

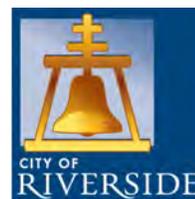


# ECONOMIC PROSPERITY ACTION PLAN AND CLIMATE ACTION PLAN

January 2016



**Riverside**  
RESTORATIVE GROWTHPRINT



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*City of Arts & Innovation*



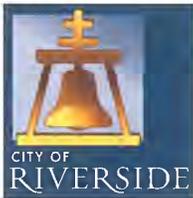
This is a project for the City of Riverside with funding provided by the Southern California Association of Governments (SCAG) Sustainability Program. The Sustainability Program is a key SCAG initiative for implementing the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), combining Compass Blueprint assistance for integrated land use and transportation planning with new Green Region Initiative assistance aimed at local sustainability and Active Transportation assistance for bicycle and pedestrian planning efforts. Sustainability Projects are intended to provide SCAG-member jurisdictions the resources to implement regional policies at the local level, focusing on voluntary efforts that will meet local needs and contribute to implementing the RTP/SCS, reducing greenhouse gas (GHG) emissions, and providing the range of local and regional benefits outlined in the RTP/SCS.

The preparation of this report has been financed in part through grant(s) from the Federal Transit Administration (FTA) through the U.S. Department of Transportation (DOT) in accordance with the provisions under the Metropolitan Planning Program as set forth in Section 104(f) of Title 23 of the U.S. Code.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of SCAG, DOT or the State of California. This report does not constitute a standard, specification or regulation. SCAG shall not be responsible for the City's future use or adaptation of the report.







Office of the Mayor  
Diverse • Inclusive • Committed

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My fellow Riversiders,

It gives me great pleasure to present the Riverside Restorative Growthprint (RRG) - two interrelated plans, the Economic Prosperity Action Plan (EPAP) and Climate Action Plan (CAP) - that embody the City of Riverside's shared commitment to environmental stewardship and a culture of innovation.

Early on, when sustainability and climate change were not even on most peoples' radar, the City made a commitment to sustainable practices with the creation of the Clean & Green Taskforce and the 2007 Sustainability Policy Statement (SPS). The SPS gave way to the Task Force's Green Action Plan, a robust strategy designed to show city officials and residents how to go green in the areas of Energy, Greenhouse Gas Emissions, Waste, Urban Design, Urban Nature, Transportation and Water. This impressive work led to the formation of the Green Accountability Performance (GAP) Committee, a group of dedicated volunteers that ensures the successful implementation of the Green Action Plan and most recently contributed to the development of the Climate Action Plan.

A primary goal of the RRG is to maximize the economic benefits inherent to addressing climate change, and to do this by cultivating opportunities for entrepreneurial growth that contribute to a thriving, prosperous, and sustainable community. Implementation of the RRG will result in economic benefits for individuals, businesses, and institutions in Riverside, while also providing public health benefits, environmental benefits, a variety of feasible transportation modes, the protection and preservation of valuable resources, and enhanced resource efficiency.

The RRG will create a prosperous future for Riverside, through a shared commitment of the City's leaders working together to creatively tackle climate change, implement innovative solutions, and promote Riverside's clean and green economy. This will ensure that Riverside remains a place attractive to dynamic and diverse families, businesses, students and visitors. I believe there is no city better equipped to lead the way than Riverside.

The time to act is now. The Riverside Restorative Growthprint cannot be a vision that sits on a shelf. The City is committed to getting to work immediately on the actions in this Plan and to lead the way for other cities. I hope that Riverside's residents and businesses will join us in taking action to ensure Riverside remains at the forefront of sustainability and seize our destiny for future generations.

Sincerely,

Rusty Bailey  
Mayor, City of Riverside  
Chair, Green Accountability Performance Committee



# ACKNOWLEDGEMENTS

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# Executive Summary

The City of Riverside (City) is dedicated to environmental quality, equity and opportunity, and economic prosperity for all. Over the past decade, the City has progressively demonstrated its commitment to taking action on the pressing issue of climate change, reducing greenhouse gas (GHG) emissions and supporting the transition to a low-carbon economy. It is the City's view that actions to reduce GHG emissions represent opportunities to inspire economic development through investment in urban development, infrastructure, mobility systems, and entrepreneurship.

The Riverside Restorative Growthprint (RRG) combines two plans: the Economic Prosperity Action Plan (RRG-EPAP) and the Climate Action Plan (RRG-CAP), which work in conjunction to spur entrepreneurship and smart growth while advancing the City of Riverside's GHG emission reduction goals. The adoption of the RRG will result in actions to reduce GHG emissions that align with the City's planning priorities and its vision of a future "green" economy based on sustainable businesses. The RRG-EPAP identifies the measures and strategies in the RRG-CAP with the greatest potential to drive local economic prosperity through clean-tech investment, entrepreneurship, and expansion of local green businesses.

The City's efforts began in 2005 with the creation of the **Clean & Green Taskforce** whose mission was to develop a policy statement that would highlight Riverside's need for sustainable practices. The task force responded with the 2007 Sustainability Policy Statement (SPS), a seminal document with eight categories: Save Water, Keep it Clean, Make it Solar, Make it Shady, Clean the Air, Save Fuel, Make it Smart and Build Green. Later that year, the SPS was officially adopted by Riverside's city council. The SPS gave way to the task force's **Green Action Plan**, a robust strategy designed to show city officials and residents how to "go green" in the areas of Energy, GHG Emissions, Waste, Urban Design, Urban Nature, Transportation and Water. This important work led to the formation of the **Green Accountability Performance (GAP) Committee**, a group of dedicated volunteers that together ensure the successful implementation of the Green Action Plan.

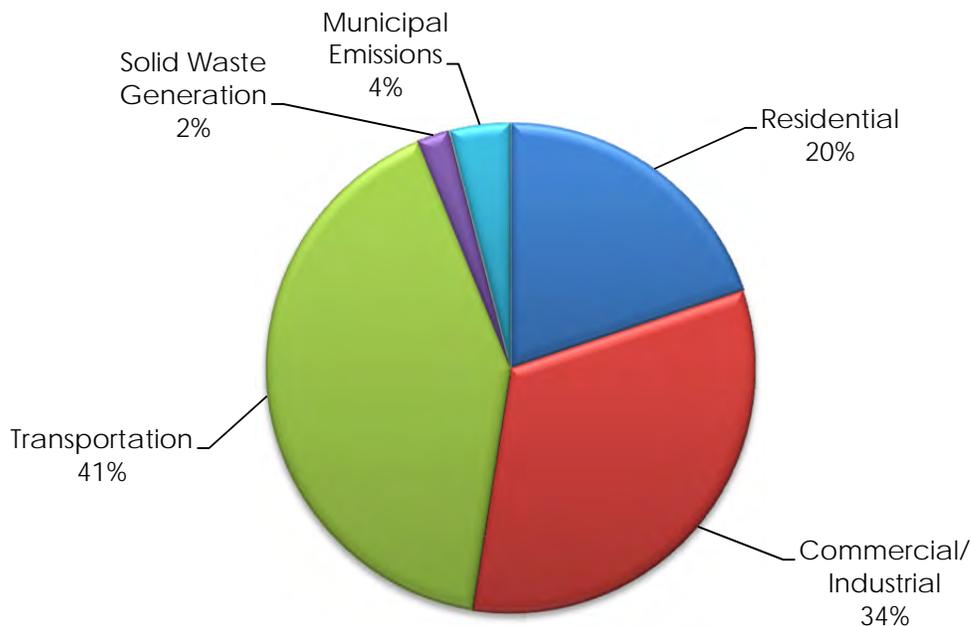
In 2014 Riverside was one of twelve cities that collaborated with the Western Riverside Council of Governments (WRCOG) on a Subregional Climate Action Plan (Subregional CAP) that includes 36 measures to guide Riverside's GHG reduction efforts through 2020. The RRG-CAP expands upon the Subregional CAP and provides a path for the

City to achieve deep reductions in GHG emissions through 2035, while the RRG-EPAP provides a framework for smart growth and low-carbon economic development. By using energy more efficiently, harnessing renewable energy to power buildings and vehicles, improving access to sustainable transportation modes, recycling more waste, conserving water, and building local food systems, the City can keep dollars in the local economy, create new green jobs, and improve public health and community quality of life.

## MEASURING RIVERSIDE'S EMISSIONS

The City's baseline GHG emissions inventory (2007) is a benchmark for tracking the City's progress in achieving future reductions. The community-wide inventory identifies the quantity of GHG emissions produced by residents, businesses, and municipal government operations. The inventory reflects the emissions generated within the City that result from the operation of motor vehicles, use of electricity and natural gas, and disposal of solid waste. **Figure ES-1** illustrates these emissions by source.

**Figure ES-1: Baseline Greenhouse Gas Emissions by Source**



In 2007, the City's total community-wide emissions were estimated at 3,024,066 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e); while emissions resulting from municipal operations were responsible for approximately 122,525 MT CO<sub>2</sub>e.<sup>1</sup> In 2010, the City conducted a second inventory that indicated the City's emissions had decreased by

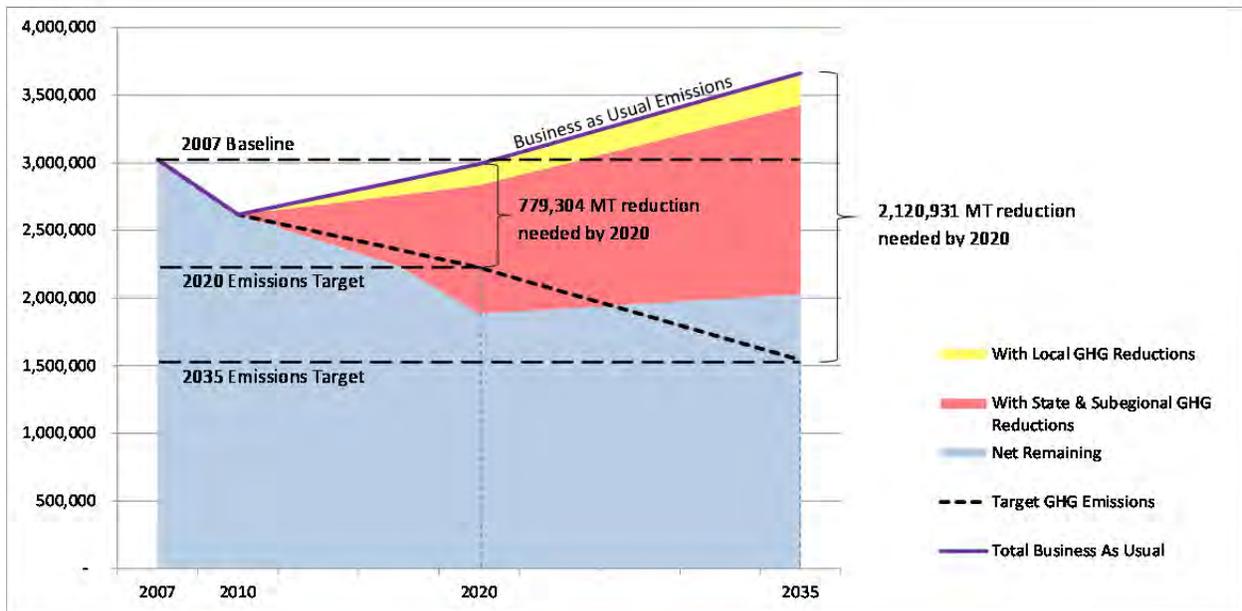
<sup>1</sup> This excludes emissions associated with the City's electric utility, which are included in the community inventory under the residential and commercial/industrial sectors that the utility serves.

approximately 13.4 percent over the three year time period. That reduction is largely attributed to the City’s actions to reduce the carbon intensity of its electricity portfolio, as supplied by municipally-owned Riverside Public Utilities (RPU). In addition, the City’s energy efficiency and renewable energy incentive programs have helped reduce energy use by residential, commercial, and industrial customers; while solid waste diversion efforts have helped decrease emissions that result from landfill disposal.

## REDUCING RIVERSIDE’S EMISSIONS

Through the WRCOG Subregional CAP process, the City has committed to a 2020 emissions target of 2,224,908 MT CO<sub>2</sub>e, which is 26.4% below the City’s 2007 baseline and 15% below 2010 emissions. This represents a reduction of 779,304 MT CO<sub>2</sub>e from the City’s 2020 business-as-usual (BAU) forecast (see **Figure ES-2**). The City is aiming for a 2035 emissions target of 1,542,274 MT CO<sub>2</sub>e, which is 49% below the 2007 baseline and represents a reduction of 2,120,931 MT CO<sub>2</sub>e from the 2035 BAU forecast.

**Figure ES-2: City of Riverside GHG Reduction Targets for 2020 and 2035**



Through state and regional measures implemented at the subregional level, the City of Riverside anticipates significant reductions from the City’s 2020 and 2035 BAU emissions forecasts (949,572 MT CO<sub>2</sub>e and 1,398,918 MT CO<sub>2</sub>e, respectively). Figure ES-2 shows the impact that the state and subregional measures have on reducing GHG reductions from business-as-usual projections.

## TAKING ACTION

The RRG-CAP expands upon the efforts of the WRCOG Subregional CAP, employing local measures to help the City achieve deep GHG reductions through the year 2035. To further develop local GHG reduction measures for the RRG-CAP, the City conducted a detailed assessment of local strategies and actions related to the measures identified in the Subregional CAP, and expanded the discussion and analysis with respect to implementation (particularly post-2020), costs and funding, performance metrics, and local co-benefits. Importantly, the discussions identify local economic and entrepreneurship opportunities that can be integrated with local, regional, and global GHG reductions, such as the development of green enterprise zones.

The RRG-CAP contains GHG reduction measures organized into four primary sectors, as defined by the following policy goals:

### ENERGY



Energy measures will increase community-wide building and equipment efficiency and renewable energy use, and promote energy efficiency and renewable energy generation for use supporting municipal operations that support the community.

### TRANSPORTATION AND LAND USE



Transportation and land use measures will reduce single-occupancy vehicle travel, increase non-motorized travel, improve public transit access, increase motor vehicle efficiency, encourage alternative fuel vehicles and promote sustainable growth patterns.

### WATER



Water measures will conserve potable water and reduce water demand by the community and municipal operations.

### SOLID WASTE



Solid waste measures will reduce solid waste sent to landfills that is generated by the community and municipal operations.

Through locally-implemented measures, the City of Riverside anticipates reductions of 189,399 MTCO<sub>2</sub>e and 275,273 MTCO<sub>2</sub>e from the City's 2020 and 2035 BAU emissions forecasts, respectively. Successful implementation of the RRG-CAP will enable the City to surpass its community-wide GHG emissions target for 2020, but more aggressive action by the City, the WRCOG subregion, and the state is needed to reach the 2035 target. In addition to the measures in the RRG-CAP, reductions of nearly half a million

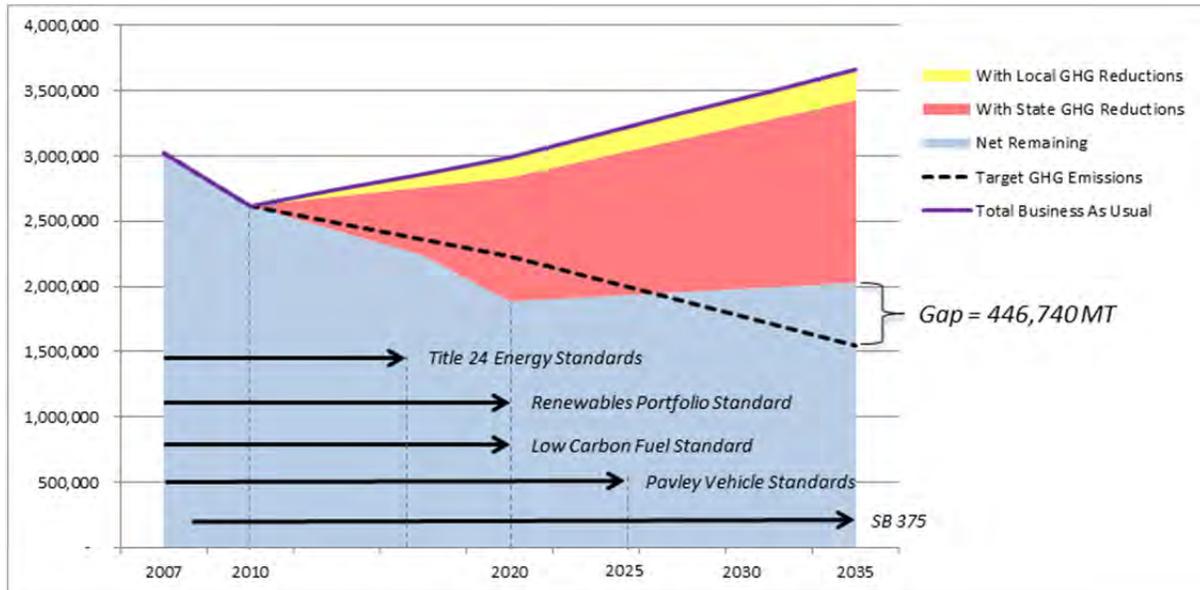


Figure ES-3: Impact of Chapter 3 Reduction Measures on GHG Targets

metric tons of CO<sub>2</sub>e will be needed to close the gap. **Figure ES-3** depicts graphically the expected impact of current RRG-CAP measures through the year 2035, showing that the measures are sufficient to keep the City on track with meeting its long-term GHG reduction goal until approximately 2026. After that point, a gap emerges between needed reductions and expected reductions, a gap that steadily grows until reaching a deficit of approximately 446,740 MT CO<sub>2</sub>e by 2035.

As Figure ES-3 shows, state and subregional measures provide the bulk of GHG emission reductions in the RRG-CAP through 2020 and beyond. Recent policy developments and pronouncements by the Governor indicate the state of California will continue to expand its regulations and GHG reduction programs in the coming years to strengthen the ability of the state as a whole to reach its long-term climate protection targets. Meanwhile, the City will continue to expand programs and identify new opportunities to further reduce emissions beyond 2020. The RRG encourages a business environment that supports and nurtures innovative practices and investments that can lead to the deep reductions needed for the City to achieve its ambitious 2035 target.

## CREATING ECONOMIC OPPORTUNITIES

Together, the RRG- EPAP and RRG-CAP identify opportunities to link economic development with GHG emissions reduction activities. The RRG-EPAP puts forth policies and strategies that support sustainable infrastructure, increase community connections, and foster smart growth. The EPAP's top 10 **Entrepreneurial Opportunity Areas (EOAs)**,

outlined below, directly support RRG-CAP implementation by identifying areas where the City can stimulate economic development and entrepreneurship while reducing GHG emissions. They are key to the success of the RRG as a whole.

1. ENERGY AND WATER UPGRADES FOR HOME OR BUSINESS - Provide financing for property owners (residential and commercial) to make energy efficient, renewable energy, and water conservation improvements.
2. GREEN BUILDING STANDARDS - Increase energy efficiency standards for residential, commercial, and municipal buildings.
3. CLEAN VEHICLES AND CHARGING/FUELING STATIONS - Facilitate alternative and renewable fuels and advanced transportation technologies and infrastructure.
4. RIVERSIDE PUBLIC UTILITY CLEAN TECHNOLOGY FUNDING - Provide financing and incentives to develop and deploy energy technologies that reduce GHG emissions.
5. WASTE REDUCTION AND DIVERSION - Create or tap into existing markets for recycling and re-purposing of materials to promote diversion of food and other solid waste from landfills.
6. EXPAND BICYCLE INFRASTRUCTURE - Expand on-street and off-street bicycle infrastructure including bicycle lanes, parking, facilities/amenities (showers, lockers) and bike sharing.
7. ECO/INNOVATION BUSINESS ZONE - Create a geographically defined area featuring best practices in sustainable urban design and green building focused on supporting both clean-tech and green businesses through a dedicated Green Business Program, enterprise zone incentives, and special showcasing opportunities.
8. CLEAN-TECH INCUBATOR - Develop a physical incubator office location to offer counsel, funding resources, office space and R&D lab space to clean-tech companies looking to launch and grow with Riverside as their base.
9. BUY AND PRODUCE LOCAL INITIATIVE - Support local businesses and reduce vehicle miles traveled (VMT) for shopping, entertainment, etc. by encouraging residents and employees to patronize local establishments via the bike infrastructure plan, Grow Riverside efforts and the City's existing Shop Riverside Community Card program.
10. GLOBAL MARKETS – support local businesses and investment that serves the global need for reducing GHG emissions.

## THE RIVERSIDE ADVANTAGE

The RRG-EPAP provides an analysis of efforts and activities by other cities across the nation focused on developing clean-tech ecosystems that are also tied to entrepreneurial growth. Riverside's current activities are analyzed in comparison with other U.S. metro areas in four categories: 1) Green Buildings; 2) Advanced Transportation; 3) Clean Electricity & Carbon Management; and 4) Clean Tech Investment, Innovation and Workforce. Riverside is ranked within the top fifty cities in the 22nd place with a score of 30.6 and Riverside placed in the top 50 Metro areas for the four major categories used by the Clean Tech Leadership Metro Index. The Clean Tech Leadership Index research and analysis further supports the need to focus on all of the **EOAs**, as they will lead to greater visibility and higher rankings for Riverside.

## THE PATH FORWARD

The City of Riverside, with this coordinated RRG-CAP and RRG-EPAP effort, is well-positioned to leverage opportunities created by emerging state and regional policies and programs. Riverside can meet its 2035 GHG emissions target through various combinations of state, sub-regional, and local actions, while opening up new opportunities for local business growth. Once the state has adopted a mid-term target (e.g., 2030) and released its plan for reaching that target, the role of local action will be more defined, and Riverside will be well-positioned to take advantage of state assistance and emerging funding opportunities.

The RRG-CAP contains the framework for measuring GHG emissions, tracking the success of the reduction measures contained within this plan, and establishes measures that will enable the City to exceed its 2020 GHG reduction target, and achieve substantial progress toward meeting the much more aggressive 2035 GHG reduction target. The RRG-EPAP is a plan for smart growth that establishes five overarching strategies aimed at effectively and efficiently facilitating economic development, and stimulating more sustainable infrastructure investment. These smart growth strategies outlined below, align with the **EOAs** best suited to achieve each strategy and reduce GHG emissions.



### PLACEMAKING

Support the development of a sustainable “place” for Riverside to thrive by utilizing the community’s assets to improve upon or create public spaces that actively benefit and empower the local community, strengthen social ties, create a sense of “belonging”, and spur economic activity.



### POLICY LENS

Analyze policy decisions through an RRG-oriented Policy Lens – a sustainability lens that examines whether future policies achieve both GHG reductions and support smart growth. Assessing environmental benefits in conjunction with economic benefits at the policy-making stage will allow for more collaboration between key stakeholders – the business community, building industry, and the City.



### SMART GROWTH INFRASTRUCTURE

Accommodate growth and development while reducing per capita land consumption, saving open space, revitalizing neighborhoods, helping cool the planet and improving access to alternative modes of transportation. Developing intelligently will spark an explosion of sustainable development in the City.



## CONNECTED COMMUNITIES

Create livable and connected communities by bridging sectors of the community that would not otherwise interact. Majority of the EOAs help to create those connections – from bike infrastructure, to the buy local campaign, to EV infrastructure. By getting people out of their cars, shortening commutes, encouraging money to stay within the local business community, and creating pathways from colleges to local employers/businesses for residents, the RRG encourages stronger community connections. The onset of new services to encourage the sharing economy (car sharing, bike sharing, co-working spaces) will also provide additional opportunity to create stronger community bonds.



## FUTURE LEADERS

Build out channels to secure talent from within the Riverside community by linking college students interested in sustainability with the local clean-tech community and future employers within the City. The City's efforts to develop an employment base with skills that are in demand by local industry and small businesses will, in turn, yield additional taxable income, stabilized property values, and increase rates of homeownership.

A primary goal of the RRG is to maximize the economic benefits inherent to addressing climate change, and to do this by cultivating opportunities for entrepreneurial growth that contribute to a thriving, prosperous, and sustainable community. Furthermore, implementation of the RRG will result economic benefits for individuals, businesses, and institutions in Riverside, while also providing public health benefits, environmental benefits, a variety of feasible transportation modes, the protection and preservation of valuable resources, and enhanced resource efficiency.

Both the City's decision makers and community members will need to maintain concerted efforts to implement the RRG. Through implementation of the strategies in the RRG as well as the adoption of new strategies that will emerge with technology advancements and business opportunities, the City can move deliberately toward a more sustainable and economically prosperous future.



# Riverside

RESTORATIVE GROWTHPRINT

## ECONOMIC PROSPERITY ACTION PLAN

RRG-PART A  
October 2015





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# CHAPTER A.1 EPAP INTRODUCTION

## INNOVATIVE APPROACH

Over the past decade, the City of Riverside (City) has progressively demonstrated its commitment to environmental quality, equity and opportunity, and economic prosperity for all. This commitment is evident in the policies and programs that have been developed by the City to support a transition to a low-carbon economy and to reduce the City's overall environmental impact. The City also regularly engages with other government agencies and regional efforts focused on developing infrastructure and policies which will lead to a more sustainable future for its residents, businesses and community members.

In response to the adoption of the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), the Southern California Association of Governments (SCAG) designed a grant program to work with city governments to implement the dynamic regional growth vision based on the principles of mobility, livability, prosperity and sustainability. The program's work focuses on implementing the region's SCS, the state-mandated plan for reducing greenhouse gas (GHG) emissions from cars and light trucks through integrated transportation, land use, housing and environmental planning, at the local level. Early on, the City of Riverside expressed its vision to couple leadership in climate action planning with economic development into local planning process. Working with SCAG, the City of Riverside took the opportunity to create a proposal calling for the development of a two-plan project, entitled the Riverside Restorative Growthprint (RRG). The RRG combines two plans, the Riverside Restorative Growthprint Economic Prosperity Plan (RRG-EPAP) and the Climate Action Plan (RRG-CAP), that work in conjunction to spur entrepreneurship and smart growth while meeting the City of Riverside's GHG emission reduction goals. The development of these two RRG plans will result in strategies, measures, and actions for reducing emissions that align with the City's planning priorities and its vision of a future economy based on sustainable businesses and business practices.

The RRG-EPAP serves to identify the reduction measures and strategies proposed in the RRG-CAP that have the greatest potential to drive economic prosperity by supporting a local ecosystem that inspires entrepreneurship and supports existing clean-tech businesses.

## RRG PROJECT TEAM

The innovative design of the dual-pronged RRG required a diverse and nimble project team. The team's capabilities needed to include comprehensive analysis and technical guidance on climate action planning and experience in the creation of economic development strategies tied to the clean-tech industry. Additionally, the team approach involved working closely with City staff, including staff from the Riverside Public Utilities', and the City's Office of Economic Development. The RRG project development team included environmental engineers, urban planners, transportation planners, public policy analysts, marketing strategists, and sustainability consultants. This unique blend of expertise allowed for vibrant team discussions and a joint plan development process, which allowed for greater collaboration than more traditional climate planning activities that are often completed within a particular silo.

## RRG-EPAP ORGANIZATION

The RRG-EPAP is organized by chapters that describe the plan development process from inception through to recommendations for implementation.

The RRG-EPAP is organized into five chapters:

- **Chapter 1, Introduction:** provides the framework for the RGG-EPAP and highlights local partners.
- **Chapter 2, Plan Development Process:** provides an overview of the process utilized to engage a diverse set of stakeholders from within Riverside and beyond City borders to gather ideas and feedback about the RRG-EPAP.
- **Chapter 3, Competitive Landscape:** describes the City of Riverside's competitive advantages and provides an overview of similar activities designed to spur entrepreneurial growth tied to GHG emission reductions in other cities across the state.
- **Chapter 4, The Path Forward:** provides recommendations and resources for implementing the RRG-EPAP.
- **Appendix B** provides further details about the feedback received during the outreach and engagement process.

## LOCAL SUPPORT AND INFRASTRUCTURE

The development of the RRG-EPAP would not have been possible without the contributions from a wide variety of stakeholders from within the Riverside community. The following partners and regional initiatives either participated during the plan development process or indicated their desire to be involved during the implementation stage.

### **California Baptist University**

California Baptist University (CBU) is a private Christian University located within Riverside and has a total undergraduate enrollment of 5,797. CBU offers bachelor's, master's and credential programs in Riverside, San Bernardino and online.

### **Greater Riverside Chamber of Commerce**

As one of the most influential chambers in the state, the Riverside Chamber works closely with local government and other entities to strengthen the local economy. The Chamber is pro-actively involved in every important issue facing Riverside business. One of the largest Chambers in Southern California, the Riverside Chamber is comprised of nearly 1,300 business enterprises, civic organizations, education institutions, and individuals.

### **Green Action Plan – Green Accountability Performance Committee**

The 2012 Green Action Plan is a product of the City's Clean & Green Task Force, which was created to: build upon the policies of the City's General Plan 2025; ensure that the green design guidelines would be developed and followed; provide a framework for sustainability pilot projects; and initiate partnerships among regional agencies and nearby cities. The Task Force first created the Sustainability Policy Statement (SPS), a document featuring eight main categories: Save Water, Keep it Clean, Make it Solar, Make it Shady, Clean the Air, Save Fuel, Make it Smart and Build Green. Once the SPS was adopted, the Green Action Plan was created to serve as a guidebook that would tie specific tasks to the policies of the SPS. The Green Action Plan focuses on seven key areas of city life: Energy, GHG Emissions, Waste, Urban Design, Urban Nature, Transportation, and Water.

The City formed a Green Accountability Performance (GAP) Committee to carry out the tasks and within just two years nearly each of the plan's 38 tasks had been accomplished. The GAP Committee has since been reimaged to focus on healthy communities. Healthy Communities is the GAP's eighth focus area, with 19 goals and over 50 additional tasks. The Healthy Communities strategies strengthen the Green Action Plan as setting a clear path to sustainability and serving as a living document that reflects the growth of the green movement, the progression of renewable energy, and the fresh ideas of the GAP Committee.

## **GrowRIVERSIDE**

The GrowRIVERSIDE program is a movement to revitalize agriculture and the development of local food systems with the principal goal of fostering the growth of a sustainable local food and agriculture system that benefits the community, environment and economy of Riverside. In fall of 2013, under the leadership of Councilmember Chris MacArthur, Former Mayor Ron Loveridge and the Community Development Dept., an outcomes-based conference program was developed to help Riverside reconnect to its agricultural roots and galvanize the citizens, growers, advocates, government officials and other major stakeholders around the economic opportunities that can result from increasing sustainable agricultural solutions in the city and on its fringes.

## **Healthy Communities**

Western Riverside Council of Governments (WRCOG) and its member jurisdictions are engaged in numerous efforts and initiatives to promote healthy communities, including participating in the Riverside County Health Coalition (RCHC). The RCHC is a collaboration of public and private sectors, school districts, community businesses, local and regional organizations, and community members committed to policy development and advocacy, environmental change, and community empowerment for healthy lifestyles in Riverside County. This initiative includes a focused partnership effort with local governments to integrate healthy communities into the local planning and policy-making process.

## **HERO Program**

Established under the guidance of AB 811 (2008) and AB 474 (2009), WRCOG's HERO Program is a Property Assessed Clean Energy (PACE) program that provides financing to residential and commercial property owners for the installation of energy efficient, renewable energy, and water conservation improvements on existing properties. Financing provided through the HERO Program is repaid through an assessment on property tax bills over 5-, 10-, 15-, 20-, and 25-year terms, based on the useful life of the products, and upon sale of the property, the balance generally stays with the property.

## **Inland SoCal Link iHub**

The Inland Southern California region plays a critical role in the economic prosperity of the state of California. The Inland SoCal Link iHub is anchored by an innovative partnership between the Port of Los Angeles and Inland Southern California. The overarching goal of this iHub is to maximize economic development opportunities within the transportation corridor which links the Port with the Inland Southern California region. This will be accomplished through the establishment of an advanced manufacturing iHub that seeks to innovate and refine logistics in an effort to maximize the state's exports. The iHub will promote economic development and innovation based opportunities in the Inland SoCal Link corridor. It will also boost the area's effort to create additional programs and institutions that will foster new research and knowledge centers with a focus on advanced logistics.

### **La Sierra University**

Affiliated with the Seventh-day Adventist Church, La Sierra University is acclaimed for its academic quality, opportunities for research at the undergraduate and graduate level, community service emphasis, and demographically diverse student body. The University offers undergraduate and graduate curricula in applied and liberal arts, sciences, business and management, religion, and programs for professional education in fulfillment of requirements for teaching credentials.

### **Los Angeles Cleantech Incubator (LACI)**

LACI is a non-profit organization funded by the Community Redevelopment Agency of the City of Los Angeles (CRA) and the Los Angeles Department of Water and Power (LADWP). In partnership with the City of Los Angeles' exceptional educational and research organizations – UCLA, USC, Caltech and Jet Propulsion Laboratory – LACI helps accelerate the commercialization of their clean technologies in addition to accelerating new products developed by independent entrepreneurs. LACI is a result of the Clean Tech Los Angeles (CTLA) alliance among the Mayor's office, the universities within the City of Los Angeles, the Los Angeles County Economic Development Corporation, the Los Angeles Business Council, the Los Angeles Area Chamber of Commerce, LADWP and the CRA/LA.

### **Multiple Species Habitat Conservation Plan**

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional plan to conserve sensitive species and their associated habitats in the subregion. Created in 2004 by the Western Riverside County Regional Conservation Authority (RCA), the MSHCP provides subregional transportation and green infrastructure benefits to local agencies and allows WRCOG jurisdictions to make land use decisions and maintain a strong economy in a context that comprehensively addresses federal and state Endangered Species Acts (ESA and CESA) requirements.

### **Riverside City College**

Riverside City College is a community college located in downtown Riverside and a member of the Riverside Community Colleges System. Serving more than 19,000 students each semester, Riverside City College provides students with a wide range of choices including associate's degree programs, transfer to a four-year college or university, or career certificates that prepare them to enter the workforce. Riverside City College is home to strong programs in liberal arts, science, performing arts, nursing, and athletics.

### **Riverside ExCITE**

Riverside ExCITE is a unique incubation/acceleration program created in collaboration between business leaders, local government with representatives from both the City and County of Riverside, and the local research university at UC Riverside. Riverside ExCITE is organized for the purpose of facilitating the successful incubation and acceleration of start-up companies engaged in entrepreneurial research and development of advanced technologies with the intent to create high technology jobs in the County of Riverside. By providing a location for business synthesis, mentorship and

management; access to financial resources and information; access to marketing and professional services; and technology transfer from domestic and foreign universities, organizations and governments, this unique operation will increase successful start-ups in the region.

### **Riverside Public Utilities**

The City of Riverside Public Utilities (RPU) Department provides water and electric services to the residents and businesses of Riverside. Through Green Riverside, the City supports and implements the various tasks of the Green Action Plan and other sustainability initiatives, offering multiple energy efficiency programs that reduce consumption, while promoting the City's sustainability goals. Blue Riverside includes multiple water conservation programs that reduce water consumption.

### **Riverside Technology CEO Forum**

The Riverside Technology CEO Forum provides an arena for Technology CEOs to network, discuss relevant topics and issues, and develop and deploy programs and action items of importance to the growth and prosperity of the technology industry and community.

### **Seizing Our Destiny**

Seizing Our Destiny is creating a prosperous future for Riverside, California, through a shared commitment of community, business and civic leaders working together to creatively tackle local issues, implement innovative solutions, and promote Riverside success stories. Seizing Our Destiny works as a guide, built around the need for a strong economy, welcoming places to gather and be entertained, an able workforce, art in all its forms, opportunities to learn, quality health care and respect for the earth and one another. Civic leaders, nonprofits, neighborhood and faith-based organizations, local businesses, City government and elected officials are working together to make this a reality through the collaboration on a number of initiatives and projects.

### **Southern California Association of Governments**

SCAG is the nation's largest metropolitan planning organization, representing six counties, 191 cities and more than 18 million residents. SCAG undertakes a variety of planning and policy initiatives to encourage a more sustainable Southern California now and in the future. Since 2000, SCAG has worked actively with the people and institutions of Southern California to create a dynamic regional growth vision based on these four principles: mobility, livability, prosperity, and sustainability.

### **Sustainable Communities Strategy**

California's Sustainable Communities and Climate Protection Act, or Senate Bill (SB) 375, requires SCAG to develop a Sustainable Communities Strategy (SCS) to reduce GHG emissions from cars and light trucks through integrated transportation, land use, housing and environmental planning. The SCS is a plan for meeting GHG emission reduction targets set by the California Air Resources Board (ARB) for the SCAG region. The 2012-2035 RTP/SCS achieves a 9 percent per capita GHG reduction for 2020 and a 16 percent per capita reduction for 2035. The successful implementation of the RTP/SCS allows future residents to enjoy a better quality of life than we do today, including the ability to lead a healthy and prosperous lifestyle, enjoy clean air and water, and ample

opportunities for recreation. It will have direct and substantial benefits to public health by reducing pollutant emissions and expanding the opportunities for active transportation. It also demonstrates how we can transition from things we know to be unsustainable over the long term and beyond the term of the current RTP/SCS, such as reliance on fossil fuels, to new technologies and practices for the future.

### **Regional Housing Needs Assessment**

The Regional Housing Needs Assessment (RHNA) is mandated by State Housing Law as part of the periodic process of updating local housing elements of the General Plan. The RHNA quantifies the need for housing within each jurisdiction during specified planning periods. Communities use the RHNA in land use planning, prioritizing local resource allocation, and in deciding how to address identified existing and future housing needs resulting from population, employment and household growth. The RHNA does not necessarily encourage or promote growth, but rather allows communities to anticipate growth, so that collectively, the region and subregion can grow in ways that enhance quality of life, improve access to jobs, promotes transportation mobility, and addresses social equity, fair share housing needs.

### **Active Transportation Program**

The California Active Transportation Program (ATP) was created by Senate Bill 99 (Chapter 359, Statutes 2013) and Assembly Bill 101 (Chapter 354, Statutes 2013), to encourage increased use of active modes of transportation, such as biking and walking, as well as to ensure compliance with the federal transportation authorization Moving Ahead for Progress in the 21st Century (MAP-21) Sustainability Framework for Western Riverside County. WRCOG's Sustainability Framework (Framework) is a subregional planning effort that establishes, implements, and continuously refines an overarching sustainability plan for the communities in Western Riverside County. The Framework aims to: initiate a dialogue about the importance of sustainability in the region; provide a vision and goals to guide local action and regional collaboration; define more immediate short-term goals that can contribute to the longer-term vision of the Framework; and define indicators, benchmarks, and targets that provide a measure of the effectiveness of Framework programs and policies. The Framework acts as a "living" document and contains goals and actions applying to economic development, education, public health, transportation, water and wastewater, energy, and the environment.

### **Transportation Uniform Mitigation Fee**

WRCOG's Transportation Uniform Mitigation Fee (TUMF) was implemented in 2003 as one of the largest multi-jurisdictional fee programs in the nation. TUMF makes improvements to the regional transportation system and provides transportation demand management through funds from new development, ensuring that development mitigates for increases in traffic volumes. TUMF is a 32-year program that provides subregional transportation and infrastructure benefits to local agencies in Western Riverside County. The program is expected to raise \$4.2 billion, and 1.64% is allocated to the Riverside Transit Agency (RTA) for transit improvements. To mitigate the impacts of transportation construction projects, WRCOG allocates 1.59% of TUMF funds collected to the RCA to purchase habitat for the MSCHP.

### University of California, Riverside

The University of California, Riverside (UCR) is one of 10 universities within the University of California system. Widely recognized as one of the most ethnically diverse research universities in the nation, UCR's current enrollment is more than 21,000 students, with a goal of 25,000 students by 2020. The campus is in the midst of a tremendous growth spurt with new and remodeled facilities regularly coming on-line. UCR is also home to the Center for Environmental Research and Technology (CE-CERT). The center is a vital source of research into renewable fuel development, advanced electric, hybrid, and fuel cell vehicles, and smart grid technologies.

### Western Riverside County Clean Cities Coalition

The Western Riverside County Clean Cities Coalition (Coalition) is a voluntary local government and industry partnership that aims to reduce the consumption of petroleum fuels and improve air quality in the WRCOG sub-region. The Coalition works to mobilize local stakeholders toward expanding the use of alternative fuel vehicles (AFV) and advanced technology vehicles, promoting local idle reduction measures, and strengthening local AFV fueling infrastructure. The governments of Western Riverside County have taken leadership roles in the Coalition, coordinating efforts between government and industry to recognize the value of partnership in achieving air quality, energy efficiency, economic development, and transportation goals, while advancing the clean air and energy efficiency goals of the national Clean Cities program administered by the U.S. Department of Energy.



With the generous contributions made by members of the above stakeholders, the RRG project team was able to gather feedback and suggestions about the City of Riverside's smart growth strategies. Chapter 2 of this report provides a comprehensive summary of their responses.



# CHAPTER A.2 PLAN DEVELOPMENT

## OVERVIEW

The development of the Riverside Restorative Growthprint Economic Prosperity Action Plan (RRG-EPAP) consisted of a detailed analysis of the Climate Action Plan (RRG-CAP) emission reduction targets and proposed measures. In addition to analyzing the RRG-CAP, there was a comprehensive public engagement strategy to involve key stakeholders and solicit feedback on Riverside’s competitive advantages and entrepreneurial prospects.

The City of Riverside (City) conducted public outreach that included a number of public presentations and workshops to inform and involve City residents and influencers in the plan development and decision-making process. The outreach activities involved a diverse set of key stakeholder groups with particular interests in the focus areas of the RRG – the business community, academic institutions, community groups, religious organizations, student representatives, sustainability groups, and many others. Additionally, the project was exposed to a broader global audience via online crowdsourcing resources to gather feedback from beyond the borders of Riverside to learn about the successes and experiences of smart growth strategies around the world. This chapter presents an overview of these activities; more detail is provided in Appendix B.

## ECONOMIC DEVELOPMENT APPROACH

While the primary goal of the RRG-CAP is to measure current GHG emissions and identify areas for potential reductions so that the City can meet future environmental goals, the goal of the RRG-EPAP is to unveil opportunities to link economic development activities with those focused on reducing GHG emissions. In order to accomplish these parallel goals, the RRG project team worked to analyze the emission reduction measures through an entrepreneurial lens tied to economic development.

With this unique approach, Riverside is able to create a holistic plan that accomplishes *both* environmental stewardship and economic growth.

As a starting off point, the RRG project team analyzed the RRG-CAP and identified the top ten measures that show the most promise for emission reductions as well as stimulating economic development and entrepreneurship within the City of Riverside. These have been labeled **Entrepreneurial Opportunity Areas (EOAs)** and are key to the success of the RRG.

The ten EOAs are outlined below with their associated GHG reduction measure(s) from the RRG-CAP:

**1. Energy and Water Upgrades for Home or Business**

Provide financing for property owners (residential and commercial) to make energy efficient, renewable energy, and water conservation improvements.

- HERO Programs (Measures SR-3 and SR-4)
- Local Utility Programs - Electricity (Measure E-3)
- Water Efficiency and Conservation (Measure W-1)

**2. Green Building Standards**

Increase energy efficiency standards for residential, commercial, and municipal buildings.

- California Building Energy Efficiency Standards - Title 24, Part 6 (Measure SR-2)

**3. Clean Vehicles and Charging/Fueling Stations**

Facilitate alternative and renewable fuels and advanced transportation technologies and infrastructure.

- Clean Vehicle and Low Carbon Fuel Standards (Measure SR-6)
- Electric Vehicle Plan and Infrastructure (SR-12)
- Neighborhood Electric Vehicle Programs (T-14)
- Alternative Fuel and Vehicle Technology and Infrastructure (Measure T-19)

**4. Riverside Public Utility Clean Technology Funding**

Provide financing and incentives to develop and deploy energy technologies that reduce GHG emissions.

- Renewables Portfolio Standard (Measure SR-1)
- Riverside Public Utilities Technology Grants (Supporting Measure E-6)

**5. Waste Reduction and Diversion**

Create or tap into existing markets for recycling and re-purposing of materials to promote diversion of food and other solid waste from landfills.

- Food Scrap and Paper Diversion (Measure SW-2)

**6. Expand Bicycle Infrastructure**

Expand on-street and off-street bicycle infrastructure including bicycle lanes, parking, facilities/amenities (showers, lockers) and bike sharing.

- Bicycle Programs (Measures T-1, T-2, T-3, T-12 and T-16)

**7. Eco/Innovation Business Zone**

Create a geographically defined area featuring best practices in sustainable urban

design and green building focused on supporting both clean-tech and green businesses through a dedicated Green Business Program, enterprise zone incentives, and special showcasing opportunities.

- Increase Development Densities (Measure T-6)
- Mixed Use Development (Measure T-7)
- Eco-corridor (Measure T-20)

#### **8. Clean-Tech Incubator**

Develop a physical incubator office location to offer counsel, funding resources, office space and R&D lab space to clean-tech companies looking to launch and grow with Riverside as their base.

- Eco-corridor (Measure T-20)

#### **9. Buy and Produce Local Initiative**

Support local businesses and reduce vehicle miles traveled (VMT) for shopping, entertainment, etc. by encouraging residents and employees to patronize local establishments via the bike infrastructure plan, Grow Riverside efforts and the City's existing Shop Riverside Community Card program.

- Represents a potential new RRG-CAP measure

#### **10. Wild Card**

Allows for additional suggestions for entrepreneurial opportunity areas.

- Represents a potential new RRG-CAP measure

## OUTREACH & ENGAGEMENT

The next step in plan development focused on launching a comprehensive outreach and engagement campaign to collect feedback for each EOA and identify the local resources, incentives and funding sources available to implement these initiatives. The City's innovative approach to the plan development process called for both in-person outreach activities within the Riverside community and an online effort focused on using the internet to "crowdsource" ideas via web sites designed to elicit feedback on community planning efforts. The results of the outreach and engagement efforts have been summarized below according to each individual activity.

### GAP COMMITTEE PLAN INTRODUCTION

The RRG project was first presented to the Green Accountability Performance (GAP) Committee during the June 25<sup>th</sup>, 2014 meeting. The plan for the development of the project was announced to the group and participants were able to provide feedback and sign up for future plan updates. The meeting was attended by the City of Riverside Mayor Rusty Bailey along with a diverse cross-section of local representatives from faith-based, student, university, senior, and other groups. Attendees were provided with an overview of the project plan and had the opportunity to discuss the plan's goals with the RRG project team. During the meeting, the Committee showed strong interest and support for the project and discussions among members provided valuable insight into existing programs and opportunities for improvement.

Additional local outreach included a follow-up presentation during the GAP Committee meeting on October 8<sup>th</sup>, 2014. At this meeting, the Committee was provided with a progress report outlining the status of the plan and future outreach and engagement efforts.

## INFLUENCER WORKSHOPS

One of the main outreach efforts involved a targeted approach to engage the local community and collect specific feedback for each EOA. During a workshop series hosted by the City of Riverside and the RRG project team, a curated list of active and influential members of the Riverside community were convened to discuss GHG emissions reduction efforts and the opportunities to inspire economic development through investment in urban development, infrastructure, and entrepreneurship.

The workshop participants included a diverse group of stakeholders in an effort to provide feedback that represented a well-rounded understanding of Riverside’s competitive advantages and interests within each sector. Workshop participants represented a variety of sectors including city and government representatives, local businesses, sustainability groups, neighborhood councils, universities and schools, and faith-based organizations.

Participants were divided between two workshops hosted at the local Casa Blanca Library on the afternoons of November 19<sup>th</sup> and 20<sup>th</sup>, 2014. The workshops presented attendees with an overview of the RRG program and provided a deeper look into the clean-tech innovation landscape, featuring case studies from other cities engaged in supporting clean-tech entrepreneurial efforts. Workshop participants also engaged in facilitated activities and discussions to provide feedback on the “Top 10 EOAs,” as well as, to identify potential resources available to implement and support the objectives within each EOA.



Figure A.2-1: Photos from RRG-EPAP Influencer Workshops

## CLEAN-TECH INNOVATION LANDSCAPE PRESENTATION

In a deeper exploration of the local and regional clean-tech industry, the workshop series featured a guest presentation by Erik Steeb, the Executive Director of LACI@CSUN, which is the first satellite incubator on a college campus related to the Los Angeles Cleantech Incubator (LACI). His presentation provided an overview of the regional clean-tech landscape and its formation as an economic driver in the Los Angeles region. He explained that although the clean-tech industry was relatively new to the area and arose out of necessity, the resulting transition to increased innovation and efficiency within business is vital to the success of all growing companies. Mr. Steeb also provided background on the importance of incubating new businesses. He noted

that the Kauffman Foundation recently credited new companies with the creation of three million jobs, while older companies lost one million during the same period.

Beyond working to simply attract clean-tech companies to the Los Angeles region, Mr. Steeb encouraged the utilization of an incubator program and claimed that it has been shown to be “a proven model” for success in building strong companies with a goal of providing long-term jobs and a lasting economic impact. The presentation included references to the U.S. Economic Development Administration (EDA) study which found that incubators create twenty times more jobs than community infrastructure projects. The EDA also found that the public return on investment in incubator programs is substantial with an almost 300% payback. Research from this organization continues to support the incubator model, stating that 87% of participating companies were still in business after five years and 84% of companies remain local.

The presentation also highlighted LACI’s successful track record, calling out the 36 months of company traction by the incubator’s portfolio companies that showed over \$50 million of total investment. Mr. Steeb explained that the 27 active and graduated companies from LACI’s program have created 417 direct and indirect jobs, which translate to over 100 million dollars in economic impact over five years. LACI was recently awarded a grant from the Department of Energy National Incubator Initiative for Clean Energy, is ranked as a Global Top 10 Incubator from among 800 candidates across 67 countries, and is recognized as the “most advanced small business cluster” by JPMorgan Chase.

The presentation also focused on the methods of support LACI provides to its program participants and portfolio companies. Primarily, they offer startup clean-tech companies a physical office space or temporary production facilities, which include conference and meeting rooms, all furniture, utilities, and parking. The portfolio companies also receive high-level executive coaching and mentorship support through a network of 60 expert advisors, access to business boot-camps, and “C-level” seminars on venture financing, county purchasing, B2B sales management, social networking, and presentation skills.

Additionally, LACI leverages its network to provide entrepreneurs with access to investors, corporate relationships, management teams, government associations, and academic intuitions. LACI’s on-site support team includes advisors as well as staff, including general managers, technical analysts, and an operational support and marketing team. The presentation emphasized the importance of providing access to investors and strong professional networks, as many developing companies may not qualify for traditional loans and must seek private investment to fund their development.

The presentation also described LACI’s efforts to develop a clean-tech corridor, a four-mile long strip between the Los Angeles River and Alameda in the eastern part of Downtown Los Angeles. The LACI CleanTech Corridor is the cornerstone of the City’s green economy strategy and offers a range of incentives for clean-tech companies to locate and develop within the area. One highlight of the Corridor will be a new La Kretz Innovation Campus, a 60,000 square foot facility complete with R&D labs, conference facilities and office space for companies in every stage of development. The project will not only impact the Corridor itself but will transform industry in the surrounding neighborhoods including Boyle Heights, East Los Angeles, and South Central.

Lastly, Mr. Steeb described the development of the LACI partnership with California State University Northridge (CSUN) as an effort to utilize the economic potential and existing networks within both institutions. LACI viewed CSUN's educational history, alumni network, and 4,000 annual graduating engineers as strong assets, while CSUN saw potential to attract new students, increase entrepreneurship, attract research funding, as well as engage new stakeholders and staff through the partnership. Following on the success of the CSUN campus incubator, LACI pursued the establishment of another incubator at Otis College of Art and Design with a focus on commercialization of sustainable design.

Mr. Steeb concluded his presentation by encouraging the formation of a Riverside clean-tech incubator and emphasizing the opportunity for lasting economic impact and regional partnerships with LACI and others throughout the State.

## **WORKSHOP FINDINGS**

During the workshop activities and group discussions, participants showed strong support for the EOAs and offered a number of innovative wildcard suggestions. For all EOAs, participants emphasized the need to seek funding and develop local programs to support EOA objectives in addition to increasing awareness of existing and future programs through educational materials. The feedback from the workshop participants also showed strong interest and need for the creation of "place," improved local communication channels, and the development of partnerships and infrastructure to promote Riverside as a leader in sustainability and clean-tech.

### Summary of Resources Available to Support EOA Implementation:

The participants identified a wide range of existing programs and resources available to the Riverside community to help with the implementation of the activities covered within each EOA. Below is a summary of the resources identified by workshop participants:

#### Incentive & Rebate Programs

- Property Assessed Clean Energy (PACE) program
- Home Energy Renovation Opportunity (HERO) program
- Electric vehicle (EV) rebates

#### Local Government

- City of Riverside Planning Department
- Riverside Public Utilities (RPU)
- Riverside-Corona Resource Conservation District (RCRCD)

#### Local Initiatives

- Green Riverside
- Transportation Uniform Mitigation Fee (TUMF)
- Recycling Market Development Zone (RMDZ)
- Downtown Business Improvement District (BID)
- Small Business Development Center (SBDC)
- Community Supported Agriculture (CSA)
- City of Riverside Master Bike Plan
- Shop Riverside Campaign
- GrowRIVERSIDE

- Neighbor Fest Event
- Riverside Community Garden Project

#### Funding Platforms & Partnership Opportunities

- Southern California Association of Governments (SCAG)
- Western Riverside Council of Governments (WRCOG)
- South Coast Air Quality Management District (AQMD)
- U.S. Environmental Protection Agency (EPA)
- California Air Resources Board (CARB)
- Southern California Gas Company
- Riverside Public Utilities (RPU)
- Active Transportation Grant Program
- Clean Cities Coalition
- CalRecycle
- U.S. Green Building Council (USGBC) Inland Empire Chapter

#### Local Universities & Cooperatives

- University of California, Riverside (UCR)
- Cal Baptist University (CBU)
- La Sierra University (LSU)
- Riverside Community College (RCC)
- University of California Global Food Initiative
- University of California Cooperative Extension Program

#### Summary of Program Ideas By EOA Category:

Workshop attendees brainstormed a number of programs and ideas, outlined below, that both support EOA objectives as well as future sustainability goals for the City of Riverside.

### **Energy and Water Upgrades for Home or Business**

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The top 5 ideas identified by workshop participants included:

- 1) Develop marketing materials to promote the value of energy and water upgrades to residents and businesses;
- 2) Provide funding for grey water and wind project installations;
- 3) Develop programs to support solar installations for businesses and homes;
- 4) Adopt and promote new water-saving technologies; and,
- 5) Create and promote weatherproof/insulation enhancement programs.

### **Green Building Standards**

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The top 5 ideas identified by workshop participants included:

- 1) Provide green building training programs and information to the public;
- 2) Provide rate incentives for lowered utility usage;
- 3) Require solar installations for all new construction;
- 4) Support construction of Net Zero homes; and,
- 5) Promote mixed-use development to create walkable communities.

### **Clean Vehicles and Charging/Fueling Stations**

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The top 5 ideas identified by workshop participants included:

- 1) Develop a vehicle to grid (V2G) system;
- 2) Provide additional charging stations in central locations such as grocery stores, parks, libraries, etc. that have a variety of fuel types;
- 3) Develop awareness campaigns on the benefits of electric vehicles (EVs) and existing infrastructure;
- 4) Promote employer incentive programs for using clean vehicles; and,
- 5) Incentivize private property owners to install public charging stations.

### **RPU Clean Technology Funding**

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The top 5 ideas identified by workshop participants included:

- 1) Enhance existing renewable portfolio standards;
- 2) Create marketing plan and raise visibility of existing RPU grant programs via workshops;
- 3) Provide monetary awards for technology competitions at local universities;
- 4) Seek funding for technology research and partnerships with technology companies through University of California, Riverside (UCR); and,
- 5) Enhance existing RPU technology grants.

### **Waste Reduction and Diversion**

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The top 5 ideas identified by workshop participants included:

- 1) Enhance recycling and compost collection systems;
- 2) Create sustainable purchasing programs and training for city/public/private;
- 3) Undertake local waste audit;
- 4) Create and promote a green business program; and,
- 5) Develop public education programs.

### **Expand Bicycle Infrastructure**

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The top 5 ideas identified by workshop participants included:

- 1) Create additional bike lanes and enhance safety systems;
- 2) Develop a bike path along the Gage Canal;
- 3) Provide bike lockers, racks, showering facilities, service stations and bike share programs;
- 4) Establish and promote local bike events (e.g. CicLAvia); and,
- 5) Link bicycle routes to local transit corridors (trains and buses).

### **Eco/Innovation Business Zone**

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The top 5 ideas identified by workshop participants included:

- 1) Provide skill-building workshops on sustainability for local employees;
- 2) Develop green job training and internships for high school and college students;
- 3) Develop smart growth development initiatives that incorporate live and work design with mixed-use buildings;
- 4) Provide incentives for incubator participants and businesses within the zone such as reduced permitting and fees and loan/grant programs; and,
- 5) Create zones in conjunction with Restore Riverside (one zone could be between Jurupa Ave. and the Santa Ana River from Martha McLean-Anza Narrows Park to Van Buren Blvd.).

### **Clean-Tech Incubator**

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The top 10 ideas (this EOA invoked the highest amount of responses) identified by workshop participants included:

- 1) Develop a pilot project to engage the community around the idea of a clean-tech incubator;
- 2) Attract investment and business capital to support new clean-tech companies locally;
- 3) Create programs to retain and recruit graduates from UCR and other colleges;
- 4) Staff a clean-tech “idea” booth at public events to initiate public dialogue and spark new ideas;
- 5) Develop innovation think-tank opportunities to engage thought leaders;
- 6) Provide training programs for clean-tech startups to ensure their success;
- 7) Partner with the Chamber of Commerce to support the growth of clean-tech businesses;
- 8) Develop partnerships with academic institutions similar to the LACI satellite campus idea;
- 9) Develop partnerships with regional incubators to share lessons learned and co-promote events; and,
- 10) Create flex office space for the community and local businesses.

### **Buy Local Initiative**

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The top 5 ideas identified by workshop participants included:

- 1) Provide financial incentives for local purchasing;
- 2) Establish local co-operatives and permanent farmers markets;
- 3) Develop a farm-to-table and farm-to-school program and educational resource guides and online platforms (website and social media);
- 4) Develop a public awareness campaign and nutritional education programs; and,
- 5) Enhance the community garden program.

## Wild Card

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This EOA was designed to encourage out-of-the-box thinking and participants suggested new ideas that were not covered by the other EOAs. The top ideas identified by workshop participants included:

- 1) Develop an enhanced rideshare program;
- 2) Preserve/restore native grasslands for carbon sequestration;
- 3) Promote green roofs and walls;
- 4) Include resilience and adaptation focus in city planning;
- 5) Promote a sharing economy;
- 6) Promote a life cycle approach to everything; and,
- 7) Create climate adaptation and mitigation programs.

The findings from the influencer workshops were used to shape the next steps in the outreach and engagement strategy and allowed the RRG project team to tailor future activities and surveys to collect more focused feedback.

## CROWDSOURCING CAMPAIGN

The next step in the development of the RRG-EPAP was to launch a crowdsourcing campaign using a variety of public platforms with the goal of leveraging collective knowledge and soliciting feedback on the “Top 10 EOAs.” The crowdsourcing plan was developed to engage a global audience in idea sharing and provide a perspective from beyond the borders of the Riverside community. The intention of this broader campaign was to learn about the successes and experiences of similar programs around the world and how these might be incorporated into the RRG-EPAP strategy.

After researching a variety of crowdsourcing platforms, the RRG project team concluded that the MindMixer platform was the best suited to solicit feedback about the types of programs featured within each EOA. The WRCOG and City of Riverside MindMixer pages would act as the primary sites and anchor the responses for the crowdsourcing campaign. Weekly topics about the “Top 10 EOAs” were posted to both MindMixer sites.

Topic posts were designed to tease out ideas for new business ventures, innovative program designs and success stories about clean-tech projects in cities across the globe. A “description” section also allowed viewers to learn more about the topic area and provide additional context about the local environment in Riverside.

Sample questions included:

- *Is a zero-waste community possible? Which cities and communities are leading the way, and how?*
- *How have cities utilized improvements in bicycle infrastructure for economic gains?*
- *How can we encourage businesses to adopt sustainability initiatives and locate within an Eco Business Zone?*
- *If you drove a plug-in electric vehicle, where would you charge your electric vehicle on a regular basis?*



**Figure A.2-2: Screenshot of an EOA topic posting on the MindMixer**

To drive traffic to the crowdsourcing sites, a comprehensive social media campaign was launched to push out the inquiries across a number of outlets to maximize the project's exposure. This campaign targeted online communities and interest groups focused on areas covered by the EOAs (i.e. online bike-sharing discussion groups were targeted for Bicycle Infrastructure inquiries). The RRG project team conducted research and assembled a targeted social media plan covering the three major outlets: LinkedIn, Facebook, and Twitter. A summary of the outreach plan is provided below:

## LinkedIn Outreach

The LinkedIn outreach strategy consisted of posting weekly discussion threads to the largest LinkedIn groups relating to each EOA. All discussion posts were initiated by a team member from the RRG project team via his/her LinkedIn profile (in order to post to a LinkedIn group, you must have an active profile and be a member of the group prior to posting). This portion of the social media campaign reached over 1.7 million professionals, students, and global citizens.

Below is a sampling of the groups that were included within the LinkedIn campaign:

**Table A.2-1: Sampling of LinkedIn Outreach**

Group	Description	Members
Linked Energy Group	Includes all of the industries involved the ENERGY Industry including production and sale of energy, including fuel extraction, manufacturing, refining and distribution.	208,278
Green	Green is for those who want to share ideas on environment, climate change, renewable energy, clean tech, sustainability, CSR and Green issues.	185,299
Sustainability Professionals	This group is intended to be a resource for those who work in jobs pertaining to social or environmental responsibility and for those who are seeking employment or information on careers in these areas.	100,485
US Green Building Council	Members of the U.S. Green Building Council community.	62,527
Waste Management and Recycling Professionals	The Waste Management and Recycling Professionals group (the largest LinkedIn group of its kind) is an informal networking and discussion group for those in the solid waste and recycling industries.	44,592
Cleantech	Think of us as a virtual incubator for clean tech, green business, energy and sustainability.	32,315
Green Cities: Smart Growth and Sustainability	For those interested in Smart Growth and Sustainability, Green Design, Green Infrastructure, Compact Development, Densification, reducing automobile dependency and increasing livability and quality of life...	20,000

## Facebook Outreach

The Facebook outreach strategy consisted of weekly postings to the largest Facebook groups relating to each EOA. All discussion posts were initiated by a team member from the RRG consultant team via his/her Facebook profile (in order to post to a Facebook group, you must have an active profile and be a follower of the group prior to posting).

This portion of the social media campaign reached over 3 million professionals, students, and global citizens.

Below is a sampling of the groups that were included in the Facebook campaign:

**Table A.2-2: Sampling of Facebook Outreach**

Group	Description	Followers
I Support Farmers Markets	There are 7864 local Farmers Markets in the US. There are only 4100 Walmarts.	597,716
TreeHugger	TreeHugger.com is devoted to sustainability, design, food, culture, transportation, energy, fashion, politics, health and other environmental issues.	473,532
Attainable Sustainable	Reviving the lost art of self-reliance, one small change at a time.	434,380
Environmental Working Group	EWG is a national public interest group dedicated to using the power of information to protect public health and the environment.	402,460
Natural Resources Defense Council (NRDC)	NRDC's mission is to safeguard the Earth: its people, its plants and animals and the natural systems on which all life depends	278,370
Green on Facebook	This Page is a resource for people interested in learning more about Facebook's commitment to environmental stewardship.	181,831

### Twitter Outreach

The Twitter outreach strategy consisted of posting regularly to the largest Twitter groups relating to each EOA. All discussion posts were initiated by a Twitter ID from the RRG project team. This portion of the social media campaign reached over 5.6 million professionals, students, and global citizens.

Below is a sampling of the groups that were included in the Twitter campaign:

**Table A.2-3: Sampling of Twitter Outreach**

Twitter Account	Description	Followers
Tech Crunch	Breaking technology news, analysis, and opinions from TechCrunch. The number one guide for all things tech.	4,340,000
TreeHugger	Links, Ideas and Conversation from the TreeHugger hive mind, the latest in modern green.	309,000
U.S. EPA	News, links, tips, and conversation from the U.S. Environmental Protection Agency. Neither RT nor @mentions imply endorsement.	251,000
Planet Green	Planet Green offers practical, everyday tips on how to live a greener lifestyle.	200,000
Climate Reality	Founded by @algore, we're bringing the world together to cut carbon pollution & create a healthy & prosperous future powered by clean energy.	186,000
Friends of the Earth	We see the wellbeing of people and planet as one and the same.	112,000

The RRG project team worked closely with the Riverside Office of Economic Development and Information Technology Department to administer and oversee the campaign. MindMixer posts were kept live from January to March of 2015 and project team members were actively involved in discussions, encouraging participation, and collecting responses on all platforms.

### CAMPAIGN FINDINGS

At the conclusion of the campaign, all feedback was collected and organized to create a comprehensive review of commentary within each EOA. The campaign reached a broad audience with posts originating from 16 countries around the world and participants representing a range of ages, experience and education levels.



**Figure A.2-3: World Map of Crowdsourcing Campaign Reach**

A common theme among each discussion topic, which also mirrored the response from the workshop findings, was the need for increased awareness and public engagement within the Riverside community. A number of comments highlighted the lack of educational materials and informational events focused on the City’s sustainability efforts and resources available to residents and businesses. Similarly, many participants encouraged the creation of coalitions to engage and inform community members in both new and existing sustainability initiatives.

Outlined below are specific responses related to each EOA:

### **Energy and Water Upgrades for Home or Business**

Crowdsourcing Feedback Summary:

While participants noted the success of these programs, many commented on the potential for an increased impact through additional solar incentives and improved public awareness campaigns. Participants suggested developing partnerships with solar providers to bring their businesses to Riverside. Similarly, topic discussions highlighted the need to promote these incentives and businesses among the community.



*“The public awareness needs to be increased. I for one have never known about any of these conservation improvements nor do any of my friends or coworkers.” - Nannette B.*

## Green Building Standards

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### Crowdsourcing Feedback Summary:

Overall, support was shown for promoting green building systems and informing the community of the value added by incorporating green building designs and technologies. One participant suggested the City establish a “Green Academy” that educates individuals about incentive programs, green technology suppliers, and highlights city sustainability programs. Comments also implied that there was a strong need for Riverside to not only sanction grey water systems but also streamline the integration of these systems into residential and commercial systems.

## Clean Vehicles and Charging/Fueling Stations

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### Crowdsourcing Feedback Summary:

Many respondents urged the importance of educating the community on the benefits of EVs and the location of charging stations. One discussion highlighted the importance of connecting all stakeholders and pointed to the Phoenix-based EV group, AZEV as an example of a group that is successfully promoting the development of EV infrastructure in Arizona. When asked where participants would charge their EV vehicles, many called out the need for visible, well-marketed charging stations in public locations such as grocery stores, shopping centers and within parking stations for mass transit systems.



*“Education is the best tool we have...”*

*- Jim Stack, President, PHX Electric Auto Association*

## RPU Clean Technology Funding

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### Crowdsourcing Feedback Summary:

Responses focused on the fact that additional financing and incentive programs have the ability to further reduce emissions and support the development of a strong clean-tech sector. Feedback gathered showed continued interest in the need to fund technologies to improve electricity storage and grid system enhancements.

## Waste Reduction and Diversion

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### Crowdsourcing Feedback Summary:

The campaign feedback points to the need for enhanced waste collection and diversion systems with mandated recycling and compost collection throughout the City. Many participants also saw the topic area as a potential stimulus for the creation of “place” through community projects that develop green space and educate residents on sustainable living. A popular suggestion was the creation of a centralized “Food Education Hub” that demonstrates composting techniques and emerging technologies within this industry. Similarly, participants suggested utilizing empty lots throughout the City to establish additional community gardens that benefit from city-wide compost collection. Idea submissions also pointed to the potential business opportunities in solving “end-of-life” challenges for e-waste including collection, recycling and recovery of rare earth metals.



*“We just need the right person or group to connect the dots, breath new life into the need to reuse, and make it an increased part of Riversiders’ daily activities. The timing could not be more perfect.”*

*-Jane B.*

## Expand Bicycle Infrastructure

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### Crowdsourcing Feedback Summary:

This EOA received the most responses from the crowdsourcing campaign with a great amount of support shown for the plan to increase ridership within the Riverside Community. Many local residents praised the existing bicycle plan but called out popular routes that lacked safe, maintained paths with frequent access points. These routes include the Santa Ana Trail, Central Avenue (Canyon Crest to the Riverside Plaza), and Riverside City College to University of California, Riverside. Many responses also pointed to the need for routes designed to link with transit centers, local destinations for entertainment, shopping, and employment.



*“If you want to encourage cycling in an area make places worth cycling to and through. That means higher land use density, diversity, and proximity, enabling people to bike where they are going.”*

*- Alan Cunningham, LEED-AP, AICP, Project Planner, Lea+Elliott, Inc.*

Much of the feedback also echoed the support for the infrastructure enhancements outlined within the EOA, with special emphasis placed on increased safety measures.

Suggested safety measures included:

- Reduced speed near bike lanes;
- Shared auto & bicycle lanes in downtown areas;
- Physical separation along arterial streets; and,
- Improved bicycle lane visibility.

Participants also called out the impact of shared knowledge and creation of advocacy groups/coalitions on behalf of bicyclists.



*“Better bike infrastructure is the one single measure to boost cycling - but in case you're on a budget, here are some examples of low-cost interventions to increase cycling.”*

*Web Site Link: <http://cycletraveller.com.au/australia/news/15-low-cost-innovations-that-boost-cycling>*

*- Alessio Punzi, Advocacy & Mass Participation at Union Cycliste Internationale*

## **Eco Business Zone**

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Crowdsourcing Feedback Summary:

Many participants supported the EOA objectives with specific focus on incentivizing sustainability initiatives (building and operations) while creating a prominent location for the community to thrive with meeting places, car-free zones, etc. Participants also called for the need to address the social impact of these zones through employee-owned cooperatives and job training centers.



*“I feel that the improved shopping center design is the key to making the city more bike friendly. If you go to the Riverside Plaza or Galleria they are so focused on parking for cars with very little pedestrian or bike friendly infrastructure at all. We need to focus on better parking for bikes and nicer avenues for walking rather than just a sea of parked cars on blacktop.”*

*- Anonymous*

## **Clean-tech Incubator**

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Crowdsourcing Feedback Summary:

The goal for developing an incubator program is to bolster Riverside's standing as a leader in clean-tech and attract new companies and investment to the City. Campaign responses showed support for investment in a variety of clean technologies including fuel cells, wind power, enhanced street lighting systems, green/white roofs, and solar energy.

## Buy Local Initiative

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### Crowdsourcing Feedback Summary:

Many responses for this topic pushed for increased promotion of the Shop Riverside Community Card incentive program. Similarly, participants suggested highlighting local businesses within news publications and social media outlets to provide a “personal story” linked to the business.

Commentary also focused on the need for improved access to local markets through public transportation, walkable shopping areas, and increased parking.

## Wild Card

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### Crowdsourcing Feedback Summary:

The “wild card” was designed to seek “out-of-the-box” solutions and ideas to foster business growth around clean technology solutions. Participants were asked to provide feedback on experiences with entrepreneurship and successful sustainable development projects in other cities.

Wild Card ideas submitted through the outreach platform included:



“Join (or establish) a Materials Innovation Exchange to support buy-sell-trade of industrial materials and share innovative materials reuse success stories.”

Web Site Link: <http://nbis.org/programs/by-product-synergy-nw-2/>  
- *Mary R., Vashon, WA*



“Designers with their design mindset hold the ability to use specific creative skills, tools and methods that can improve the way we try and work with complex problem solving. I recommend using a Human-Centered Design Approach that also works to tap the creative community for solutions. The most interesting challenges today are partly hidden in innovating inside the public sector. By including designers into different levels of decision making processes, you will access alternative perspectives which can result in very different planning efforts. Incorporate system thinkers, concept developers and other creatives within the decision-making processes. Examples from Finland (such as Design Lab Helsinki) or from Slovenia (Design Biotop) both use a design mindset to create a cross-sector dialogue and inspire the different levels of society to work together for societal change. What we are proposing is to include designers into the complex problem solving processes allowing them to mediate and guide workshops related to specific issues related to the RRGP. In that way, fresh perspectives could show potential new solutions on how to create a change. Sustainability is a huge topic and understanding

individual sustainability and social sustainability by using creative methods to widen the views could help spread new ideas and potential new solutions.”

*-Sasa Kerkos, M.F.A., Slovenia*

## FINANCIAL INCENTIVES & FUNDING SOURCES

Building upon the crowdsourcing plan developed for the “Top 10 EOAs”, the RRG project team utilized the established WRCOG and City of Riverside MindMixer platforms, as well as an additional crowdsourcing site, Quora, to investigate possible funding resources and financial incentives for EOA implementation. New topics and inquiries were posted to all three crowdsourcing platforms as well as follow-up questions and commentary on existing posts to develop discussions and expand the conversation to include funding sources and incentive packages.

Many participants strongly supported the idea of offering rebates and incentives to encourage adoption of the various EOA objectives, citing successful programs offered within their municipalities and often managed by the local utilities. These programs include financial incentive packages for energy and water retrofits, green building, and shop local programs.

Much of the feedback related to funding resources pointed to federal and state agency grant programs, tax revenue increases, municipal bonds, project-based financing through capital markets, and joint ventures or public – private partnerships.

Highlighted idea submissions include:

- Third Party and Other Financing Options

Property Assessed Clean Energy Programs (financed through property taxes), Qualified Clean Energy Bonds, utility on-bill financing (debt-free), Energy Efficient Mortgages and third party financing of solar and energy efficiency.

- U.S. Department of Energy Research Grants

The Department of Energy has a Transportation Electrification Initiative that aims to put the infrastructure in place across the United States to adopt electric vehicles.

- Adjusted Waste Disposal Rates

Modify municipal and commercial waste disposal fee structure to incentivize increased recycling and composting rates.

- Public-Private Partnerships

Develop a public-private partnership with a company that will assist in funding a local infrastructure project (i.e. a Citibank funded bicycle-sharing program).

## RIVERSIDE BUSINESS LEADER INTERVIEWS

The RRG project team also engaged in individual interviews with business leaders from the City of Riverside to gather additional insight on the “Top 10 EOAs,” ideas for incentive programs and recommendations for funding sources. Business leaders were

identified by the Riverside Economic Development Office and included representatives from local engineering and clean-tech firms that were involved with municipal groups, local universities, and planning efforts for the City.

Many of the participants had positive responses to the RRG and saw great promise in the EOAs and their economic impact on the region. During the discussions, interviewees highlighted the need to support the local universities in their efforts to develop job-training programs and recruit talent locally. Interviewees also noted the importance of continued assistance from the economic development office and local utilities in terms of rebate and incentive programs for residents and businesses. Interviewees explained that these programs had been helpful in driving business in the past and would make Riverside more attractive to innovative and “next generation” companies within the clean-tech industry.

On the other hand, a common concern among participants was the potential controversy with the implementation of mandatory energy efficiency standards for buildings outlined in the Green Building Standards EOA. Interviewees instead suggested focusing efforts on incentivizing green building designs for private companies.

## GAP COMMITTEE PLAN UPDATE

The RRG project team participated in a GAP Committee meeting held on February 11<sup>th</sup>, 2015 to provide both an update on the development of the RRG-EPAP and collect additional feedback on potential financial incentives and funding resources. After a presentation on the plan development highlights, the Committee participated in a facilitated discussion focused on leveraging their local knowledge of resources within the City that fall within the areas of technology, policy, and capital.

### **TECHNOLOGY**

Within each EOA, Committee members pointed to the importance of using technologies to enhance communication channels and connectivity within the community. Some examples include social media outlets, establishing a community broadband service, resource listings for local businesses, and the development of a mobile app. Committee members noted that these sources would provide information related to each EOA’s objectives, such as bicycle routes and bicycle sharing programs, energy and water conservation incentive and rebate programs, local business highlights, and tips for waste reduction and management. Increased awareness will lead to more engaged citizens that will work towards supporting the City’s sustainability and development goals.

Additionally, participants called out the numerous research centers and university programs within and around Riverside. Some examples include the Center for Environmental Research and Technology (CE-CERT), Waste Transfer Station, Composting Systems, and Master Gardener’s program, all hosted at UC Riverside. These programs are exploring a variety of technologies such as waste to energy and other renewable fuels, grey water systems, advanced electric, hybrid, and fuel cell vehicles, and smart grid technologies. Similarly, the Agricultural Research Service and US Salinity Laboratory is investigating technologies linked to agriculture, water, and soil management.

Committee members also noted the many engineering and technology firms that reside within the city limits such as SolarMax and Bourns. These firms are seen as strong resources to both develop new technologies and support the local universities and Riverside workforce.

The Committee also suggested building upon the existing infrastructure by increasing the number of solar installations and EV charging stations. The City could learn from these structures and assess the feasibility and impact for additional development.

## **POLICY**

Throughout the policy discussions, Committee members highlighted the need to create a sense of “place” to attract both businesses and new residents to the area. Suggestions included adjustments in zoning and public space usage to allow for increased green spaces, community gardens, bicycle infrastructure, and public transit options.

Additional suggestions focused on raising the visibility of the City of Riverside as a green community via public safety laws that protect cyclists and policies to support local organizations and existing programs such as Grow Riverside, Shop Riverside Community Card Program, and local farmers markets.

## **CAPITAL**

During the discussions related to capital and resources to support the EOA objectives, many participants focused on the potential for developing and encouraging local talent and curating local leaders through incubator and mentorship programs. Mentorship programs can take advantage of local business and university representatives to guide students through apprenticeship and job training programs. Similarly, these mentors will be key in supporting an incubator program for new companies.

Many Committee members also called out the local universities and clean-tech businesses as resources for pushing forward technologies within green building, alternative fuels, and transportation. Participants discussed focusing technology grants and funding programs on grey water, solar, “smart house”, waste to energy, and alternative fuel infrastructure (EV charging stations).

For support on the infrastructure and development side, Committee members called out potential federal and state grants and funds from regional groups such as the South Coast Air Quality Management District (AQMD) to support projects with targeted goals (i.e. reduced transportation emissions, EV infrastructure, etc.). Participants also suggested the City consider partnering with private companies or establishing fee structures for infrastructure development and programs such as bike sharing and bike lockers/storage.

Between the influencer workshops, business leader interviews, and online feedback, it became apparent to the RRG project team that there are many engaged members of the Riverside community who are excited about growing the clean tech sector in the City. Throughout the team’s research, many of these members provided innovative and useful insights about how the city might go about this. In order to identify which suggestions would have the greatest impact, it is important to understand the

landscape in which clean tech companies would view these city programs. Therefore, the following chapter provides a detailed outline of the California green business environment.

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# CHAPTER A.3

## COMPETITIVE LANDSCAPE

### OVERVIEW

In order to set Riverside up for success with the implementation of the Riverside Restorative Growthprint Economic Prosperity Action Plan (RRG-EPAP) and to provide a path for establishing Riverside as a leader amongst cities in the global clean-tech arena, it is important to be able to analyze Riverside's current activities in comparison with other metro areas. This chapter provides an analysis of efforts and activities by other cities across the nation focused on developing clean-tech ecosystems that are also tied to entrepreneurial growth.

Gaining an understanding of what the industry analysts use to rate cities in this area will also help inform decisions as to what types of programs might be best suited for additional external promotion efforts. Raising Riverside's profile externally will allow for additional exposure to the clean-tech investment community, potential partnerships with other cities or programs, and showcase more opportunities for the City of Riverside's (City's) initiatives and clean-tech businesses. Additionally, being able to track Riverside's progress from year to year via these industry rating systems will help serve as a monitoring tool to gauge the ongoing adoption efforts related to the RRG-EPAP.

### CLEAN-TECH DEFINED

While there is no standard definition of *clean-tech* or *clean technology*, it has been described by [Clean Edge](#), a clean technology research firm, as "a diverse range of products, services, and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources, and cut or eliminate emissions and waste;" and that "clean technologies are competitive with, if not superior to, their conventional counterparts. Many also offer significant additional benefits, notably their ability to improve the lives of those in both developed and developing

countries." This definition matches the reasoning behind the development of EOAs focused on energy savings, water conservation, reduction of transportation fuel usage, waste diversion and those designed to tie human resources to further developing these technologies.

## THE U.S. CLEAN TECH LEADERSHIP INDEX

In order to focus the analysis on the “best of the best,” the team turned to Clean Edge, the main industry index for rating clean-tech activities across the nation. The U.S. Clean Tech Leadership Index report contains findings from the 2014 editions of Clean Edge’s State and Metro Indexes, which track activity in the U.S. based on a diverse set of underlying indicators. The State Index offers scores for all 50 states, derived from more than 70 state-based indicators. The Metro Index uses 20 metro-based indicators to calculate scores for the 50 largest U.S. metropolitan statistical areas. The Index was designed to serve as a tool for regional comparative research and as a source for aggregated industry data. The information in the Index helped to inform the RRG-EPAP team about the current ranking of the City of Riverside across the various categories and to provide a snapshot of the current landscape for clean-tech activities within U.S. cities.

At the state level, the researchers looked at the three areas of support for clean-tech initiatives and grouped indicators by these three divisions: Technology, Policy, and Capital. When they drilled down into research at the metro or city level, the researchers narrowed their focus into four categories of clean tech:

- Green Buildings;
- Advanced Transportation;
- Clean Electricity & Carbon Management; and,
- Clean Tech Investment, Innovation and Workforce.

It is encouraging that the state of California is a leader, earning top ranking for the fifth consecutive year on the 2014 State Index and also claimed five of the top ten slots in the Metro Index (as illustrated in **Figure A.3-1**). Additionally, the cities of San Francisco and San Jose have repeated their #1 and #2 rankings for the second year in a row.

2014 STATE INDEX TOP 10		
STATE	RANK	SCORE
CALIFORNIA	1	93.7
MASSACHUSETTS	2	79.4
OREGON	3	67.0
COLORADO	4	66.8
NEW YORK	5	64.8
NEW MEXICO	6	61.9
WASHINGTON	7	61.6
ILLINOIS	8	61.5
VERMONT	9	58.6
CONNECTICUT	10	57.3

Source: Clean Edge, Inc.

2014 METRO INDEX TOP 10		
METRO AREA	RANK	SCORE
SAN FRANCISCO, CA	1	94.4
SAN JOSE, CA	2	79.7
SAN DIEGO, CA	3	66.3
PORTLAND, OR	4	62.9
SACRAMENTO, CA	5	61.0
BOSTON, MA	6	56.2
LOS ANGELES, CA	7	56.0
WASHINGTON, DC	8	53.6
AUSTIN, TX	9	51.3
DENVER, CO	10	49.7

Source: Clean Edge, Inc.

Figure A.3-1: 2014 U.S. Clean Tech Leadership Index – State Index Top 10 and Metro Index Top 10

## STATE INDEX - CALIFORNIA'S LEADERSHIP POSITION

In looking at the City of Riverside's competitive advantages, it is important to note the benefits of being supported by California's existing lead in the clean-tech marketplace. For the fifth consecutive year, California leads the State Index by a wide margin, scoring 93.7 overall (with Massachusetts in second place with a score of 79.4). The State's clean-tech prominence is evident across all of the study's key indicators:

- California leads the Technology category and ranks a very close second in both Policy and Capital.
- With existing solar, wind, and geothermal resources, a supportive voting populace, and effective policy levers at every level of government, California places #1 in all three subcategories of clean technology deployment: Electricity, Transportation, and Energy Efficiency/Green Buildings.

### 2014 STATE INDEX

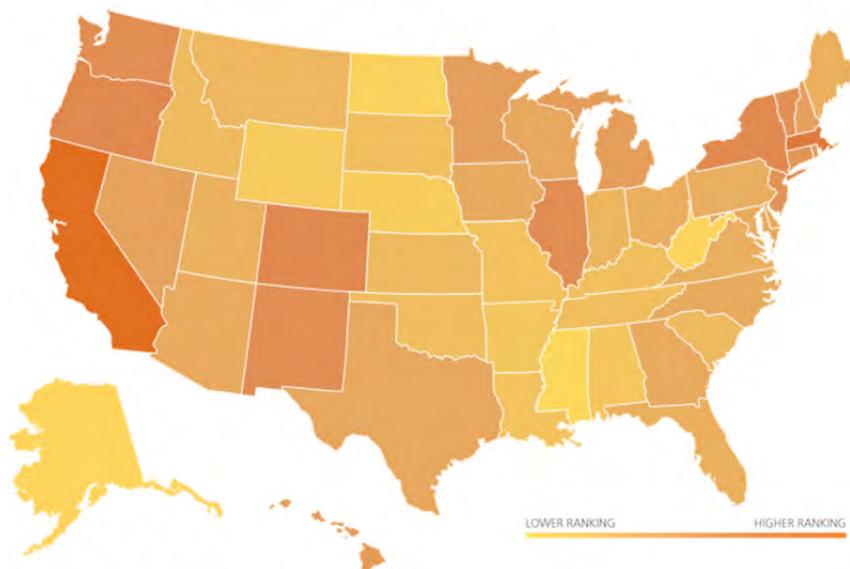


Figure A.3-2: 2014 U.S. Clean Tech Leadership State Index

## CALIFORNIA'S SCORECARD - POLICY

In looking at specific State legislation that helped propel several California cities into the top ten list, the study credited the following green building policies for maintaining the State's leadership position: California Green Building Standards Code (CALGreen) and voluntary building code provisions, Tier 1 and Tier 2 requirements. These policies worked to provide greater energy savings, emission reductions, and support for local clean-tech business growth. In addition to the green building standards, the Water Conservation Act of 2009, known as SB X7-7, requires the State to reduce urban per

capita water use by 20% by 2020. This legislation has spurred the development of Regional Urban Water Management Plans, which provide strategies and create incentives to achieve these targets. Cities have had to initiate measures related to tiered pricing and enforce water-efficient landscape requirements for water and irrigation management, and a variety of other conservation measures often tied to water saving technologies. The subcategory to evaluating state-level efforts to combat climate change also tracks states that have established climate action plans, GHG reduction targets, and are participating in an active regional climate initiative. To date, 34 states have established climate action plans, which identify the most cost-effective strategies with the greatest impact to reduce local GHG emissions and 19 states have actually established a specific GHG reduction target. The Regional Greenhouse Gas Initiative (RGGI), which includes nine northeastern states, was the first active cap-and-trade program of its kind in the U.S. and California's emissions trading program brings the number of states active in cap-and-trade markets to 10.

## CALIFORNIA'S SCORECARD - TECHNOLOGY

California also demonstrated market leadership in the Technology arena. The State's dominance of the Clean Electricity subcategory can be attributed to robust deployment in the solar photovoltaic (PV), wind, and geothermal sectors. California added 2.62 gigawatts (GW) of new PV capacity during the 2014 year – accounting for 55 percent of the record 4.75 GW installed throughout the U.S. California also leads in hybrid and electric vehicles per million people, with approximately 80,000 EVs (including plug-in hybrids) on California's roads. There is clearly a link between policies that support the growth and, in some cases, subsidize the growth of these clean technologies and cities that are rated higher on the Metro Index. Riverside is able to add on local policies as an overlay to the State's efforts to further grow localized efforts in the adoption of PV, clean vehicles, and the development of energy efficiency technologies.

## CALIFORNIA'S SCORECARD - CAPITAL

California ranked second on the list of states in the Capital category, which measures both clean-tech investment activity and indicators such as: patent activity, the presence of top-rated educational, research, and incubator institutions, and activities in the areas of Human and Intellectual Capital. California's dollars invested per capita figure increased slightly from 2012 to 2013, from \$58.51 to \$58.67, and total venture capital deals grew from 143 to 207. Massachusetts placed first in the Capital category for the fifth straight year, although its lead over second-place California narrowed from more than four points last year to just 1.2 points. Massachusetts, the biggest hub of clean-tech venture capital outside of California, takes top honors in Financial Capital (normalized for population), while New York, a center of educational and research prowess, is #1 in the Human and Intellectual Capital subcategory.

## METRO INDEX – THE RIVERSIDE ADVANTAGE

When looking at the growth potential for the City of Riverside in the clean-tech arena, there are several existing competitive advantages that will support the City’s ability to continue to expand their clean-tech ecosystem. As noted earlier, there is a clear benefit of being supported by California’s existing lead in the clean-tech marketplace. The State’s clean-tech prominence is evident across all of the study’s key indicators, which also correlates with the fact that five of the top ten cities listed in the Metro Index are from California. **Riverside is ranked within the top fifty cities in the 22<sup>nd</sup> place with a score of 30.6.** San Francisco and San Jose have remained in the first and second place positions, respectively, for the past two years.

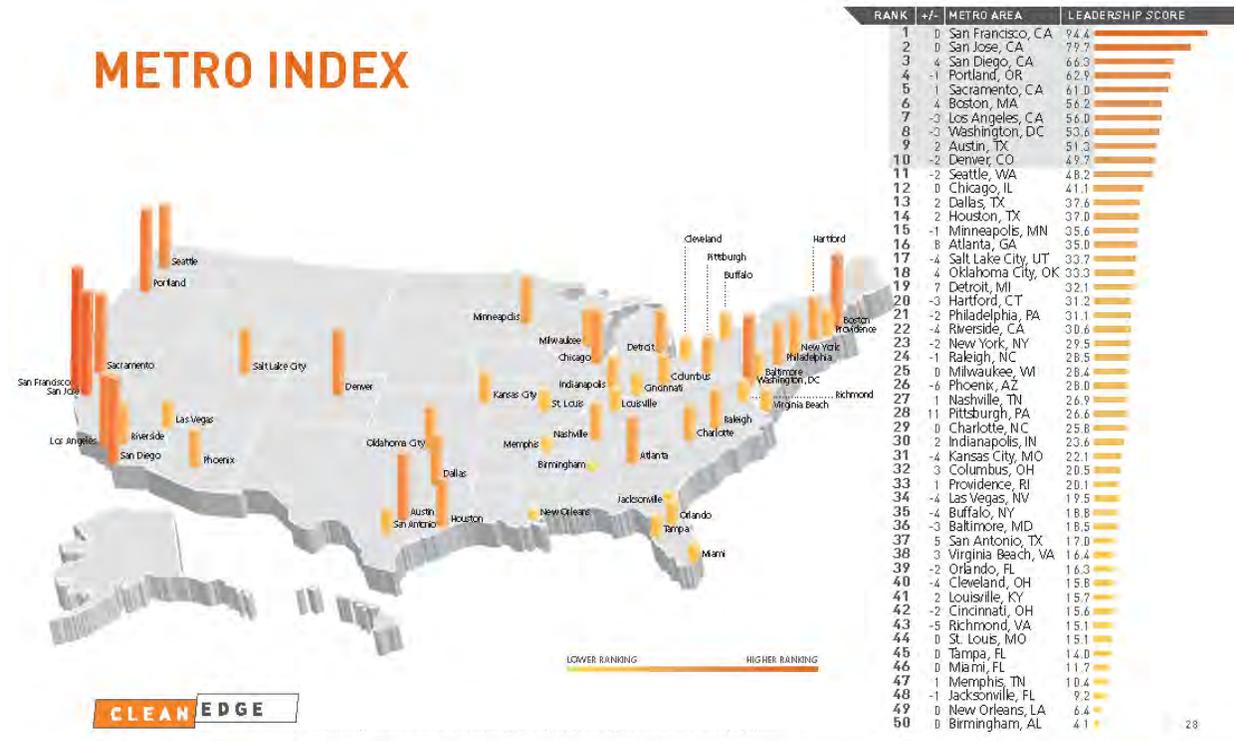


Figure A.3-3: 2014 U.S. Clean Tech Leadership Metro Index

## RIVERSIDE’S SCORECARD – AT A GLANCE

Riverside placed in the top 50 Metro areas for the four major categories used by the Clean Tech Leadership Metro Index.

- Green Buildings #41
- Advanced Transportation #10
- Clean Electricity & Carbon Management #13
- Clean Tech Investment, Innovation & Workforce #45

## RIVERSIDE'S SCORECARD – GREEN BUILDINGS #41

Riverside placed in the top 50 Metro areas for the four major categories used by the Clean Tech Leadership Metro Index. In the Green Buildings category, the Index considers LEED certified projects and U.S. Environmental Protection Agency Energy Star-qualified buildings (by number of projects and square feet per capita) in each metro area. Given Riverside's focus on green building standards and RPU's programs to encourage energy savings, the City is positioned to move ahead in this category, especially if there are increased efforts to promote the adoption of both LEED and Energy-Star certifications.

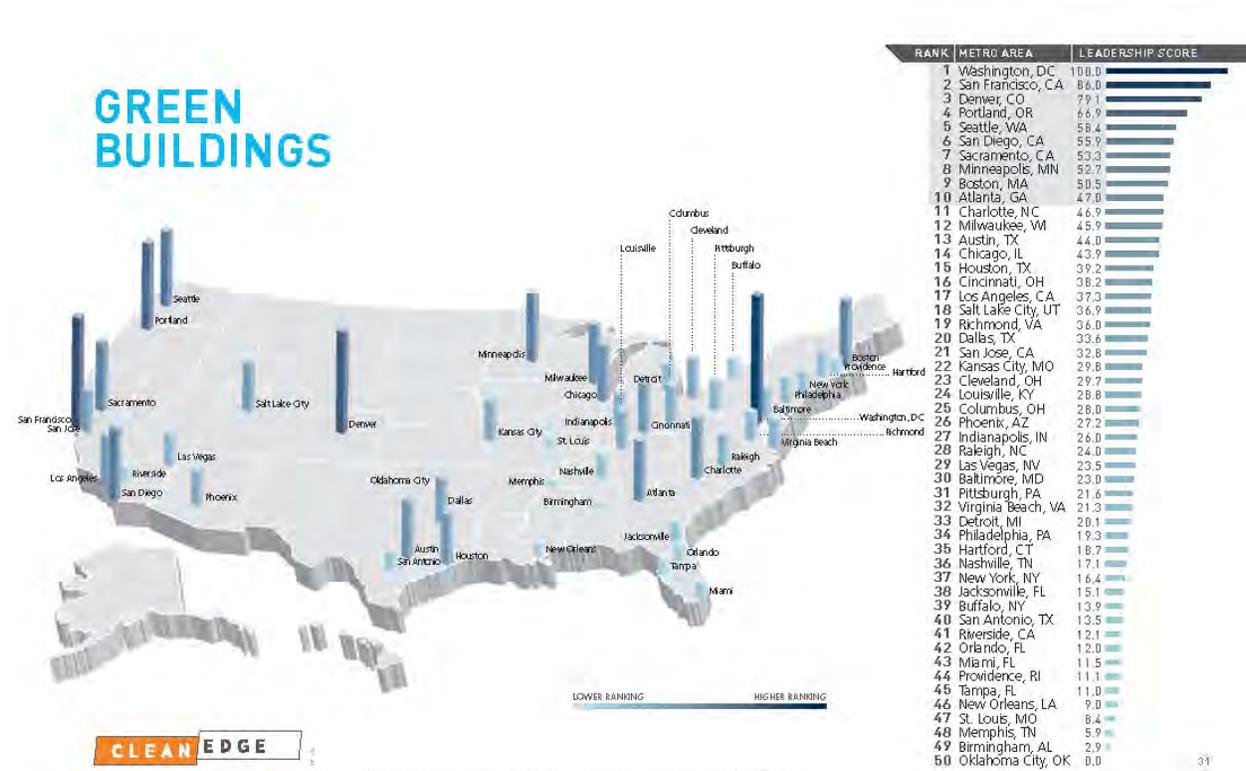


Figure A.3-4: 2014 U.S. Clean Tech Leadership Metro Index – Green Buildings

## RIVERSIDE'S SCORECARD – ADVANCED TRANSPORTATION #10

Riverside demonstrated leadership in the Advanced Transportation category with placement in the number 10 slot. This category measures three types of advanced vehicles, their related charging or fueling infrastructure, and public transportation ridership. All six of California's largest metro areas make up the top 10 in this category which coincides with the State ranking first in the comparable Clean Transportation subcategory in the State Index. This is one of Riverside's strongest areas from both a policy perspective and analysis showing that the members of the Riverside community support advanced transportation. For example, Riverside ranks 7<sup>th</sup> in the nation for the

number of registered Hybrid Electric Vehicles (282,401). However, in looking at EV charging infrastructure rankings, the cities of Portland and Seattle take the lead by a wide margin over other cities. Given the focus on EV charging and fueling infrastructure as one of the EOAs in the RRG-EPAP, Riverside has the potential to increase its ranking in this area in the future.

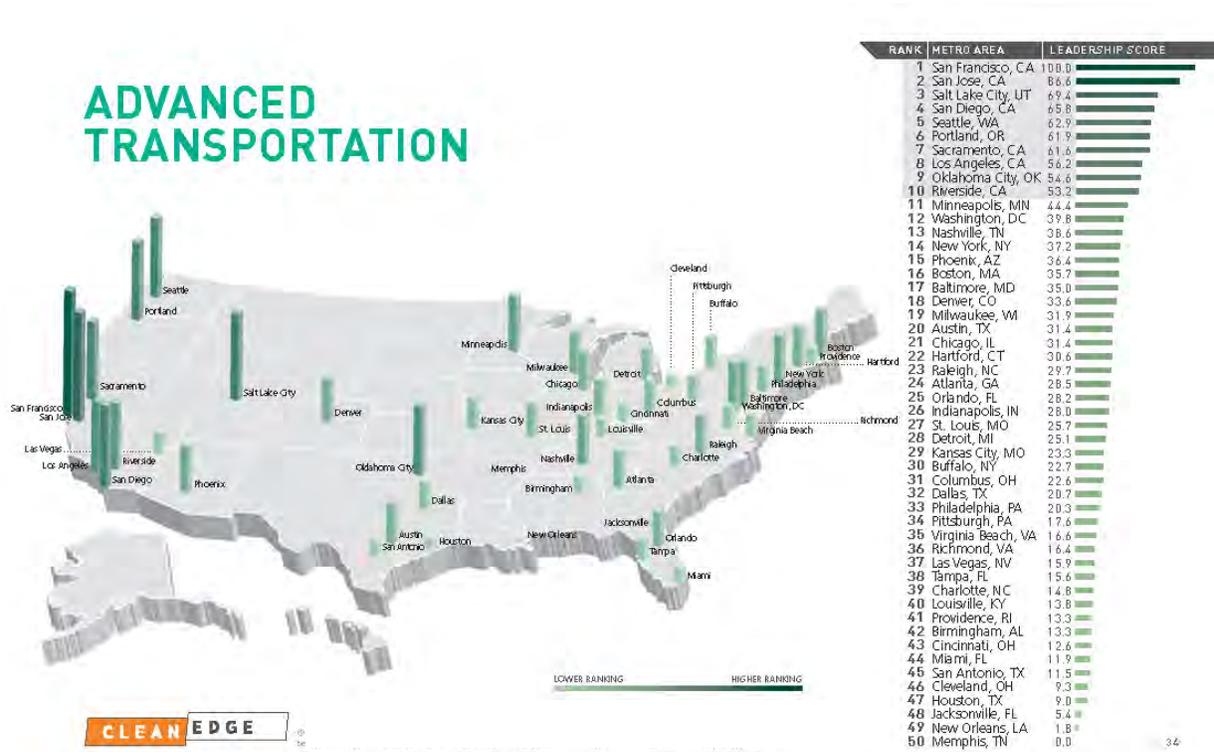


Figure A.3-5: 2014 U.S. Clean Tech Leadership Metro Index – Advanced Transportation

## RIVERSIDE'S SCORECARD – CLEAN ELECTRICITY & CARBON MANAGEMENT #13

This category considers three main indicators – the electricity makeup of each metro region, local government participation in voluntary green power purchasing programs, and the carbon intensity of local economies. Again, California's cities dominated this category with the top five cities including Sacramento, San Diego, San Jose, Los Angeles, and San Francisco. Given RPU's policies and focus on clean electricity and energy saving technologies, Riverside's performance in this category is impressive at 13<sup>th</sup> place. Nevertheless, many of the strategies outlined in the Riverside Restorative Growthprint Climate Action Plan (RRG-CAP) and RRG-EPAP will help the City move up in this category

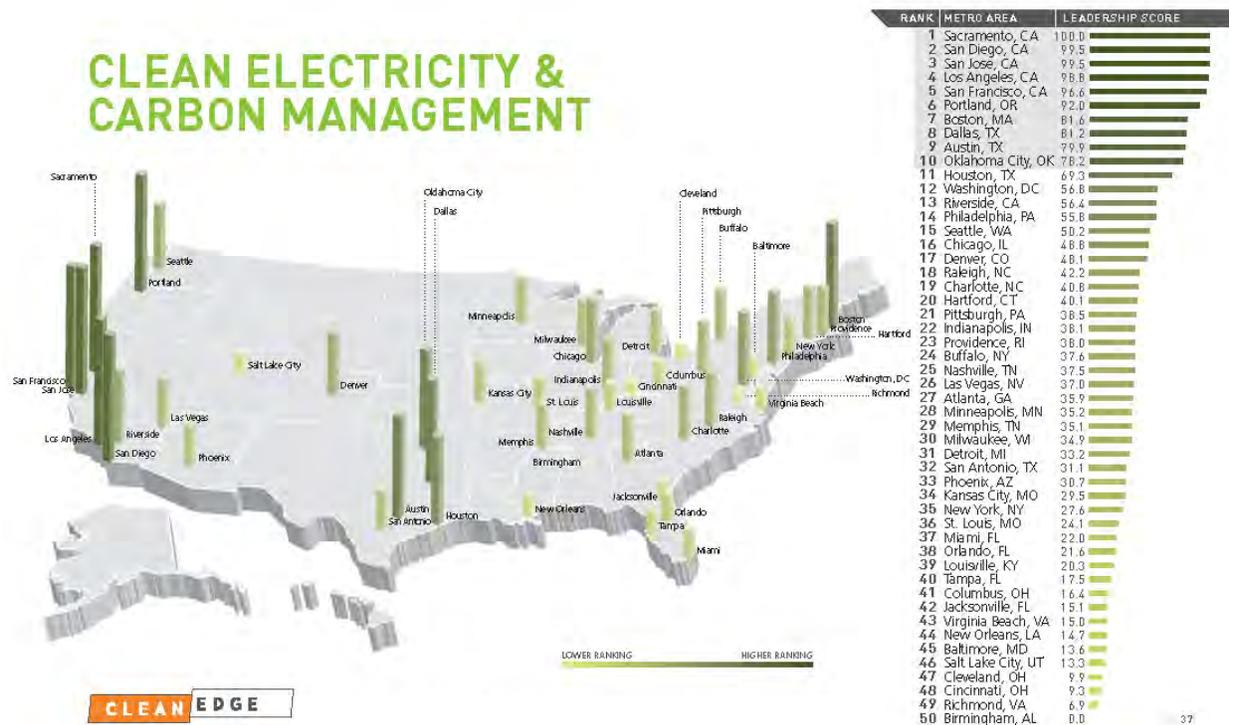


Figure A.3-6: 2014 U.S. Clean Tech Leadership Metro Index – Clean Electricity & Carbon Management

## RIVERSIDE'S SCORECARD – CLEAN TECH INVESTMENT, INNOVATION & WORKFORCE #45

The Clean Tech Investment, Innovation and Workforce category measures a metro area's financial, human, and intellectual capital with indicators such as venture capital investments in clean-tech, clean-energy patent activity, and the presence of U.S. Department of Energy labs, incubators or accelerators, and top-rated Green MBA programs. Riverside's position at #45 in this category demonstrates the need for many of the efforts outlined in the EOAs, including the Clean-Tech Incubator, the Eco District Corridor, and other linked initiatives such as building relationships between the universities and local clean-tech businesses. With the development of a Clean-Tech Incubator and an Eco District, Riverside will be able to create showcase opportunities for local clean-tech companies, attract more interest from the investment community, and, ideally, be able to take credit for registered patent activity in the area.

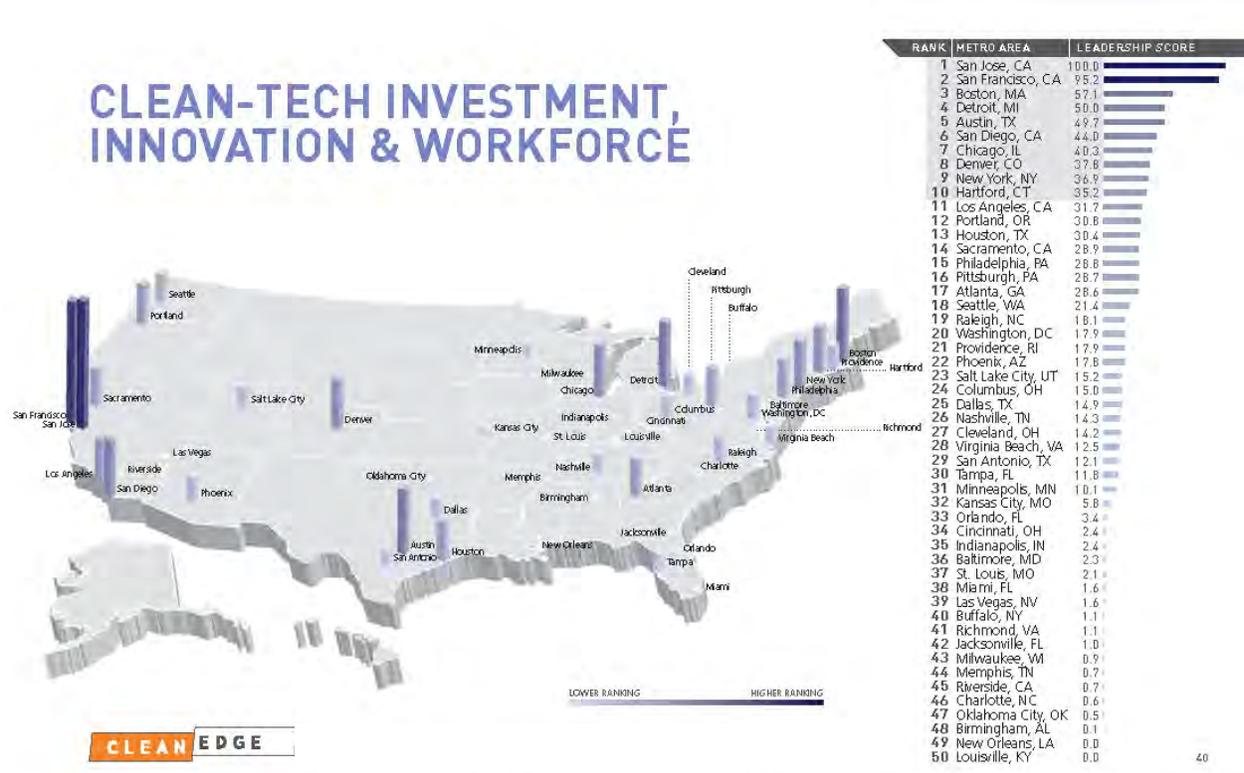


Figure A.3-7: 2014 U.S. Clean Tech Leadership Metro Index – Clean-Tech Investment, Innovation & Workforce

## THE PATH FORWARD

The Clean Tech Leadership Index research and analysis further supports the need to focus on all of the EOAs outlined in Chapter 2, as they will lead to greater visibility and higher rankings for Riverside. Gaining recognition by the industry for the City’s efforts to grow a thriving clean-tech ecosystem will only lead to additional financial and non-financial support: more clean-tech companies will look to locate in Riverside, more talented students will want to engage in university clean-tech programs, more entrepreneurs will enroll in the Incubator or Accelerator programs, and more residents will feel engaged and be able to benefit from the increase in EV charging stations, public transit options, bicycle infrastructure, and RPU incentive programs for their homes.

## GREEN BUSINESS INCENTIVE PROGRAMS

To assess the City of Riverside's competitiveness in attracting green businesses, it is important to analyze the landscape of other green business incentive programs throughout the State. The RRG project team conducted one-on-one interviews with economic development and clean-tech incubator staff to gather a comprehensive list of the financial and non-financial incentives offered by the top five California cities from the 2014 Metro Index within the U.S. Clean Tech Leadership Index. Financial incentives help to strengthen the business case for setting up a headquarters operation or factory within city limits, while non-financial incentives can promote the business, place the business within a supportive ecosystem or community of like-minded businesses, and set the business on more solid footing for future growth by creating linkages to human capital and other key relationship capital.

A summary of the incentive packages offered by each city is provided below:

### CITY OF SAN FRANCISCO, CA

#### Financial Incentives

Solar Rebate: The City of San Francisco offers an incentive program, GoSolarSF, which covers part of the cost of installing solar panels for residents and businesses.

Water Conservation Rebate: Businesses are eligible for rebates if they replace their old commercial toilets, washers, and other water intensive machinery with new, water efficient models.

#### Non-Financial Incentives

Certification: San Francisco businesses can gain recognition for their sustainability efforts by becoming certified green businesses through the San Francisco Green Business Program. Once certified, businesses receive a decal that they can display on their windows and the city will promote them in online and print communications.

Green Building Incentives: Pacific Gas and Electric Company provides free energy surveys and recommendations for energy efficiency improvements for commercial buildings in San Francisco. Furthermore, the San Francisco Public Utilities Commission provides commercial customers with a free water-wise evaluation, a free review of property operations and management, and recommendations for water conservation.

Recycling Assistance: Businesses receive recycling assistance in the form of multi-lingual training for staff and managers, container stickers, and signs.

## CITY OF SAN JOSÉ, CA

### Financial Incentives

Home-Based Business Efficiency Incentives: The RightLights Energy Efficient Lighting Program provides home-based businesses in San José with energy efficiency direct installation, rebates, and education.

Lighting Upgrade Incentives: Silicon Valley Energy Watch and the RightLights Energy Efficient Lighting Program provide small to medium-size businesses rate-payer-funded lighting upgrades and free expert assistance to lower energy bills.

Retrofit Incentives: Pacific Gas and Electric Company provides incentives and rebates for San José businesses that install high-efficiency equipment.

### Non-Financial Incentives

None.

## CITY OF SAN DIEGO, CA

### Financial Incentives

Energy Efficiency Incentives: San Diego Gas & Electric provides evaluations of small- to mid-sized San Diego business facilities and installs energy efficient replacement equipment at no cost. They also offer rebates for retrofitting or installing new high-efficiency equipment and 0% financing on energy efficient improvements for eligible businesses.

Lighting Upgrade Incentives: Businesses can receive rebates from San Diego Gas & Electric for upgrading to energy efficient lighting.

Water Conservation Rebates: Businesses can receive rebates for upgrading to water saving equipment.

### Non-Financial Incentives

Certification: San Diego businesses can gain recognition for their sustainability efforts by becoming certified green businesses through the San Diego Area Green Business Project. Once certified, businesses receive a decal they can display in their windows and the city promotes them in online and print communications.

## CITY OF SACRAMENTO, CA

### Financial Incentives

Recycling Market Development Zones: The City of Sacramento offers financial, technical, and marketing incentives to small and mid-sized manufacturers who locate in specified geographic areas and incorporate recycled materials into their production process.

### Non-Financial Incentives

Certification: Sacramento businesses can gain recognition for their sustainability efforts by becoming certified green businesses through the Sacramento Area Sustainable Business Program. Once certified, businesses receive a placard they can display in their stores and the city promotes them in online and print communications.

## CITY OF LOS ANGELES, CA

### Financial Incentives

Electric Vehicle Charger Rebate: Commercial customers receive cash rebates for installation of electric vehicle charging stations.

Energy Efficiency Rebates: The Los Angeles Department of Water and Power offers rebates for investments in projects that reduce energy usage in commercial buildings.

Green Building Incentives: The City's New Constructions Program offers new commercial building projects analysis tools, training, and information about efficient technologies and design, as well as incentives to offset costs of energy efficient building.

Lighting Upgrade Incentives: The Los Angeles Department of Water and Power provides rebates on the installation of energy efficient commercial lighting.

Refrigeration Upgrade Incentives: The Los Angeles Department of Water and Power provides rebates on the installation of energy efficient commercial refrigeration equipment.

Solar Incentives: Businesses that install solar photovoltaic systems receive incentive payments. The city also allows businesses to sell renewable energy produced from their own systems.

Water Conservation Incentives: Businesses can receive rebates for upgrading to water saving equipment. The Los Angeles Department of Water and Power also provides commercial customers with efficient aerators and showerheads at no cost.

Water Wise Landscaping Rebate: Los Angeles businesses are eligible for a rebate if they replace turf with California friendly plants, mulch, or permeable pathways.

## **Non-Financial Incentives**

Certification: Los Angeles businesses can gain recognition for their sustainability efforts by becoming certified green businesses through the LA Green Business Program. Once certified, businesses receive a placard they can display in their stores and the City promotes them in online and print communications.

Los Angeles Cleantech Incubator: This program offers clean-tech start-ups flexible office space, CEO coaching and mentoring, and access to a network of local experts.

## **HOW RIVERSIDE STACKS UP**

The following are the financial and non-financial incentives the City of Riverside currently offers businesses.

### **Financial Incentives**

Air Conditioning Incentives: Riverside Public Utilities offers incentives to offset the costs of upgrading to energy efficient air conditioning systems.

Energy Star Product Rebate: Businesses receive a rebate when they purchase Energy Star appliances.

Energy Technologies Grants: Through the Custom Energy Technology Grant program, businesses can request funds for the advancement of renewable energy and utility industry solutions.

Energy Management System Incentives: The City of Riverside helps businesses cover the cost of upgrading their energy management systems.

Green Building Incentives: The City's Commercial Building Construction Incentives offer rebates for new construction and retrofitting projects that incorporate energy-saving designs and equipment.

Green Tech and Manufacturing Energy Discount: Businesses that relocate their research, technology, green technology, or green manufacturing companies to Riverside can receive discounted energy rates.

Lighting Upgrade Incentives: Riverside Public Utilities provides rebates on the installation of energy efficient commercial lighting.

Personal Computer Power Management Incentives: The City provides rebates to offset the cost of purchasing power management software for personal computers.

Premium Motor Incentives: Businesses receive incentives to offset the costs of switching to energy efficient commercial motors.

Solar Incentives: Businesses that install solar photovoltaic systems can receive rebates.

Thermal Energy Storage Incentives: Riverside businesses can earn rebates when they install thermal energy storage systems.

Water Conservation Incentives: Businesses can receive rebates for upgrading to water saving equipment.

Water Wise Landscaping Rebate: Riverside businesses are eligible for a rebate if they replace existing lawns with California friendly plants.

Weatherization Rebate: The Weatherization Rebate Program offers rebates to businesses that install attic and exterior wall insulation, whole building fans, attic fans, window film, and Cool Roof coatings or products.

### **Non-Financial Incentives**

Audit Services: The City of Riverside provides free online energy audits for businesses.

Load Profiles: Businesses can receive data on energy spikes, historical data, and short and long-term energy trends.

Riverside has a comprehensive offering of programs for homeowners and businesses to help them with their overall sustainability efforts. Being able to group together packages for clean-tech businesses, which include location-based advantages (either in the Eco District or Clean-Tech Incubator), will help in marketing Riverside as a location designed for clean-tech business success. Chapter 4 will include recommendations for implementation of the RRG-EPAP as well as additional ways of packaging financial and non-financial incentives.



# CHAPTER A.4

## THE PATH FORWARD

### COMPLETING THE PUZZLE

The RRG concept presented an ambitious challenge to build *two* complementary plans for the City of Riverside in an effort to achieve *two* important goals – reaching citywide GHG emission reduction targets and setting the City on a growth path that marries economic prosperity with environmental stewardship. Other cities have embarked on similar efforts, but the development of an economic plan *in conjunction* with a climate action plan is an innovative approach that sets Riverside apart from other cities across the nation.

The comprehensive outreach and engagement efforts detailed in Chapter 2 produced hundreds of valuable suggestions on ways to strengthen Riverside’s economy by focusing on impact areas that also yield GHG emission reductions. In order to synthesize this data and present a clear path forward for implementation, the RRG project team established “smart growth” categories to organize the action plan into focused areas.

### DEFINING SMART GROWTH

‘Smart growth’ is a theory of land development that accepts that growth and development will continue to occur and seeks to direct that growth in an intentional, comprehensive way, typically by creating more compact, walkable urban centers. In recent years, cities and regions alike have incorporated sustainable development goals into their growth plans. The Natural Resources Defense Council (NRDC) published case studies of 70 communities across the U.S. that are embracing smart growth as a better solution to meet the needs of their growing populations. The NRDC defines smart growth principles as those that accommodate growth and development while saving open space, revitalizing neighborhoods and helping cool the planet.”

In addition to incorporating a focus on sustainable development practices, smart growth policies have also helped facilitate community support of growth initiatives in general. The U.S. Environmental Protection Agency defines smart growth as “development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to how and where should new development be accommodated.” Smart growth can provide various economic, social, and environmental benefits, as summarized in **Table A.4-1**. These benefits result from various features of smart growth, including reduced per capita land consumption, less dispersed development, and more diverse transportation systems.

**Table A.4-1: Smart Growth Benefits**

ECONOMIC		SOCIAL	ENVIRONMENTAL
Infrastructure cost savings		Improved transport options, particularly for non-drivers	Greenspace & habitat preservation
Public service cost savings		Increased housing options	Energy savings
Transportation efficiencies		Community cohesion	Air pollution reductions
Economic resilience		Cultural resource preservation (historic sites, traditional neighborhoods, etc.)	Water pollution reductions
Economies of scale		Increased physical exercise and health	Reduced “heat island” effect
Supports industries that depend on high quality environments (tourism, higher education, farming, etc.)	Mentorship and apprenticeship programs to develop future generations	Greater adoption of clean technologies	

The RRG-EPAP is a plan for intelligent growth in Riverside. All of the efforts during the plan development stages, as captured within the pages of this report, provide the necessary puzzle pieces to map out a bright future for the City. The recommendations listed below help to assemble the puzzle in a way that is easily implemented through an inclusive planning process.

## RECOMMENDATIONS

The feedback provided through the outreach and stakeholder engagement process has been synthesized into five overarching strategies. These strategies are aimed at effectively and efficiently facilitating intelligent growth development, and stimulating more sustainable infrastructure investment.

The five overarching strategies include:

1. Placemaking
2. Policy Lens
3. Smart Growth and Infrastructure
4. Connected Community
5. Future Leaders

These strategies are outlined below, with a special focus on the EOA(s) best suited to achieve each strategy.



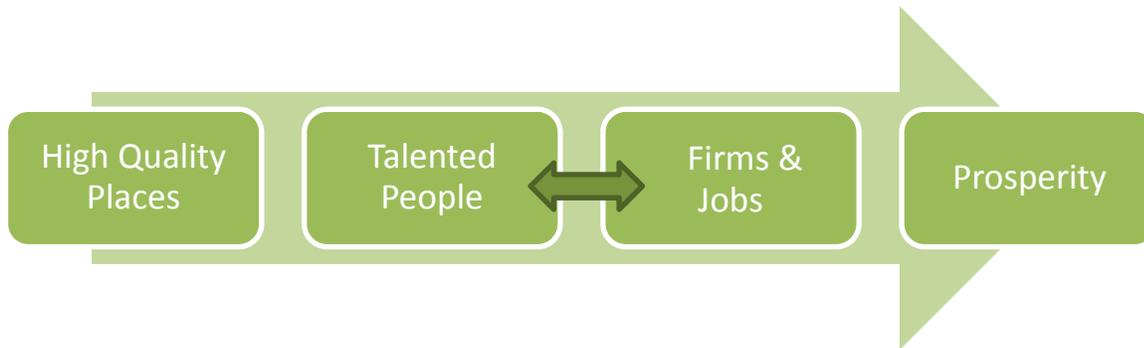
### PLACEMAKING

The concept of “placemaking” aims to utilize and transform the planning, design and management of public spaces in an effort to empower local communities and create a sense of “belonging.” The process behind placemaking utilizes a community’s assets to improve upon or create public spaces that actively benefit the community, strengthen social ties, and spur economic activity.

*“Placemaking’ is both an overarching idea and a hands-on tool for improving a neighborhood, city or region. It has the potential to be one of the most transformative ideas of this century.” – Project for Public Spaces*

There are many successful examples of placemaking projects across the country and abroad. One example is the Boston Innovation District, which has transformed the South Boston waterfront into a hub for collaboration and entrepreneurship that is changing the way residents, workers, and visitors interact with the area. Since inception, the effort has successfully added over 5,000 jobs and 200 new companies. Technology companies (including clean-tech) have contributed to over a third of this job growth.

As we progress towards a knowledge-based economy, strategies for economic development must increasingly take into account the importance of place. Placemaking strategies can result in quality places, tax revenues, job creation, livability, sustainability, and competitiveness. Quality places retain and attract skilled and talented people. Talented people like places with natural, community, social, leisure, creative, and cultural activities for themselves and their families. These characteristics are important in allowing smaller and medium-sized cities such as Riverside to attract and retain the talent and investment in business necessary to compete with larger urban centers.



**Figure A.4-1: How Placemaking Can Work**

A number of placemaking principles address sustainability and incorporate methods to promote economic development of the local community while simultaneously reducing environmental impact. The following EOAs fall within this model and support the development of a sustainable “place” for the Riverside community to thrive:

### **Bicycle Infrastructure Expansion**

The expansion of on-street and off-street bicycle infrastructure includes the creation of bicycle lanes, parking, facilities/amenities (such as showers, lockers) and bicycle sharing programs. By providing both recreational and commuting cyclists with improved infrastructure and amenities, the City will encourage increased ridership and enjoy the associated economic benefits. Examples of these benefits include the development of businesses and new jobs to support bicycling infrastructure facilities and the creation of bicycle sharing programs. Additionally, local businesses along bicycle paths will see increased patronage.

Another significant opportunity is for the City to create a bike friendly district. This bike friendly district would have extensive bicycle facilities, bike shops, and other businesses which support cycling. Local businesses could also advertise discounts and provide bicycle parking options. A bike friendly district would serve as a proving ground and support for more innovative bicycling concepts, such as bike corrals, “bike boulevards” or pedcab rickshaws. This bike friendly district would also create additional foot traffic, which would be conducive to having more patrons at restaurants, café’s, and shops. One likely application would be in the Downtown area, where a synergy of bicycle facilities and supportive land uses could be easily achieved.

### **Eco/Innovation Business Zone**

An Eco/Innovation Business Zone is a geographically defined area featuring best practices in sustainable urban design and green building with a focus on supporting both clean-tech and green businesses through a dedicated Green Business Program, enterprise zone incentives, and special showcasing opportunities. Similar to Boston’s Innovation District, the Eco/Innovation Business Zone is designed to encourage economic development by attracting new, innovative businesses and rewarding existing businesses for adopting sustainable practices. In order to reinforce a sense of

community and sense of belonging for Riverside's clean-tech businesses, the Eco/Innovation Business Zone and the correlating support programs will encourage interaction, networking, and showcasing of Riverside's eco-entrepreneurs. Supporting the Riverside Food Systems Alliance, the Eco/Innovation Business Zone would also work to provide resources and showcase opportunities to engage local food and agriculture stakeholders focused on building an environmentally sustainable and economically viable community of farmers, inside and outside the City.

### **Clean-Tech Incubator**

In addition to an Eco/Innovation Business Zone, the creation of a Clean-Tech Incubator would provide a physical location to offer counsel, funding resources, office space, and R&D lab space to local clean-tech companies looking to launch and grow within Riverside. Incubator programs across the country and specifically in Southern California have demonstrated great success in creating a community environment for entrepreneurs to thrive and share lessons learned. The Clean-Tech Incubator will support a variety of clean technologies, including those that are directly tied to Riverside's existing industries like food and agriculture.

### **Urban Form/Built Environment**

Recent studies show that some individuals and companies prioritize housing and employment locations within higher-density, multi-use centers that are more walkable. Such development reduces both vehicle miles traveled (VMT) and GHGs, as individuals can accomplish many tasks in a single mixed-use area. This centrality of uses also can improve community health by encouraging bicycling and walking, improve air quality by reducing tailpipe emissions, and increase the community's sense of place. Within the City of Riverside, there are significant opportunities for mixed-use, particularly within the Downtown area and University and Magnolia corridors. There is already a mix of retail, housing, and office space within the Downtown area and additional mixed-use development will only improve the current use diversity.



## **POLICY LENS**

The City of Riverside is perfectly positioned to analyze policy decisions through an RRG-oriented Policy Lens – a sustainability lens that examines whether future policies achieve both GHG reductions and support smart growth. Being able to assess environmental benefits in conjunction with economic benefits at the policy-making stage will allow for more collaboration between key stakeholders – the business community, building industry, and the City.

The following EOAs are examples of using this dual-pronged RRG Policy Lens to achieve smart growth:

### **Energy and Water Upgrades for Home or Business**

By providing financing for property owners (residential and commercial) to make energy efficient, renewable energy, and water conservation improvements, the City will demonstrate its support of greening the building inventory while encouraging clean-tech business activities focused on energy and water efficiency.

### **Green Building Standards**

As part of California's demonstrated leadership in the policy arena, Riverside's implementation of the State's mandatory energy efficiency standards for residential, commercial, and municipal buildings will help pave the way for green building solutions providers. While the State's green building standards are mandatory, the City can consider optional Code language that increase green building solutions that are beneficial, flexible and provide tangible incentives to the builder industry.

### **RPU Clean Technology Funding**

Riverside Public Utilities' (RPU) offers a number of programs to provide financing and incentives to develop and deploy energy technologies that reduce GHG emissions. The Custom Energy Technology Grant program provides RPU electric business customers with the opportunity to request funds for the advancement of renewable energy and utility industry solutions. These include benefits to California electricity ratepayers and target utility related categories such as distributed generation and energy efficiency. Such solutions will address changes the utility industry has seen in the last five years with the advancement of technology and its impact on the utility space.

Additionally, the Energy Innovations Grant (EIG) Program was developed for the funding of research, development and demonstration programs for the public interest to advance science or technology in electric related projects in the institutions of higher education within the City of Riverside. Funding from the program has helped post-secondary institutions look for new ways to advance science and technology in energy-related fields.

Furthermore, RPU provides Economic Development rates for relocating or expanding manufacturing companies pursuing green technology and manufacturing in Riverside. Customers may qualify to receive a four-year contract with a 40% discount per month the first year and 20% discount per month the second year. Qualifying companies are defined by the North American Industrial Classification System (NAICS) codes.

Lastly, the Green Power Premium is a voluntary program available to all RPU electric customers interested in helping Riverside achieve and surpass its renewable energy goals. Customers who opt into this voluntary program agree to contribute an additional two cents (\$0.02) per kilowatt hour (kWh) of electricity used, at their current per-kWh rate. Funds raised through this program will go directly toward the purchase of renewable energy for the city of Riverside.

RPU is looking to continue its partnerships to explore ways to utilize technologies available today to make cleaner energy more reliable.



## SMART GROWTH AND INFRASTRUCTURE

Smart growth improves accessibility to alternative modes of transportation, discourages single occupancy vehicle ridership, and encourages more movement on foot. By improving the connectedness of the city overall, the benefits will lead to a reduction in direct and indirect transportation costs. Smart growth policies have provided various savings and benefits for other cities, including:

- Fewer impervious surfaces reduce storm water management costs and heat island effects (increased ambient temperatures on sunny days), and leaves more land for other productive uses, including farming and wildlife habitat; Compact development reduces the capital and operating costs of providing public infrastructure and services such as roads, utility lines, garbage collection, and emergency services;
- Enhanced transportation systems improve overall accessibility (people's ability to reach desired goods and services). This increases the efficiency of activities that involve distribution (products delivered to a destination) or interaction (people and materials brought together); and,
- Alternative transportation options reduce overall transportation costs, including the per capita costs to consumers to own and operate vehicles, road and parking facility costs, traffic accidents, and pollution emissions. Within Riverside County, the average household spends upwards of \$1,000 per month on all transportation related costs. The majority of the Riverside City residents spend upwards of 45% of their household income on housing plus transportation costs, which are some of the highest in the State.

Transportation infrastructure tied to smart growth principles is a particularly important part of economic development. Transportation drives development and the transportation system a city selects dictates the shape of real estate. For the past three generations, U.S. transportation investment policy focused primarily on building roads, as the market wanted. However, this resulted in an over-supply of "drivable suburban" development. In today's real estate market, particularly among members of the Millennial generation, demand is rapidly rising for "walkable urban" development, which is denser and mixes infrastructure uses within walking distance. By improving access to rail and developing a convenient transit infrastructure, biking and pedestrian systems will spark an explosion of sustainable development in the City.

The following EOAs support the development of Smart Growth and Infrastructure for Riverside:

### **Clean Vehicles and Charging/Fueling Stations**

Providing clean vehicle charging and fueling infrastructure will encourage those who drive within the City to move toward alternative and renewable fuels and other clean transportation technologies.

### **Expand Bicycle Infrastructure**

As mentioned earlier in the 'Placemaking' section, creating a successful bike friendly district relies heavily on infrastructure plans to ensure safe transit for bicyclists and provides the amenities necessary to make daily rides possible. Expanding on-street and off-street bicycle infrastructure, including bicycle lanes, parking, facilities/amenities (showers, lockers), and bike sharing, will provide the foundation for a successful bike friendly district.

Other supporting RRG-CAP measures and smart growth planning strategies include:

### **Transit Infrastructure**

Increasing ridership on public transit will also help to support local businesses while reducing vehicle miles traveled within the City limits. Efforts include expanding transit infrastructure including bus rapid transit services and fixed guideway transit; subsidized transit passes and expanding the accessibility of transit to all users; increasing service hours where feasible; and expanding Metrolink service hours.

### **Waste Reduction and Diversion**

In order to increase waste diversion rates and encourage more recycling and composting of waste, businesses and residents need the infrastructure to collect and properly dispose of these materials. A first step includes creating or tapping into existing markets for recycling and re-purposing of materials to promote diversion of food and other solid waste from landfills. Building out the recycling and composting infrastructure is necessary before an education and engagement program can be created to raise awareness about a waste reduction initiative.



## **CONNECTED COMMUNITY**

Smart growth planning also focuses on creating livable and connected communities. As is evident by the diverse group of stakeholders who participated in the RRG-EPAP outreach activities, the richness of the City lies in the interest and involvement of the City's residents, employees, business owners and students. Ultimately, the ideas, technologies, and business models needed to transition the local economy must come from the people who live and work in Riverside. The real opportunity for the City lies in the leaders and innovators who call Riverside home, and in the fertile ground the City provides for inspiring entrepreneurial activity. The City can serve to articulate a vision

and provide a clear policy framework for a low-carbon future, and engaged citizens of Riverside can be involved with setting the community's governance structure, economic base, culture, values, and social foundation.

Smart growth also considers the ability to create linkages to further Community Connections by bridging sectors of the community that would not otherwise interact. Most of the EOAs help to create those connections – from bike infrastructure, to the buy local campaign, to EV infrastructure. By getting people out of their cars, shortening commutes, encouraging money to stay within the local business community, and creating pathways from colleges to local employers/local businesses to residents, the plan encourages stronger community connections. The onset of new services to encourage the sharing economy (car sharing, bike sharing, co-working spaces) will also provide additional opportunity to create stronger community bonds. Younger generations and college students will help to embed these types of services as part of the Riverside lifestyle, as they have been the biggest users of the “sharing economy” businesses in cities across the globe.

Monitoring and measuring the progress of initiatives to increase the connectivity of the community is always a difficult task. Riverside has been selected (as one of 25 U.S. cities) to participate in the Sustainability Tools for Assessing & Rating (STAR) Communities Program, which was created through a partnership of the U.S. Green Building Council (USGBC), the National League of Cities, the Center for American Progress, and the ICLEI Governments for Sustainability. The STAR program was designed as a way to help cities rank and evaluate their ongoing sustainability efforts. As one of the pilot program participants, Riverside will be able to test out the STAR Communities rating system and have access to new technical guides, and online reporting tools. The feedback from the STAR program will help to evaluate current programs to connect community groups and provide tools to assess which areas may need additional resources.

### **Buy Local Initiative**

This EOA initiative works to support local businesses and reduce vehicle miles traveled for shopping, entertainment, and errands by encouraging residents and employees to patronize local establishments. It also reduces the vehicle miles traveled of the products created in Riverside, and goods brought in from elsewhere. This program would be integrated with the transit infrastructure efforts, clean vehicles and charging/fueling stations, bike infrastructure plan, Grow Riverside efforts and the City's existing Shop Riverside Community Card program.



### **FUTURE LEADERS**

Careers in clean-tech and sustainability-focused areas are on the rise. As the City builds out programs to retain college students interested in sustainability post-graduation, the local clean-tech community will continue to develop organically with stronger ties to those who have already established roots in Riverside. The City's efforts to develop an employment base with skills that are in demand by local industry and small businesses will, in turn, yield additional taxable income, stabilized property values, and increase rates of homeownership.

Feedback from the business community has emphasized the importance of building out channels to secure talent from within the Riverside community by linking college students with future employers within the City. One example is SolarMax Technology Inc., which sources engineering talent from local universities. The ability to recruit from local universities was cited as one of the main reasons why SolarMax decided to base their headquarters within the City of Riverside.

### **Clean-Tech Apprenticeship/Internship Program**

The large student population in Riverside provides a unique opportunity for businesses in the area to draw new talent and encourage more young people to enter the industry. A city-sponsored apprenticeship program could pair green businesses with aspiring sustainability professionals from the University of California, Riverside (UCR), Riverside City College (RCC), California Baptist University, and La Sierra University. A program such as this would act as an incentive for businesses to locate in the area because it would give them access to high quality interns and a skilled labor pool.

One example of a successful apprenticeship program is UCR's Bourns College of Engineering IMPACT program that places undergraduate students with mentors. IMPACT stands for Industrial Mentorship for Professional Advancement and Career Training. The program has garnered support from an impressive list of partners, including the current participating IMPACT mentors:

- County of Riverside
- Fluor Corporation
- Kaiser Permanente Information Technology
- TIAX, LLC.
- Western Digital
- Western Municipal Water District
- U.S. Department of Navy, Naval Surface Warfare Center
- Verizon Communications

Another example is Riverside City College's comprehensive career training programs. RCC supports the local economy through critical vocational and apprenticeship programs in fields such as engineering, high technology, healthcare, culinary arts, international trade, auto tech, and other services.

### **Satellite Incubator Programs**

In addition to providing introductions to Riverside's established clean-tech businesses through the apprenticeship programs, the City can also develop branches of its clean-tech incubator in the form of satellite incubator programs on the college campuses. Encouraging entrepreneurial activity within the undergraduate and graduate student populations is also in alignment with the other smart growth areas. This partnership model has already proven to be a success in Riverside with the Excite incubator – a partnership between the County of Riverside, City of Riverside and University of California, Riverside.

An example of the satellite approach is the Los Angeles Cleantech Incubator's recent expansion efforts, namely LACI@CSUN. The LACI@CSUN business incubator is collaboration between California State University, Northridge (CSUN) and the Los Angeles Cleantech Incubator (LACI), designed to help startups from CSUN and the San Fernando Valley discover new opportunities, create outstanding enterprises and connect with our global network of businesses and investors. Located on the campus of California State University Northridge, the LACI@CSUN business incubator links LACI's best practices in developing robust companies with CSUN's ongoing teaching and research in the areas of technology, manufacturing, education, health and human development, and more. This partnership brings innovative marketing, unique facilities, private funding and other necessary support to students, faculty and the entire San Fernando Valley community.

## IMPLEMENTATION OF THE RRG-EPAP

To implement the RRG-EPAP smart growth strategies, we have outlined a 4-step action plan that can be used to jumpstart the project planning process. The action plan structure below includes the same focus on stakeholder engagement and ongoing outreach activities as was implemented during the creation of the RRG-EPAP. Maintaining an inclusive planning process for each of these areas will lead to greater adoption by those within the Riverside community and allow for increased awareness of Riverside's commitment to environmental stewardship and economic prosperity by those outside of the City.

In addition to the recommended action plan structure above, the Appendix (A-1 through A-4) contains starter action plans categorized by EOA. This will enable entities working on specific areas to focus on the most relevant recommendations collected during the RRG-EPAP outreach campaign.

**Table 4-2: Implementation of the RRG-EPAP**

<p>STEP <b>1</b></p>	<p>STEP <b>2</b></p>	<p>STEP <b>3</b></p>	<p>STEP <b>4</b></p>
<p><b>OWNERSHIP</b></p> <p>Establish desired outcomes.</p> <p>Define org chart for successful project rollout.</p> <p>Establish partnerships to align personnel.</p> <p>Set regular meeting schedule.</p> <p>Create protocol to document planning process.</p>	<p><b>RESOURCES</b></p> <p>Develop list of Riverside resources for project (see RRG-EPAP resources in Chapter 2).</p> <p>Analyze external resources (federal, state, public/private partnerships).</p> <p>Review needs for physical space (if required).</p> <p>Assess whether new policies are needed for project's success.</p>	<p><b>PLAN TIMELINE</b></p> <p>Create draft timeline for project rollout.</p> <p>Set targets and milestone goals.</p> <p>Determine measurement tools and success metrics.</p> <p>Initiate policy development process (if needed).</p>	<p><b>ENGAGEMENT</b></p> <p>Develop outreach and engagement plan.</p> <p>Create communications plan for the project with online and offline materials.</p> <p>Activate web presence to encourage feedback and suggestions from the community.</p>

## COMPREHENSIVE CLEAN-TECH INCENTIVE PACKAGE

In addition to developing individual action plans for each strategy and its associated EOAs, the RRG-EPAP calls for the development of a comprehensive incentive package to further attract and support local clean-tech businesses. After comparing the incentives that the City of Riverside offers to existing businesses with those offered by other leading California cities, it is recommended that Riverside institute the following

additional incentive programs. These programs will further promote sustainable and clean-tech businesses to relocate to or expand their operations in Riverside.

## Financial Incentives

Offer a rebate on electric vehicles purchased as company cars: These rebates will encourage companies to provide environmentally friendly transportation for their staff and products.

Offer a rebate on electric vehicle charger installation: By offering these rebates, Riverside will promote the installation of electric vehicle chargers in commercial parking areas. Greater availability of chargers will encourage more city residents to buy and drive electric vehicles.

Green roof incentives for commercial buildings: Green roofs provide benefits for both cities and individual businesses. They help filter pollutants in the air and provide energy-saving insulation for buildings. Washington, D.C. has developed an acclaimed green roof program, and provides base funding for green roofs of \$10 per square foot, and up to \$15 per square foot in targeted subwatersheds. To learn more about their incentive program, visit <http://green.dc.gov/greenroofs>.

Subsidize recycled and eco-friendly materials for manufacturers: The City can encourage manufacturing companies to use recycled materials in their production by subsidizing recycled and eco-friendly materials. Sacramento has a Recycling Market Development Zone, administered by the Department of Resources Recycling and Recovery (CalRecycle), which offers loans (a total of about \$3 million in FY 2014-2015), technical assistance, and free product marketing to companies that use materials from the waste stream to manufacture their products. To learn more about their program, visit <http://www.calrecycle.ca.gov/RMDZ/>.

## Non-Financial Incentives

Create a green business certification program: Four of the five California cities listed on the Metro Index's 2014 U.S. Clean Tech Leadership Index have green business certification programs. These programs are low-cost and provide recognition and marketing opportunities as incentives for businesses to reduce their environmental impact. The Los Angeles Green Business Program, administered by the Los Angeles Bureau of Sanitation and the Los Angeles Community College District, has now granted certification to 228 businesses. The program has been highlighted in publications such as the Los Angeles Times and Discover Los Angeles. Businesses in the city typically seek certification to use as a marketing tool and to incentivize eco-minded citizens to become customers. The City of Santa Monica Green Business Certification Program is administered by an environmental nonprofit organization, Sustainable Works, that is under an annual service contract with the city. The Green Business Certification Program is a voluntary program that encourages businesses to implement proactive actions that are good for their bottom line and the environment. For the past 20 years, the City of Santa Monica has recognized a select group of local businesses in an award ceremony called the "Sustainable Quality Awards" or SQA The Santa Monica Chamber

of Commerce, the City of Santa Monica, and Sustainable Works developed the SQA to identify and recognize businesses in the Santa Monica area that are successfully incorporating sustainable practices into their operations. The SQA is an annual event that promotes the efforts of local businesses that have made significant achievements in the areas of sustainable economic development, social responsibility, and stewardship of the natural environment. By recognizing these achievements, this awards program educates and inspires other businesses to adopt their own sustainable practices, thus helping Santa Monica become a model sustainable community, providing its residents and visitors with a healthy economy and environment.

Create a clean-tech incubator: A physical incubator office location can offer counsel, funding resources, office space and R&D lab space to clean-tech companies looking to launch and grow with Riverside as their base. An incubator also draws attention to local businesses from Venture Capital and Private Equity investors.

Develop an inter-college sustainability apprenticeship program: The large student population in Riverside provides a unique opportunity for businesses in the area to draw new talent and encourage more young people to enter the industry. A city-sponsored or university-sponsored apprenticeship program could pair green businesses with aspiring sustainability experts from the University of California, Riverside, Riverside City College, California Baptist University, and La Sierra University. A program such as this would act as an incentive for businesses to locate in the area because it would give them access to high quality interns and a skilled labor pool. Many college programs require capstone projects and field study internships and others offer structured apprenticeship programs (like Los Angeles Trade Tech College – see <http://college.lattc.edu/cmu/program/apprenticeship-programs/>). Developing a program that specifically focuses on building the talent pipeline for Riverside’s clean-tech industry will allow the City to further demonstrate its desire to build community connections that contribute to sustainable community growth.

Incorporate a local agriculture showcase for local food vendors into the annual Grow Riverside conference: The Grow Riverside conference, which works to foster growth of a sustainable local food and agriculture system in the community, attracted a sold-out audience of over 420 to its inaugural event in 2013. By incorporating into this conference a showcase of seasonal foods available from local farmers and ranchers specifically for Riverside food vendors, restaurants, and supermarkets, businesses in the community would be encouraged to source locally grown food. The practice of sourcing locally both supports local farmers and reduces transportation-related carbon emissions.

Institute a clean-tech mentorship program: An inter-business mentorship program similar to the Los Angeles Cleantech Incubator program would foster cooperation among Riverside businesses and encourage connections between entrepreneurs.

Provide a business and/or staff training program on recycling: By training business managers and staff on recycling best practices, the city can create a better-informed business population that is capable of using Riverside’s recycling system to its fullest potential.

Sponsor a clean-tech investor series: An annual or biannual clean-tech investor series, similar to GloSho Los Angeles and the Clean Tech LA Investor Series, would showcase local clean-tech companies and connect them to Venture Capital and Private Equity investors.

## PROMOTING RIVERSIDE'S COMPETITIVE ADVANTAGE

The RRG project team is developing an outreach plan to showcase Riverside's competitive advantages and these additional incentives will serve as great additions to the overall offering. The outreach plan will include presentation materials to allow Riverside representatives to raise awareness and encourage participation in the development of the RRG-EPAP initiatives from key stakeholders - entrepreneurs, business owners, academic community, students, community members, clean-tech investment community, and the clean-tech industry at-large.

The outreach plan will also identify speaking opportunities at local, regional and national clean-tech conferences and seminars. These targeted outreach activities will work to position Riverside as a top city for clean-tech businesses and highlight the City on the national stage as an example of a sustainable community.

## ONGOING PROJECT SUPPORT

The final recommendation is to continue to assign resources to support the RRG on an ongoing basis by maintaining the project headquarters in the City's Community Development Department. The outreach efforts were promoted from the City's Community Development Department - Planning Division web page and many of the stakeholder groups will continue to look to the Planning page for project updates. Even though some of the initiatives may be housed or owned by other areas within the City, having a central hub to maintain consistency of the mission of the RRG across all projects moving forward will be key to the overall success of this plan.

Through its existing sustainable community programs, the City of Riverside has already established its commitment to improving the health of its residents and its environment. Nevertheless, in order to demonstrate its sustained support for its citizens and environment, it must continually grow its existing programs and look for new, innovative approaches to city development. The above recommendations, compiled over the course of the RRG project team's 10 months of research, present pathways for Riverside to do just this. If implemented, the team is confident that the recommendations would encourage the City's existing residents and businesses to lower their environmental impacts and draw attention of up-and-coming clean tech startups, aspiring college students, and citizens looking for a modern, livable city to call home.

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# Riverside

RESTORATIVE GROWTHPRINT

## CLIMATE ACTION PLAN

RRG-PART B  
October 2015





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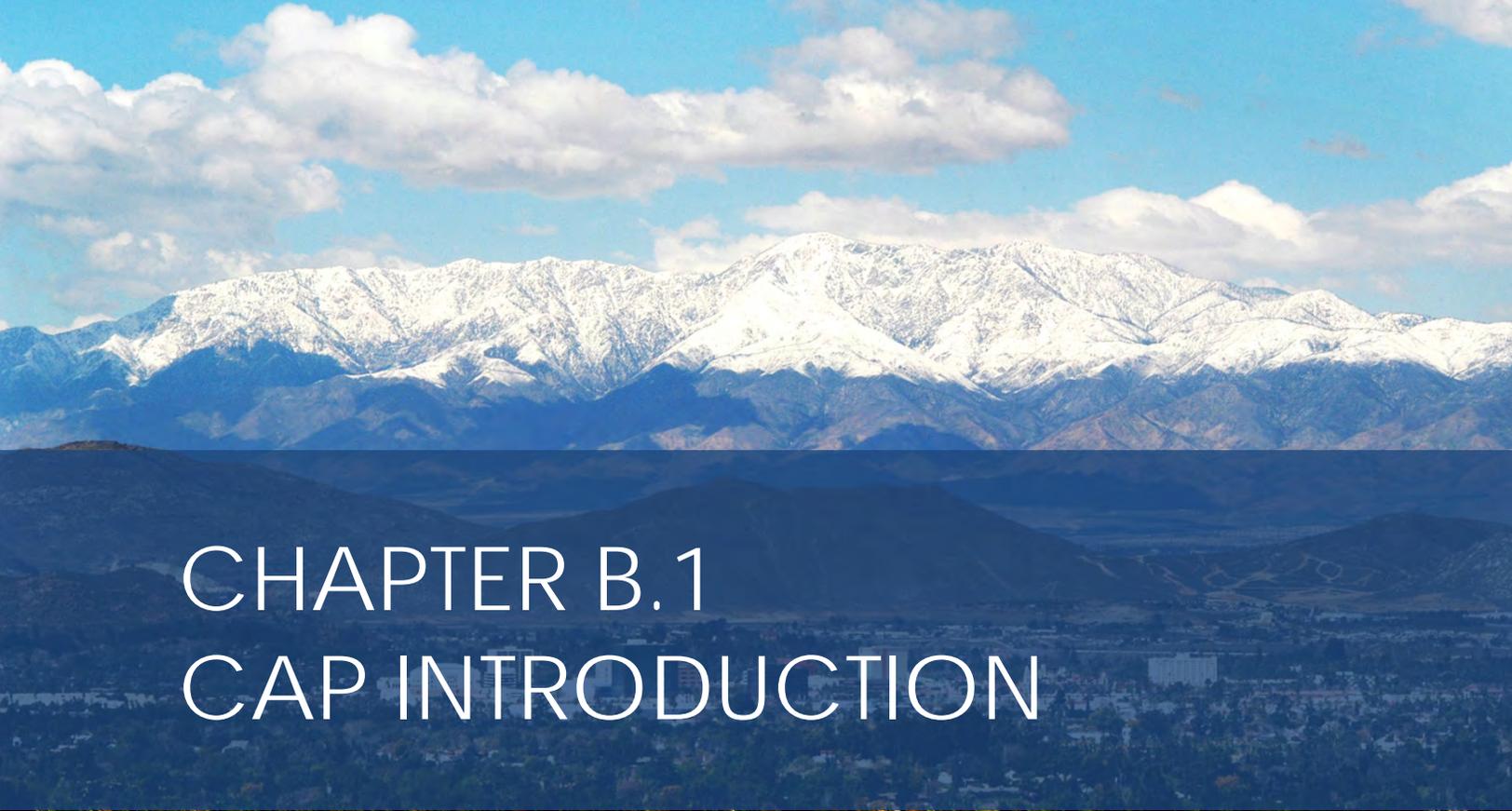
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# CHAPTER B.1 CAP INTRODUCTION

## PURPOSE

Over the past decade, the City of Riverside has progressively demonstrated its commitment to environmental quality, social equity, and economic prosperity for all. The Riverside Restorative Growthprint (RRG) embodies the City of Riverside's commitment to be an engaged and responsible steward of its natural resources (both locally and regionally); reflects the City's dedication to address climate change by reducing greenhouse gas (GHG) emissions; and defines the City's view that actions to reduce GHG emissions are opportunities to inspire economic development through investment in urban development, infrastructure, mobility systems, and entrepreneurship.

This document represents the cumulative result of three separate but integrated planning efforts, including:

- **Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan (Subregional CAP):** in 2014 Riverside was one of twelve cities that collaborated with WRCOG on the Subregional CAP, which set forth a subregional emissions reduction target, emissions reduction measures, and action steps to assist each community in the region to demonstrate consistency with California's Global Warming Solutions Act of 2006 (AB 32). The City committed to reducing its GHG contribution by adopting 36 reduction measures from the Subregional CAP that would guide the City's GHG reduction efforts through 2020. The Subregional CAP serves as the foundation for this document, which expands upon those subregional commitments and provides a path for the City's GHG reduction goals beyond 2020.
- **Riverside Restorative Growthprint - Economic Prosperity Action Plan (RRG-EPAP):** Section One of this document showcases those opportunities where GHG reduction measures also advance economic growth and provide meaningful benefit to the residents, employees, investors and visitors of the City. The RRG-

EPAP identifies those measures and strategies that have the most potential to spur economic development and inspire entrepreneurship, which are illustrated through the “Top 10 Entrepreneurial Opportunity Areas” list. Furthermore, the EPAP identifies key implementation recommendations for the City to facilitate intelligent growth and stimulate sustainable infrastructure investment.

- **Riverside Restorative Growthprint - Climate Action Plan (RRG-CAP):** Section 2 of this document provides a roadmap for the City of Riverside to achieve deep GHG emissions reductions through the year 2035. The RRG-CAP prioritizes the implementation of policies that enable the City to fulfill the requirements of state initiatives, Assembly Bill [AB] 32 and Senate Bill [SB] 375. The RRG-CAP includes a baseline GHG inventory for local government operations and for the community as a whole, and establishes emission reduction targets consistent with state law. Through stakeholder engagement and cost-benefit analysis, the RRG-CAP resulted in strategies, measures, and actions for reducing emissions that align with the City’s planning priorities and its vision of a future economy based on “clean, green businesses and business practices.”

The following five chapters of this document represent the RRG-CAP, which identifies strategies for reducing GHG emissions that, in turn, inspire entrepreneurial opportunities captured and promoted through the RRG-EPAP, found in chapters one through four of Section One.

AB 32 directs California to reduce statewide GHG emissions to 1990 levels by 2020. To achieve these reductions, the California Air Resources Board (CARB) recommends that local governments target their 2020 emissions at 15% below “current”<sup>1</sup> levels, consistent with the statewide commitment, to account for emissions growth that has occurred since 1990. Several initiatives at the state level will help the City reduce GHG emissions, but they alone will not be sufficient to meet the 2020 and 2035 targets. The RRG-CAP provides a roadmap for the City to reduce GHG emissions through local actions.

The release of GHGs into the atmosphere is the direct and indirect result of everyday activities as residents and businesses use energy in their homes and office, travel to work, generate waste, and use water. Local governments also emit GHGs as they perform essential services and operate buildings, vehicles, street lights, traffic signals, water systems, and wastewater plants. Strategies in this CAP to reduce such emissions include increasing energy efficiency in buildings and facilities, utilizing renewable energy sources, increasing vehicle fuel efficiency, supporting alternative modes of transportation, reducing waste generation, and reducing water consumption. In addition to addressing climate change, reducing GHG emissions often provides co-benefits such as reducing energy and transportation costs for residents, businesses, and local governments; creating green jobs and supporting advancement of green technologies and industries; improving air quality and the overall health of residents; and making the community a more attractive place to live and locate a business.

## CAP ORGANIZATION

The RRG-CAP expands upon the GHG reduction programs and policies that the City has already implemented, the Subregional CAP measures the City has already

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<sup>1</sup> “Current” is a term used by CARB in its Climate Change Scoping Plan of September 2008, but is undefined. It is generally taken to mean emissions for a year between 2005 and 2008, although other years have been used by local communities.

committed to, and best practices and innovative programs that have been successful in other cities, all of which creates a tailored suite of measures for the City of Riverside. The measures in the RRG-CAP were chosen not only for their GHG reduction potential, but also for their potential to spur local business opportunities and encourage local economic development. Other factors that contributed to the measure selection process include cost-benefit characteristics, funding availability, implementation feasibility and associated co-benefits, such as public health.

The RRG-CAP is organized into five chapters:

- **Chapter 1, Introduction:** provides the framework for the RRG-CAP, places the CAP in the context of current climate change science and policy, describes existing regional and local sustainability efforts and accomplishments.
- **Chapter 2, Emissions Inventory, Projections, and Goals:** describes the emissions inventory process and results, forecasted business-as-usual emissions for the City, and the City's adopted emissions reduction target.
- **Chapter 3, Reduction Measures and Actions:** contains the anticipated state and federal emissions reductions, and the local reduction measures and actions that will be implemented to meet the City's reduction target.
- **Chapter 4, Closing the Gap:** discusses the potential for existing and future state legislation to reduce emissions beyond 2026 and allow the City to achieve their 2035 target.
- **Chapter 5, Implementation and Monitoring:** provides best practices and specific resources for implementing reduction and adaptation/resiliency measures, the role of measure-specific evaluations, periodic updates to the inventories, use of indicators to monitor the City's progress, and the need for future iterations of the CAP to incorporate new data and measures as they become available.

## GREENHOUSE GAS EMISSIONS IMPACTS

Naturally occurring gases dispersed in the atmosphere determine the Earth's climate by trapping infrared radiation (heat). This phenomenon is known as the greenhouse effect and without it the Earth would be about -2°F. Overwhelming evidence shows that human activities are increasing the concentration of GHGs in the atmosphere, trapping more heat, and changing the global climate. The most significant contributor is the burning of fossil fuels for transportation, electricity generation, and other purposes, which introduces large amounts of carbon dioxide and other GHGs into the atmosphere. Collectively, these gases intensify the natural greenhouse effect, causing global average surface and lower atmospheric temperatures to rise, a phenomenon known as global climate change.

The most important GHGs to reduce are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), which constitute over 98% of human-released GHGs in the U.S.<sup>2</sup> Other important GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

These gases are emitted through a variety of natural processes and human activities, including:

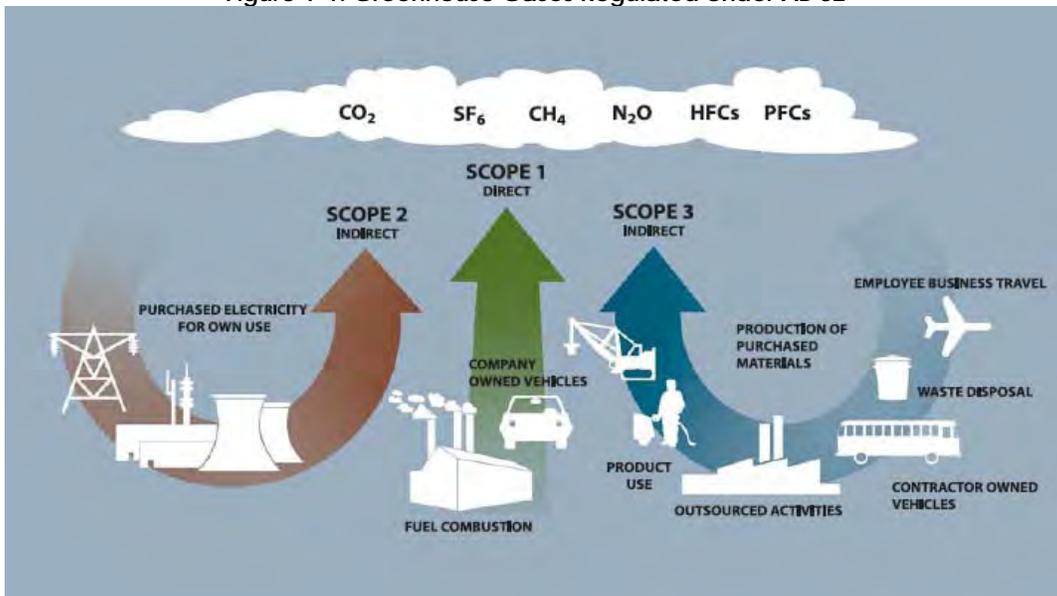
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<sup>2</sup> U.S. Environmental Protection Agency, 2011, <http://www.epa.gov/climatechange/ghgemissions/gases.html>

- Fossil fuel combustion (CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub>);
- Agricultural operations, such as fertilization of crops (N<sub>2</sub>O), livestock production, and rice cultivation (CH<sub>4</sub>);
- Anaerobic composting and landfill off-gassing (CH<sub>4</sub>);
- Refrigeration and cooling (HFCs); and
- Industrial manufacturing, including aluminum production (PFCs), semi-conductor manufacturing (SF<sub>6</sub>), and cement production (CO<sub>2</sub>).

Global Warming Potential (GWP) is a quantitative measurement that expresses the relative warming potency of each GHG over a specific period of time. CO<sub>2</sub> is assigned a GWP value of 1 and the other GHGs are assigned GWPs relative to CO<sub>2</sub>. For GHG emission inventories, the amount of each gas emitted is multiplied by its GWP and presented in units of carbon dioxide equivalents (CO<sub>2</sub>e). **Table 1-1** and **Figure 1.1** show the six primary GHGs as defined in AB 32, their chemical formula, the lifetime of the compound, and their GWPs relative to CO<sub>2</sub>. Although CO<sub>2</sub> has a lower GWP than other GHGs, it is the largest contributor to human-caused global warming, constituting about 84% of U.S. emissions.<sup>3</sup>

Figure 1-1: Greenhouse Gases Regulated Under AB 32



While the anticipated effects of climate change are likely to vary regionally, it is anticipated to have the following global effects<sup>4</sup>:

- Higher maximum temperatures and more hot days over most land areas;
- Higher minimum temperatures, fewer cold days, and frost days over most land areas;
- Reduced diurnal temperature range over most land areas;
- Increased heat index over land areas; and
- More intense precipitation events.

<sup>3</sup> Ibid.

<sup>4</sup> IPCC Fourth Assessment Report: Climate Change 2007 (AR4). Available at: [http://www.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_synthesis\\_report.htm](http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm)

Many secondary effects are anticipated to result from climate change in California, including: loss in snow pack; sea level rise and inundation of coastal areas; increased flooding of low-lying areas; more extreme heat days per year; high ozone days; increased incidence of large forest fires; and more frequent and severe drought years.

**Table 1-1 – Primary Greenhouse Gases, as defined by AB 32.**

GREENHOUSE GAS	CHEMICAL FORMULA	LIFETIME (YEARS)	GLOBAL WARMING POTENTIAL FOR 100-YEAR HORIZON
Carbon Dioxide	CO <sub>2</sub>	Variable	1
Methane	CH <sub>4</sub>	12	21
Nitrous Oxide	N <sub>2</sub> O	114	310
Sulfur Hexafluoride	SF <sub>6</sub>	3,200	23,900
Hydrofluorocarbons	HFCs	1.4 – 270	140 – 11,700
Perfluorocarbons	PFCs	1,000 – 50,000	6,500 – 9,200

**Source:** International Panel on Climate Change (IPCC) Second Assessment Report: Climate Change 1995 (SAR). Available at: [http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data\\_reports.shtml](http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml)

**Note:** According to the Local Government Operations Protocol (LGO Protocol) and the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol), the GWP values in Table 1-2 were applied in this CAP. Since the SAR was published in 1995, the IPCC has published updated GWP values in its Third Assessment Report (TAR) and Fourth Assessment Report (AR4) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO<sub>2</sub>. However, GWP values from the SAR are still used by international convention to maintain consistency in GHG reporting. For GWP values that were not quantified in the SAR, GWP values from the TAR were used.

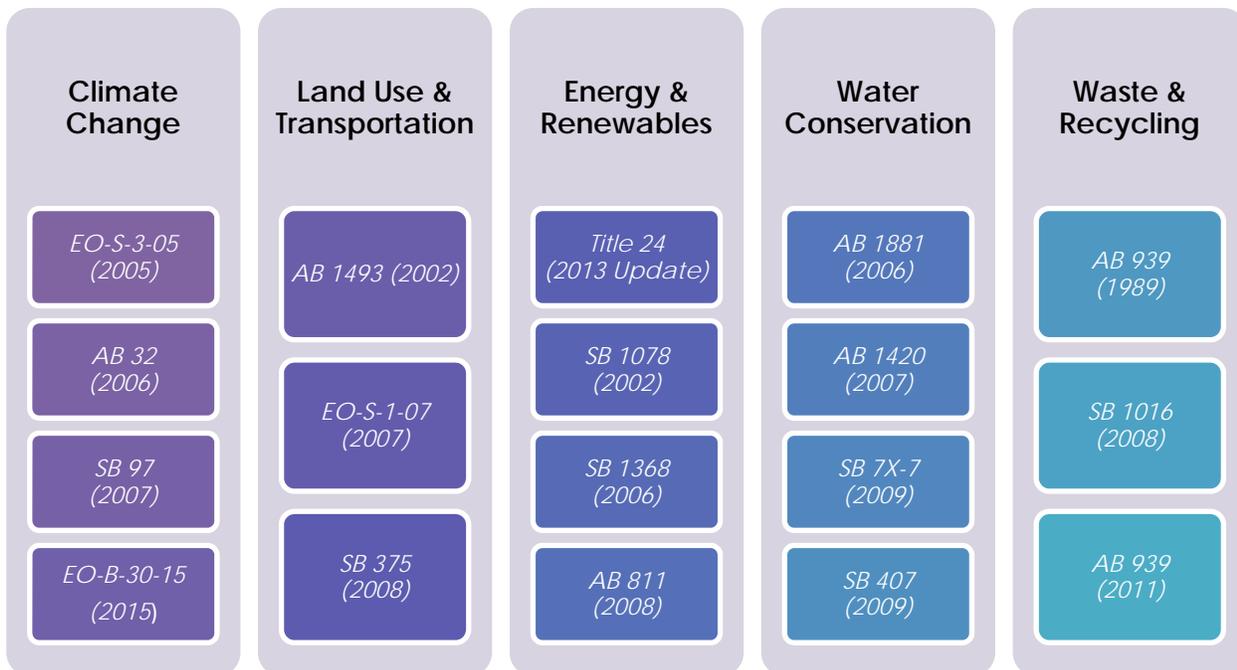
## REGULATORY CONTEXT

Many strategies for monitoring and addressing climate change have emerged at the international, national, and state levels. California remains a leader in the effort to reduce GHG emissions through mitigation and adaptation strategies. With AB 32, California is the first state in the U.S. to mandate GHG emissions reductions across its entire economy. To support AB 32, California has been developing policy and passing legislation that seeks to control emissions of gases that contribute to climate change. These have included regulatory approaches such as mandatory reporting for significant sources of GHG emissions and caps on emission levels, as well as market-based mechanisms, such as cap-and-trade. Voluntary local actions are also increasing, such as conducting emissions inventories, implementing practices to reduce emissions, and purchasing offsets and renewable energy certificates. While many local actions are currently voluntary, there is more emphasis being placed on monitoring and reporting emissions to demonstrate the effectiveness of policies and local consistency with state reduction goals. The following section highlights the primary state legislation and guidance related to the RRG-CAP.

## STATE LEGISLATION AND GUIDANCE

AB 32, also known as the Global Warming Solutions Act of 2006, directs public agencies in California to support the statewide goal of reducing GHG emissions to 1990 levels by 2020. Preparing a CAP supports AB 32 at the local level. The CAP provides a policy framework for how the City can do its part to reduce emissions. While compliance with AB 32 is not a requirement for local jurisdictions, demonstrating consistency with statewide reduction goals can significantly assist jurisdictions to qualify for incentives such as grant funding. Efforts to address climate change, reduce consumption of resources, and improve energy efficiency led by state legislation or programs are identified in **Figure 1-2** and briefly described below.

**Figure 1-2: Regulatory Framework for Climate Change**



### Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which established the following GHG emission reduction targets:

- by 2010 California shall reduce GHG emissions to 2000 levels;
- by 2020 California shall reduce GHG emissions to 1990 levels; and
- by 2050 California shall reduce GHG emissions to 80 percent below 1990 levels.

EO-S-3-05 created the California Climate Action Team (CAT), which is tasked with the preparation of biennial science assessment reports on climate changes and adaptation options for California. The first CAT Report to the Governor and Legislature was published in 2006, and contains recommendations and strategies to help meet the targets in EO-S-3-05. These were expanded upon in the 2009 CAT Biennial Report to the Governor and Legislature. The new information includes revised climate and sea-level projections, and an evaluation of climate change within the context of broader social

changes, such as land-use changes and demographic shifts<sup>5</sup>. The action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by EO-S-13-08.

### **Assembly Bill 32 – California Global Warming Solutions Act of 2006**

AB 32 was approved by the legislature and signed by Governor Schwarzenegger in 2006. The landmark legislation requires CARB to develop mechanisms that will reduce GHG emissions to 1990 levels by 2020. Mandatory actions under the legislation to be completed by CARB include:

- Identification of early action items that can be quickly implemented to achieve GHG reductions. These early action items were adopted by CARB in 2007 and include regulations affecting landfill operations, motor vehicle fuels, car refrigerants, and port operations, among other regulations.
- Creation and adoption of regulations to require the state’s largest industrial emitters of GHGs to report and verify their emissions on an annual basis.
- Development of a scoping plan<sup>6</sup> to identify the most technologically feasible and cost-effective measures to achieve the necessary emissions reductions to reach 1990 levels by 2020. The Scoping Plan, adopted in 2008, identifies a variety of GHG reduction measures that include direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and market-based cap-and-trade program. Key elements of the Climate Change Scoping Plan are:
  - Expanding and strengthening existing energy efficiency programs;
  - Achieving a statewide renewables energy mix of 33 percent for electricity generation;
  - Developing a California cap-and-trade program affecting all GHG-emitting power plants in the state as well as companies that import power from other states for sale in California;
  - Establishing targets for transportation-related GHGs for regions throughout California and pursuing policies and incentives to achieve those targets;
  - Adopting measures pursuant to existing laws including clean car standards and low carbon fuel standards;
  - Creating targeted fees on high global warming potential gases and a fee to fund the administrative costs of the state’s long term commitment to AB 32 implementation; and
  - Adopting measures to increase commercial recycling.

The Scoping Plan identifies local governments and municipal-owned utilities as strategic partners to achieving the state reduction goal, which is translated to a 15% reduction from 2008 emissions by 2020. AB 32 implementing activities directly affecting Riverside Public Utilities include expansion of energy efficiency programs, renewable portfolio standards and the cap-and-trade program.

### **Senate Bill 97 – California Environmental Quality Act Guideline Amendments of 2007**

Senate Bill (SB) 97 was adopted in 2007 and directed the Governor’s Office of Planning and Research (OPR) to amend the CEQA Guidelines to address GHG emissions. The

<sup>5</sup> California EPA - Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006. Available at: [http://www.climatechange.ca.gov/climate\\_action\\_team/reports/index.html](http://www.climatechange.ca.gov/climate_action_team/reports/index.html)

<sup>6</sup> CARB 2008 Scoping Plan. Available at <http://arb.ca.gov/cc/scopingplan/scopingplan.htm>

CEQA Guidelines, as amended by OPR, were adopted in December 2009 and went into effect March 18, 2010. Local governments may use adopted plans consistent with the CEQA Guidelines to assess the cumulative impacts of projects on climate change, if the plan for the reduction of GHG emissions accomplishes the following:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require an amendment if the plan is not achieving specified levels.
- Be adopted in a public process following environmental review.

### **SB 375 – Sustainable Communities and Climate Protection Act of 2008**

SB 375, also known as the Sustainable Communities and Climate Protection Act of 2008, builds off of AB 32 and aims to reduce GHG emissions by linking transportation funding to land use planning. It requires the state's metropolitan planning organizations (MPO) to create a sustainable communities strategy (SCS) in their regional transportation plan (RTP) for the purpose of reducing urban sprawl. Under SB 375, CARB established regional targets for GHG emissions reductions from passenger vehicle use for each MPO. The regional reduction targets for the Southern California Association of Governments (SCAG) region, which is the MPO with jurisdiction over the WRCOG subregion, are 8% per capita by 2020, and a conditional target of 13% per capita by 2035 from 2005 levels. In April 2012, SCAG adopted its first SCS, which demonstrates how the region will achieve the GHG emissions reduction targets set by CARB.

### **Executive Order B-30-15**

On April 29, 2015, Governor Jerry Brown signed Executive Order (EO) B-30-15, which establishes a new interim GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030. The EO requires the CARB to express the 2030 target in terms of million metric tons of carbon dioxide equivalent. The EO also requires state agencies consider "full life-cycle cost accounting" when making future planning and investment decisions. To help state agencies incorporate climate change impacts into planning and investment decisions, the EO requires the Governor's Office of Planning and Research to establish a technical, advisory group on the issue.

# PLANNING CONTEXT

## REGIONAL PROGRAMS

The regional initiatives described below contribute to the development and success of this CAP. Many of these programs are administered by WRCOG while others are conducted by other regional entities in partnership with WRCOG.

### **Southern California Association of Governments Regional Transportation Plan and Sustainable Communities Strategy**



SCAG is the regional planning agency for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated MPO for the Southern California region and is the largest MPO in the U.S. With respect to air quality planning, SCAG has prepared the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (2012 RTP/SCS): Towards a Sustainable Future*, to fulfill federal planning requirements contained in the *Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*, which calls for regions to consider urban form and natural resources as part of the transportation planning process. Under SB 375, all of California’s MPOs must prepare an SCS as a component of their RTP. The RTP serves as a long-range transportation plan that is developed and updated by SCAG every four years. The RTP provides a vision for the development of transportation facilities throughout the region based on growth forecasts and economic trends projected over a 20-year period. The SCS expands upon transportation strategies in the RTP to analyze growth patterns and establish future land use strategies that aid the region in meeting its GHG reduction targets. The SCS does not mandate future land use policies for local jurisdictions, but rather provides a foundation of regional policy upon which local governments can build. WRCOG and its member jurisdictions partner with SCAG and are active members in the development and implementation of the RTP/SCS.

### **Sustainability Framework for Western Riverside County**

WRCOG’s Sustainability Framework (Framework) is a subregional planning effort that establishes, implements, and continuously refines an overarching sustainability plan for the communities in Western Riverside County. The Framework aims to: initiate a dialogue about the importance of sustainability in the region; provide a vision and goals to guide local action and regional collaboration; define more immediate short-term goals that can contribute to the longer-term vision of the Framework; and define indicators, benchmarks, and targets that provide a measure of the effectiveness of Framework programs and policies. The Framework acts as a “living” document and contains goals and actions applying to economic development, education, public health, transportation, water and wastewater, energy, and the environment.

### Western Riverside County Clean Cities Coalition

The Western Riverside County Clean Cities Coalition (Coalition) is a voluntary local government and industry partnership that aims to reduce the consumption of petroleum fuels and improve air quality in the WRCOG subregion. The Coalition works to mobilize local stakeholders toward expanding the use of alternative fuel vehicles (AFV) and advanced technology vehicles, promoting local idle reduction measures, and strengthening local AFV fueling infrastructure. The governments of Western Riverside County have taken leadership roles in the Coalition, coordinating efforts between government and industry to recognize the value of partnership in achieving air quality, energy efficiency, economic development, and transportation goals, while advancing the clean air and energy efficiency goals of the national Clean Cities program administered by the U.S. Department of Energy.



### Healthy Communities

WRCOG and its member jurisdictions are engaged in numerous efforts and initiatives to promote healthy communities, including participating in the Riverside County Health Coalition (RCHC). The RCHC is a collaboration of public and private sectors, school districts, community businesses, local and regional organizations and community members committed to policy development and advocacy, environmental change and community empowerment for healthy lifestyles in Riverside County. This initiative includes a focused partnership effort with local governments to integrate healthy communities into the local planning and policy-making process.



### Multiple Species Habitat Conservation Plan

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional plan to conserve sensitive species and their associated habitats in the subregion. Created in 2004 by the Western Riverside County Regional Conservation Authority (RCA), the MSHCP provides subregional transportation and green infrastructure benefits to local agencies and allows WRCOG jurisdictions to make land use decisions and maintain a strong economy in a context that comprehensively addresses federal and state Endangered Species Acts (ESA and CESA) requirements.



### Transportation Uniform Mitigation Fee

WRCOG’s Transportation Uniform Mitigation Fee (TUMF) was implemented in 2003 as one of the largest multi-jurisdictional fee programs in the nation. TUMF makes improvements to the regional transportation system and provides transportation demand management through funds from new development, ensuring that development mitigates for increases in traffic volumes. TUMF is a 32-year program that provides subregional transportation and infrastructure benefits to local agencies in Western Riverside County. The program is expected to raise \$4.2 billion, and 1.64% is allocated to the Riverside Transit Agency (RTA) for transit improvements. To mitigate the impacts of transportation construction projects, WRCOG allocates 1.59% of TUMF funds collected to the RCA to purchase habitat for the MSCHP.



## HERO Program

Established under the guidance of AB 811 (2008) and AB 474 (2009), WRCOG's HERO Program is a Property Assessed Clean Energy (PACE) program that provides financing to residential and commercial property owners for the installation of energy efficient, renewable energy, and water conservation improvements on existing properties. Financing provided through the HERO Program is repaid through an assessment on property tax bills over 5-, 10-, 15-, 20-, and 25-year terms, based on the useful life of the products, and upon sale of the property, the balance generally stays with the property.



## EXISTING SUBREGIONAL AND LOCAL ACCOMPLISHMENTS

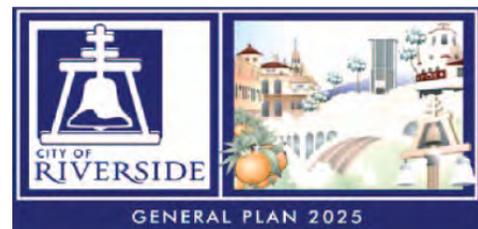
### WRCOG Subregional Climate Action Plan

The WRCOG Subregional CAP was developed with the objectives of creating more livable, equitable, and economically vibrant communities. Twelve cities in the subregion, including Riverside, participated in the development of a Subregional CAP, which sets forth subregional emissions reduction targets, emissions reduction measures, and action steps to assist each community in demonstrating consistency with AB 32. The Subregional CAP includes feasible strategies that will help the WRCOG subregion advance toward GHG emissions reduction goals, while affording each community additional economic, public health and environmental benefits.



### General Plan 2025

The adoption of the City's General Plan 2025 Program in November of 2007 included the seven Elements mandated by state law, as well as several optional Elements. The Air Quality Element, which recognizes Riverside as a leader in clean air and a healthy environment, provides the scientific and regulatory context describing the importance of improving air quality and reducing GHG emissions. The Air Quality Element describes city programs and regional initiatives that had been implemented at the time the plan was adopted, and outlines programs and partnerships that the City would pursue in the future. Policies in the Air Quality Element help to set the framework for the air quality and climate change initiatives the City is pursuing today. As required by state law, as part of the General Plan 2025, the Implementation Plan includes tools, or action items, that address the Objectives and Policies of the Elements. In addition, there are Overarching Tools in the Implementation Plan that addressed the more significant Objectives and Policies of the General Plan 2025.



### Proposition R and Measure C

In addition to the City's General Plan, the City has two major voter approved initiatives to preserve the City's natural resources. With the passage of Proposition R in 1979 and Measure C in 1987, voters expressed serious community resolve to protect the Arlington Heights Greenbelt and Rancho La Sierra area's agricultural heritage and prevent urban sprawl thereby preserving them as community treasures. These measures serve to

protect natural hillsides, arroyos and other important topographical features and ensure Riverside's greenbelt provides a buffer between urban and rural land uses.

## Green Action Plan

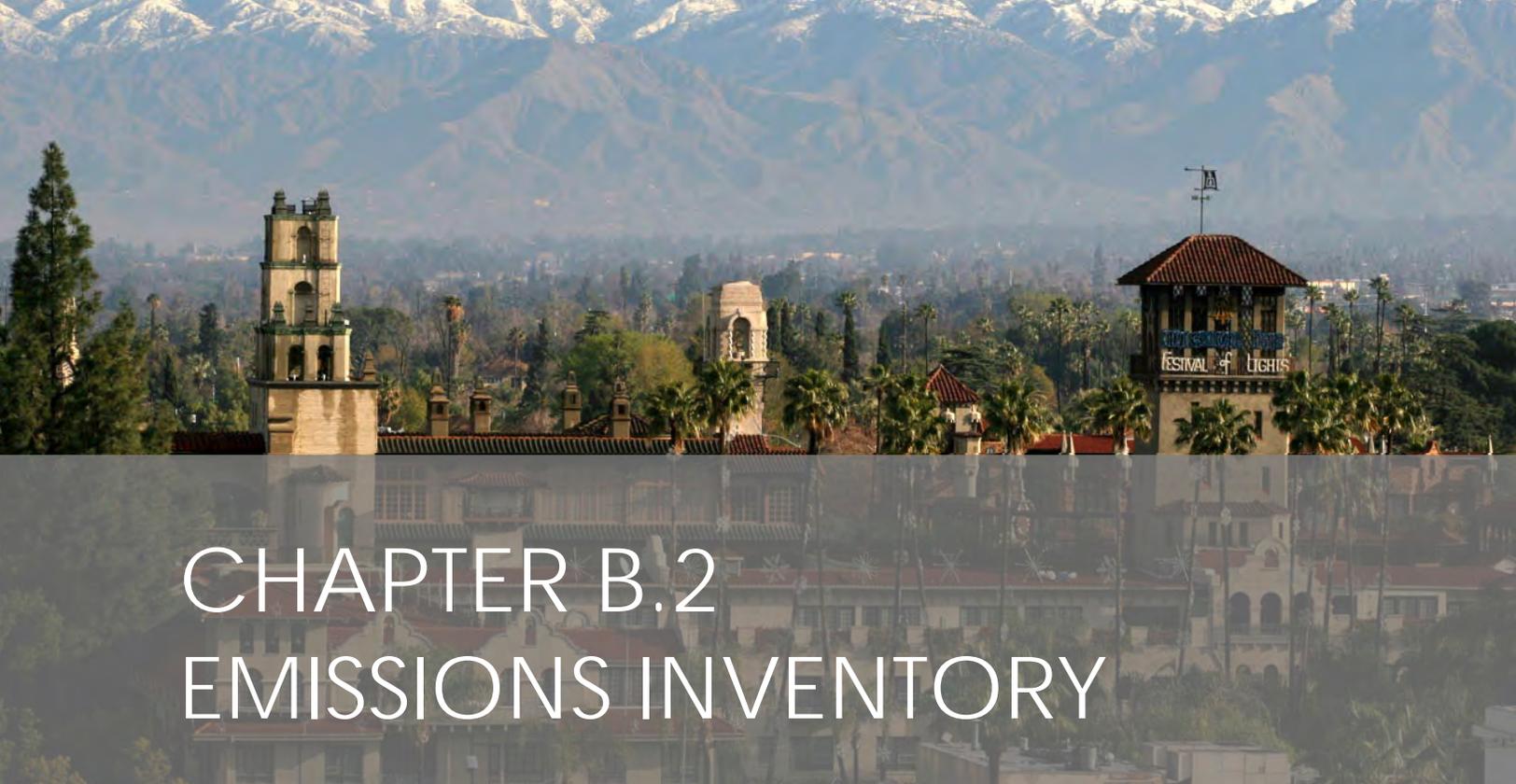
The 2012 Green Action Plan is a product of the City's Clean & Green Task Force, which was created to: build upon the policies of the City's General Plan 2025; ensure that the green design guidelines would be developed and followed; provide a framework for sustainability pilot projects; and initiate partnerships among regional agencies and nearby cities. The Task Force first created the Sustainability Policy Statement (SPS), a document featuring eight main categories: Save Water, Keep it Clean, Make it Solar, Make it Shady, Clean the Air, Save Fuel, Make it Smart and Build Green. Once the SPS was adopted, the Green Action Plan was created to serve as a guidebook that would tie specific tasks to the policies of the SPS. The Green Action Plan focuses on seven key areas of city life: Energy, GHG Emissions, Waste, Urban Design, Urban Nature, Transportation and Water.

The City formed a Green Accountability Performance (GAP) Committee to carry out the tasks and within just two years nearly each of the plan's 38 tasks had been accomplished. The GAP Committee was reimaged to focus on healthy communities, and Riverside was awarded its designation by the United States Center for Disease Control and Prevention (CDC) as an Emerald City, an honor that has gained the City national acclaim. Healthy Communities is the GAP's eighth focus area, with 19 goals and over 50 additional tasks. The Healthy Communities strategies strengthen the Green Action Plan as setting a clear path to sustainability and serving as a living document that reflects the growth of the green movement, the progression of renewable energy, and the fresh ideas of the GAP Committee.

## Riverside Public Utilities

The City of Riverside Public Utilities (RPU) Department provides water and electric services to the residents and businesses of Riverside. Through **Green Riverside**, the City supports and implements the various tasks of the Green Action Plan and other sustainability initiatives, offering multiple energy efficiency programs that reduce consumption, while promoting the City's sustainability goals. **Blue Riverside** includes multiple water conservation programs that reduce water consumption.





# CHAPTER B.2 EMISSIONS INVENTORY

## OVERVIEW

The City of Riverside (City) GHG inventory serves multiple purposes. It quantifies the GHG emissions resulting from activities taking place throughout the City of Riverside, caused by its residents, businesses, and local government (i.e., the Community Inventory), as well as emissions attributed to local government operations (i.e., the Municipal Inventory). The inventory provides an understanding of where GHG emissions are originating, and creates an emissions baseline against which the City can set reduction targets and measure future progress. The inventory further allows the City to develop effective policies, strategies, and programs to reduce emissions.

The Community Inventory encompasses the GHG emissions resulting from activities taking place within the City's boundaries, where the local government has jurisdictional authority, in addition to some activities taking place outside the City boundaries that support activities in the jurisdiction. The Community Inventory includes emissions from the following sectors: residential energy, commercial/industrial energy, transportation, solid waste, and wastewater. The City's Municipal Inventory includes emissions from municipal sources including buildings and facilities, fleet vehicles, streetlights, water conveyance, wastewater treatment, airport operations, solid waste disposal, employee commuting, and municipally-owned power generation.

The City has developed inventories for the calendar years 2007 and 2010 that breakdown GHG emissions by sector, illustrating the contribution of various sources in the community and from municipal operations. The 2007 and 2010 inventories were developed using ICLEI's Clean Air and Climate Protection (CACCP) Software, and various emissions accounting protocols for assessing emissions from the community and municipal operations. A review and analysis of the 2007 and 2010 inventories is included as Appendix C.

The City is a participant in the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan (Subregional CAP), whereby Riverside and 11 additional local jurisdictions prepared baseline inventories to quantify GHG emissions from community contributors and government operations. 2010 was chosen as the inventory base year for 10 of the 12 participating jurisdictions within the WRCOG subregion, including the City of Riverside.

The Riverside Restorative Growthprint – Climate Action Plan (RRG-CAP), while consistent with the WRCOG subregional CAP, is customized to meet the specific needs of the City and designed to be integrated with the many planning projects that are currently underway. In order to show a more comprehensive and locally-focused picture of the City's emissions profile, 2007 is used as the baseline emissions year for the RRG-CAP. Selecting 2007 as the baseline year recognizes important accomplishments the City has already taken to reduce community-wide GHG emissions, most notably the shift from coal-generated electricity to renewable sources, and it ensures that those accomplishments are accounted for in assessing progress toward future goals.

Also influencing the selection of 2007 as the baseline year is the established set of standard elements required for a “qualified” climate action plan (or GHG reduction strategy) that can be used to streamline the analysis of GHG emissions under the streamlining provisions of California Environmental Quality Act (CEQA) Guidelines Section §15183.5. Those standard elements include a provision that the baseline inventory should include one complete calendar year of data for 2008 or earlier (see Section 2.7.2 of the CEQA Guidelines, under Standard Elements of a GHG Reduction Strategy for further guidance). Additional regulatory guidance from California Air Resources Board (CARB),<sup>1</sup> and the precedent set by dozens if not hundreds of communities across California, has established the years 2005 through 2008 as the most commonly used baseline years for community-wide climate action plans and as the basis for setting a significance threshold for CEQA.

This chapter forecasts future GHG emissions using growth factors for population, households, motor vehicles, and job growth that are consistent with the Southern California Association of Governments (SCAG) 2016-2040 Draft Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), which is currently being developed for the region. The City's GHG reduction targets for future years (2020 and 2035) are based on regulatory guidance and best practices established by other local jurisdictions across California, including those participating in the WRCOG Subregional CAP.

## COMMUNITYWIDE INVENTORY

The emission sources and activities chosen for inclusion in the City of Riverside Community Inventory are based on the local government reporting framework developed by ICLEI in their *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. As such, emissions in the Community Inventory are derived from sources located within the jurisdiction and from activities by community members

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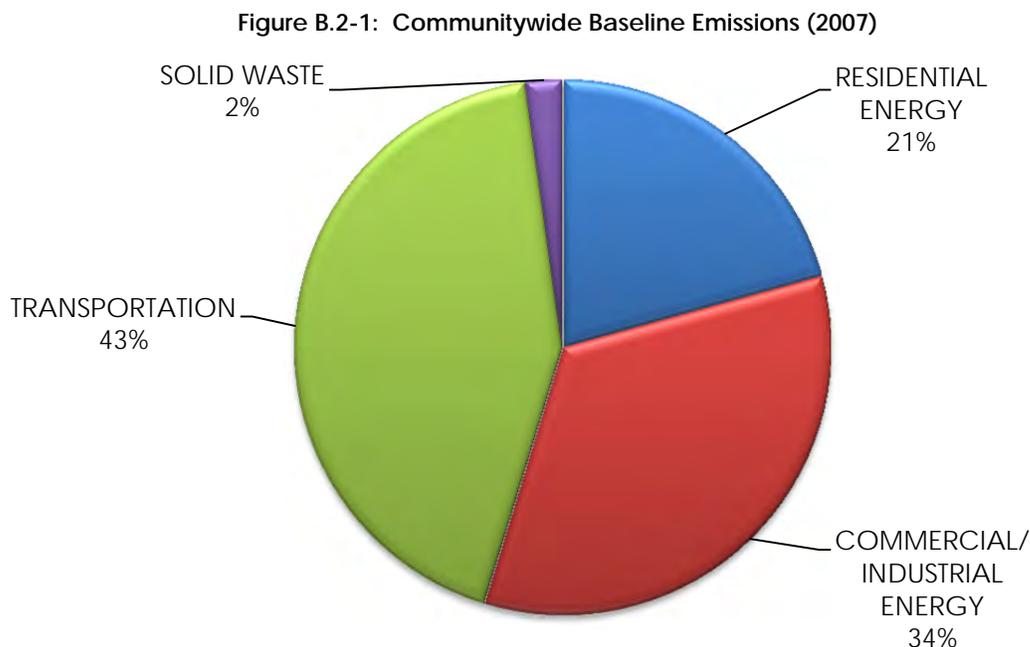
<sup>1</sup> In its Climate Change Scoping Plan of September 2008, CARB recommends that local governments adopt a GHG reduction target consistent with the State's commitment to reach 1990 levels by 2020. This was identified as equivalent to 15% below “current” levels at the time of writing (2008), and is generally interpreted as including the years 2005 through 2008.

for which the local government has significant influence to mitigate over time. This includes activities taking place within the City’s geopolitical boundary where the local government has jurisdictional authority, as well as community-related activities taking place outside of City limits that are attributable to community activities (e.g., landfill waste from City residents). Emissions from sources not subject to significant influence by the City were not included within the inventory, since the local government has limited means to influence material uses and consumption by the community itself. The inventory estimates current emissions using the best available data and methods at the time the inventory was completed. As data collection and estimation methodologies evolve, future inventories may incorporate emission sources that were not captured previously, or may use newer approaches to estimate emissions.

## INVENTORY RESULTS

The Community Inventory includes emissions from residential, commercial, and industrial activities, as well as municipal operations, broken into 4 sectors: Residential, Commercial/Industrial, Transportation, and Solid Waste. Results are further broken down by energy source (e.g., electricity) and solid waste composition (e.g., paper products).

The results of the 2007 Baseline GHG Inventory are summarized in **Table B.2-1** and **Figure B.2-1**. Total community emissions in 2007 were 3,024,066 metric tons (MT) of carbon dioxide equivalent (CO<sub>2</sub>e<sup>2</sup>). Transportation is the biggest contributor to community emissions, followed by Commercial/Industrial operations, Residential activities, and Solid Waste disposal to landfill.



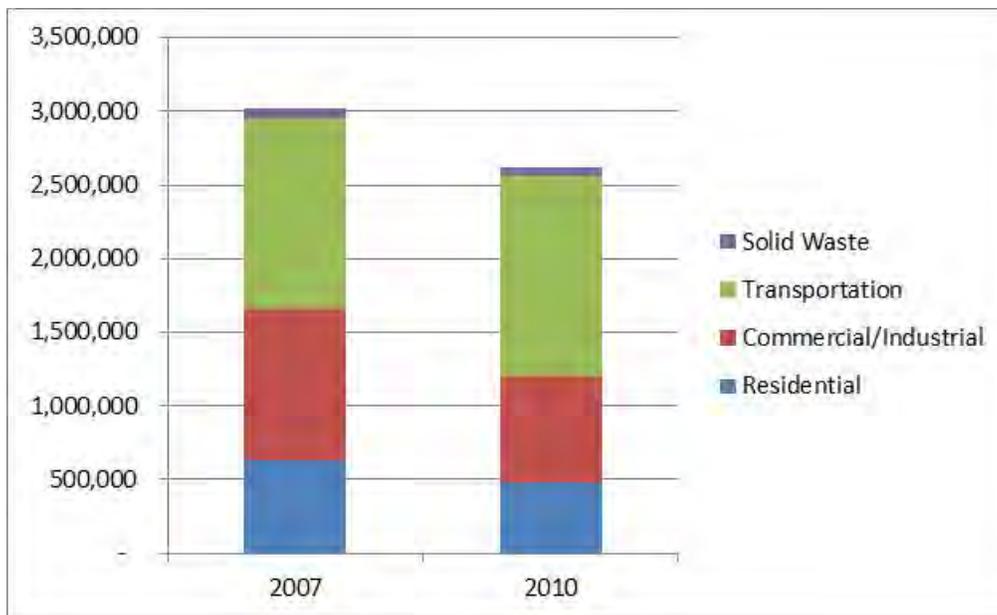
<sup>2</sup> Carbon dioxide equivalent (CO<sub>2</sub>e) includes carbon dioxide, methane (CH<sub>4</sub> and/or nitrous oxide (N<sub>2</sub>O).

**Table B.2-1 – Communitywide Baseline Emissions (2007)**

SECTOR	2007 (MT CO <sub>2</sub> e/yr)	Percent of Total
Residential Energy Use	626,136	20.7%
Commercial/ Industrial Energy Use	1,028,804	34.0%
Transportation	1,301,784	43.0%
Solid Waste Generation	67,342	2.2%
<b>Total Inventory</b>	<b>3,024,066</b>	<b>100%</b>

**Figure B.2-2** compares the 2010 emissions inventory (quantified for the WRCOG Subregional CAP) with the 2007 baseline. Communitywide emissions decreased by approximately 13.4 percent, with three of the four sectors experiencing a decrease; only transportation emissions increased. The primary reason for the large drop in Residential and Commercial/Industrial emissions from 2007 to 2010 was a reduction in the carbon intensity of the City’s electricity portfolio, as supplied by municipally-owned Riverside Public Utilities (RPU). The underlying reason for the significant decrease is described in more detail in the following section on the Municipal Inventory. The resulting impact on the wider community was a 23% reduction in Residential emissions and a 30% reduction in Commercial/Industrial emissions. Overall, community-wide emissions fell by 13% from 2007 to 2010.

**Figure B.2-2: 2007 and 2010 Communitywide GHG Emissions by Sector (MT CO<sub>2</sub>e)**



Use of a 2007 baseline year in the RRG-CAP captures these important reductions in GHG emissions that were the direct result of City policy and related actions. The City's Residential and Commercial/Industrial sectors also used less energy, likely as a result of the economic downturn experienced over the period along with the City's ongoing energy efficiency and renewable energy programs. Solid Waste emissions decreased slightly due to a higher percentage of the City's waste being diverted from the landfill (i.e., increased recycling).

## GOVERNMENT OPERATIONS INVENTORY

Emissions from municipal operations are included in the Community Inventory, but a separate Municipal Inventory is included to provide the City with the detail needed to target reductions in these emissions. The emission sources and activities included in the Municipal Inventory are consistent with the Local Government Operations Protocol (LGOP), which was developed by the California Air Resources Board (CARB), the California Climate Action Registry (CCAR), and Local Governments for Sustainability (ICLEI) in collaboration with The Climate Registry (TCR). The LGOP provides a standardized set of guidelines and methodologies to assist local governments with quantifying and reporting GHG emissions associated with their operations. ICLEI's CACP Software was used to generate GHG emissions estimates based on conversion factors for electricity and natural gas consumption, as well as conversion factors for liquid fuel consumption and modeling of emissions from solid waste disposed in landfills.

The Municipal Inventory includes emissions from all sources of GHGs under the direct control of the City, including Buildings and Facilities, Streetlights, Fleet Vehicles, Water Conveyance (both within the City boundary and upstream of the City), Wastewater Treatment, the City-operated Airport, government-generated Solid Waste, Employee Commuting, and most significantly, emissions from Municipal Power Generation by RPU<sup>3</sup>.

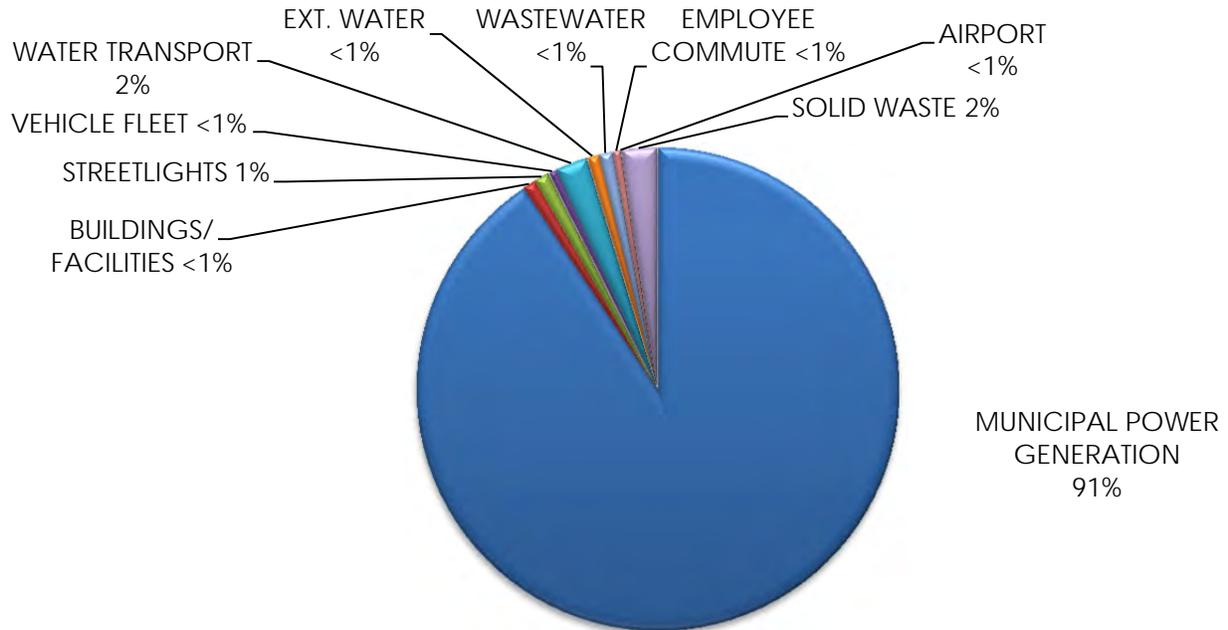
## INVENTORY RESULTS

As shown in **Table B.2-2**, municipal operations were responsible for approximately 1,362,587 MT CO<sub>2</sub>e in 2007. Indirect GHG emissions associated with RPU operations have an outsized impact on the Municipal Inventory, representing approximately 91% of the 2007 inventory. **Figure B.2-3** shows graphically how much influence RPU has on municipal emissions. The primary sources constituting the rest of the inventory are government-generated Solid Waste and Water Transport (both within the City and upstream of the City from original sources), followed by roughly equal contributions from Buildings and Facilities, Streetlights, and Employee Commuting, Vehicle Fleet, and Wastewater Treatment. Airport facilities provide a relatively small contribution to total emissions.

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<sup>3</sup> RPU is a city-owned local electric and water utility with more than 107,000 metered electric customers and 64,000 metered water customers

**Figure B.2-3: Government Operations Baseline Emissions (2007)**

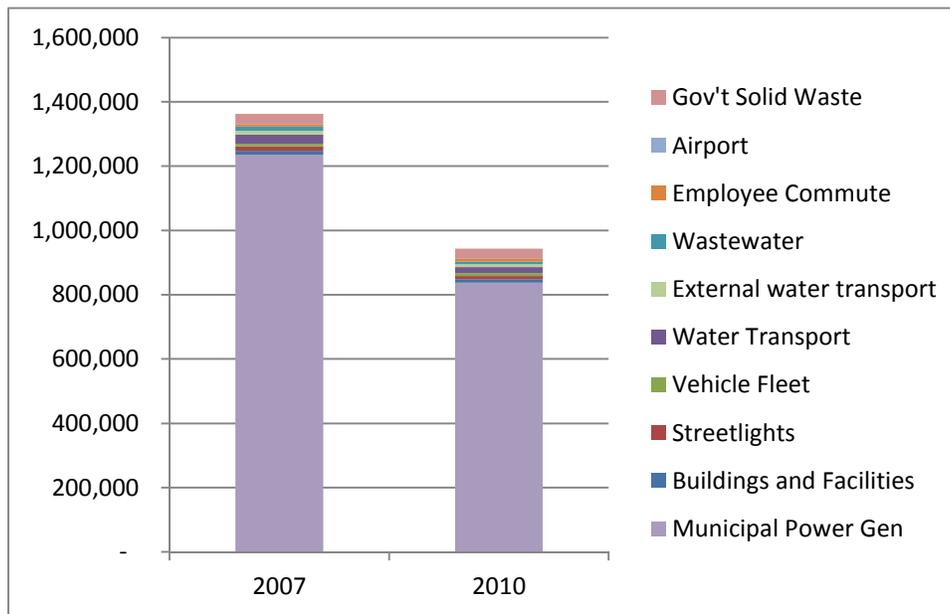


**Table B.2-2 – Government Operations Baseline Emissions (2007)**

SECTOR	2007 (MT CO <sub>2</sub> e/yr)	Percent of Total
Buildings and Facilities	12,734	0.9%
Streetlights	13,523	1.0%
Vehicle Fleet	7,700	0.6%
Water Transport (within City)	29,167	2.1%
External Water Transport (upstream of City)	11,227	0.8%
Wastewater	12,717	0.9%
Employee Commute	7,413	0.5%
Airport	304	0.0%
Municipal Solid Waste	32,465	2.4%
Municipal Power Generation	1,235,337	90.7%
<b>Total Inventory</b>	<b>1,362,587</b>	<b>100.0%</b>

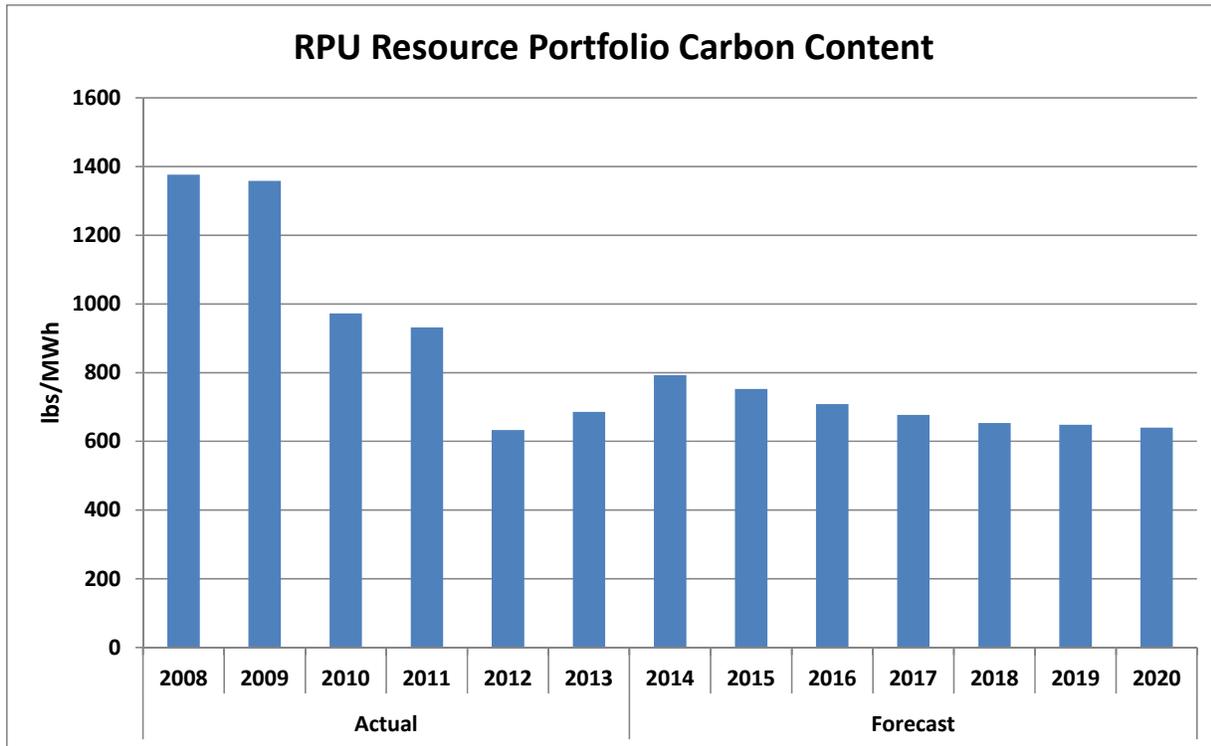
**Figure B.2-4** compares the 2010 municipal operations inventory (quantified for the WRCOG Subregional CAP) with the 2007 baseline. During the period, emissions associated with RPU fell by more than 32%, primarily due to a shift from purchasing coal-produced electricity to more low-carbon electricity sources over that time period.

**Figure 2-4: 2007 and 2010 Municipal Operations GHG Emissions by Sector (MT CO<sub>2</sub>e)**



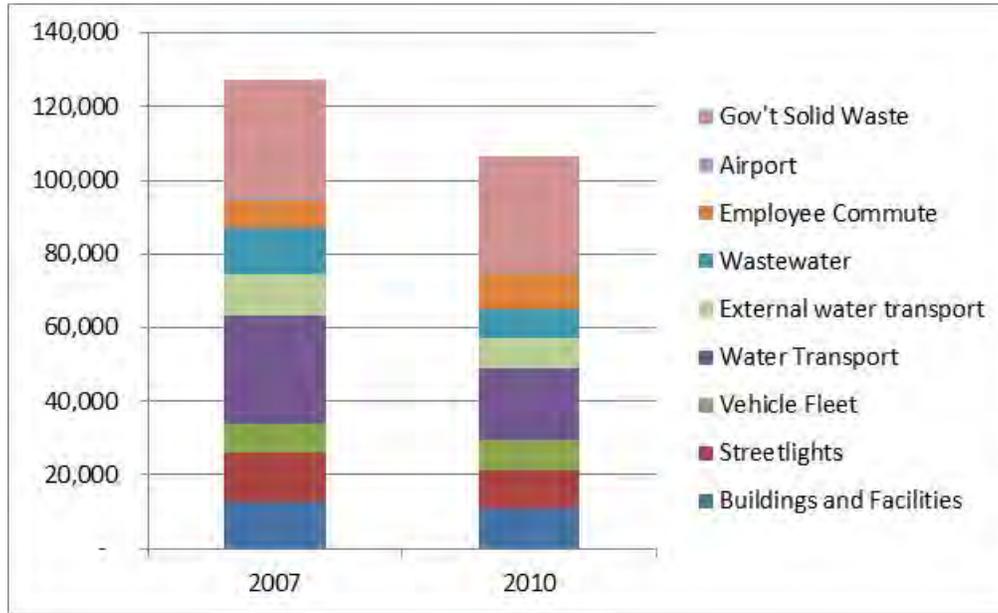
**Figure B.2-5** shows how the carbon content of RPU’s electricity decreased between 2007 and 2010. Although not shown in the figure, the carbon content continued to decrease through 2012. Prior to 2007, RPU began positioning itself to achieve significant reductions in GHG emissions associated with its electricity portfolio by shifting its resource mix from carbon intensive sources to renewable sources. In 2003, RPU was one of the first electric utilities in California to voluntarily procure renewable resources (the Salton Sea geothermal resource in Imperial Valley and the Wintec wind resource in Palm Springs) to meet a portion of Riverside’s electric power needs. This commitment accelerated in 2005 when RPU amended its contract with Salton Sea geothermal resource to more than double its procurement of renewable energy. To further its commitment to clean power, RPU terminated its power purchase agreement with Deseret Generation and Transmission Cooperative for Hunter and Bonanza coal generating plants in Utah at the end of 2009. The impact of these changes in the City’s electricity portfolio, which occurred primarily in the 2009-2010 timeframe, is clearly observed in Figure B.2-5. These changes in Riverside’s electricity portfolio are also the primary reason that community-wide emissions fell by more than 13% from 2007 to 2010, as illustrated in Figure B.2-2.

Figure B.2-5: City of Riverside Public Utilities – Portfolio Carbon Content Over Time



Since emissions associated with the electricity provided by RPU represent such a large percentage of emissions from municipal operations, it is useful to analyze the Municipal Inventory excluding the RPU-related emissions, to provide a clearer picture of the relative contributions from other municipal sectors. **Figure B.2-6** shows the 2007 and 2010 Municipal Inventories without the RPU-related emissions. Over this period, the emissions reductions associated with Water Transport, Buildings and Facilities, Streetlights, and Wastewater Treatment, and Airport facilities are largely the result of the lower carbon intensity of the City’s electricity supply.

Figure B.2-6: Municipal GHG Emissions by Sector (MT CO<sub>2</sub>e), Excluding RPU



## EMISSIONS FORECASTS

GHG emissions forecasts for 2020 and 2035 were developed under a business-as-usual (BAU) scenario (i.e., a scenario that does not include regulatory actions or GHG reduction measures that were not in place by the 2007 base year), and then adjusted for the expected impact of state-wide emissions reduction measures, such as updates to building energy standards, and implementation of state-wide programs to decrease emissions from on-road vehicles.

### BUSINESS-AS-USUAL SCENARIO

BAU GHG emissions forecasts for 2020 and 2035 were developed using growth factors that are consistent with the 2016 RTP/SCS being developed for the SCAG region. Anticipated growth rates for population, households, and employment in the City of Riverside were used to derive emissions growth factors for the Residential, Commercial/Industrial, Transportation, and Solid Waste sectors of the Community Inventory, to forecast emissions in 2020 and 2035. These factors differ slightly from those used for the WRCOG Subregional CAP, with the primary difference being relatively slower residential and commercial growth forecasts by the RTP/SCS through 2020.

## COMMUNITY-WIDE FORECASTS

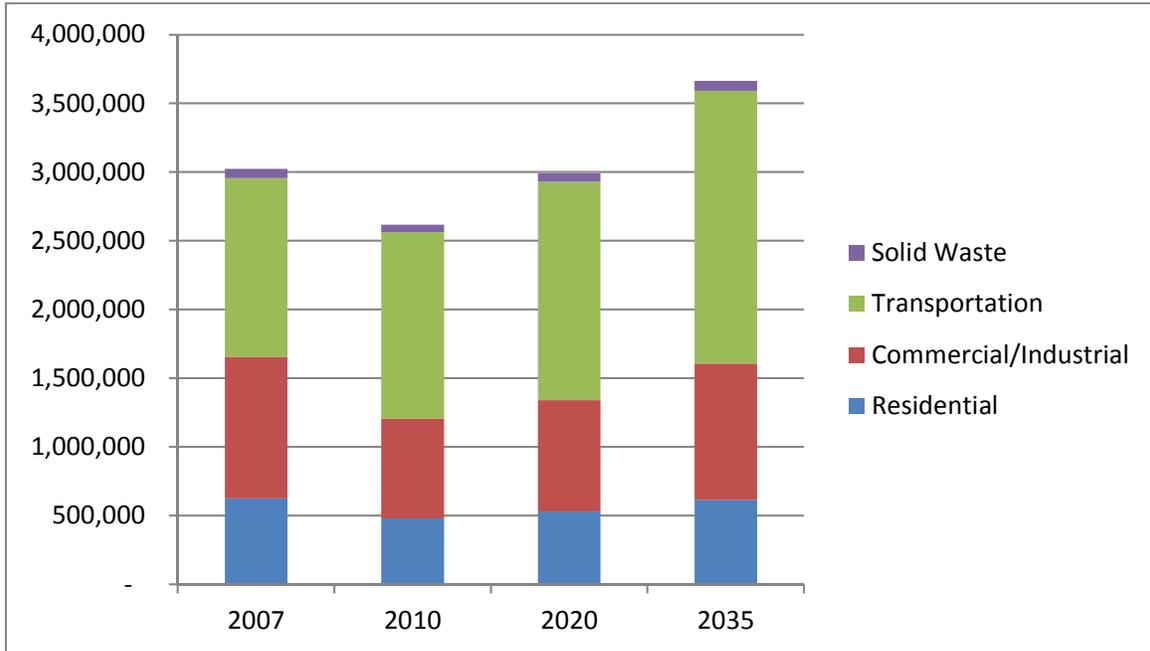
**Table B.2-3** provides a summary of emissions forecasts for the four community sectors. For purposes of comparison, Table B.2-3 also includes the results from the 2010 inventory. Household numbers were used as a growth proxy for Residential emissions; Commercial employment was used to represent Commercial/Industrial emissions growth; Transportation (vehicle miles traveled and associated emissions) growth was taken directly from the modeling results using the County’s traffic model (known as RIVTAM); Service population (residents plus numbers employed) was used as a proxy for Solid Waste emissions.

**Figure B.2-7** shows how community emissions are projected to increase by 2020 and 2035 using the BAU forecasts. Looking forward from the latest inventory (2010) total community-wide GHG emissions are expected to grow 14.3% by 2020 and 40.0% by 2035.

**Table B.2-3 – Communitywide Business-As-Usual Emissions Forecast**

SECTOR	2007 Baseline (MT CO <sub>2</sub> e/yr)	2010 Baseline (MT CO <sub>2</sub> e/yr)	2020 Forecast (MT CO <sub>2</sub> e/yr)	Growth Rate 2007-2020	2035 Forecast (MT CO <sub>2</sub> e/yr)	Growth Rate 2007-2035
Residential Energy Use	626,136	481,903	543,134	10.1%	617,156	28.1%
Commercial/ Industrial Energy Use	1,028,804	722,321	809,594	12.1%	989,264	37.0%
Transportation	1,301,784	1,358,647	1,590,544	17.1%	1,985,260	46.1%
Solid Waste Generation	67,342	54,669	60,939	11.5%	71,525	30.8%
<b>TOTAL INVENTORY</b>	<b>3,024,066</b>	<b>2,617,540</b>	<b>3,004,212</b>	<b>14.3%</b>	<b>3,663,205</b>	<b>40.0%</b>

Figure B.2-7: Communitywide Business-As-Usual Emissions Forecast



## MUNICIPAL FORECASTS

For projecting municipal emissions it was assumed that emissions from Municipal Power Generation, Water Transport, Streetlights, and Wastewater Treatment will grow commensurate with the City’s service population (residents plus numbers employed locally), whereas other municipal operations sectors would grow in proportion to municipal employment trends. Municipal employment is anticipated to grow at a slower rate than the City population from 2010 to 2020 and 2035. **Table B.2-4** provides a summary of emissions forecasts for the ten local government sectors. **Figure B.2-8** shows how emissions from municipal operations are projected to increase by 2020 and 2035 using the BAU forecasts.

From 2010 onwards, total GHG emissions from municipal operations are expected to grow 10.8% by 2020 and 29.1% by 2035. Excluding emission from RPU electricity, GHG emissions from municipal operations are expected to grow 5.6% by 2020 and 15.3% by 2035. **Figure B.2-9** shows municipal emissions forecasts that exclude the RPU-related emissions to provide a clearer picture of how the other sectors influence the inventory and forecasts over time.

**Table B.2-3 – Municipal Business-As-Usual Emissions Forecast**

SECTOR	2007 Baseline (MT CO <sub>2</sub> e/yr)	2010 Baseline (MT CO <sub>2</sub> e/yr)	2020 Forecast (MT CO <sub>2</sub> e/yr)	Growth Rate 2007-2020	2035 Forecast (MT CO <sub>2</sub> e/yr)	Growth Rate 2007- 2035
Buildings and Facilities	12,734	10,939	11,065	1.2%	11,324	3.5%
Streetlights	13,523	10,155	11,320	11.5%	13,286	30.8%
Vehicle Fleet	7,700	8,402	8,499	1.2%	8,698	3.5%
Water Transport	29,167	19,471	21,704	11.5%	25,475	30.8%
External water transport	11,227	8,164	9,100	11.5%	10,681	30.8%
Wastewater	12,717	7,927	8,836	11.5%	10,371	30.8%
Employee Commute	7,413	10,045	10,161	1.2%	10,399	3.5%
Airport	304	293	296	1.2%	303	3.5%
Municipal Solid Waste	32,465	30,900	31,256	1.2%	31,988	3.5%
Municipal Power Gen	1,235,337	837,170	933,190	11.5%	1,095,295	30.8%
<b>TOTAL INVENTORY</b>	<b>1,362,587</b>	<b>943,466</b>	<b>1,045,427</b>	<b>10.8%</b>	<b>1,217,821</b>	<b>29.1%</b>
Excluding Power Gen	127,250	106,296	112,237	5.6%	122,525	15.3%

Figure B.2-8: Municipal Business-As-Usual Emissions Forecast

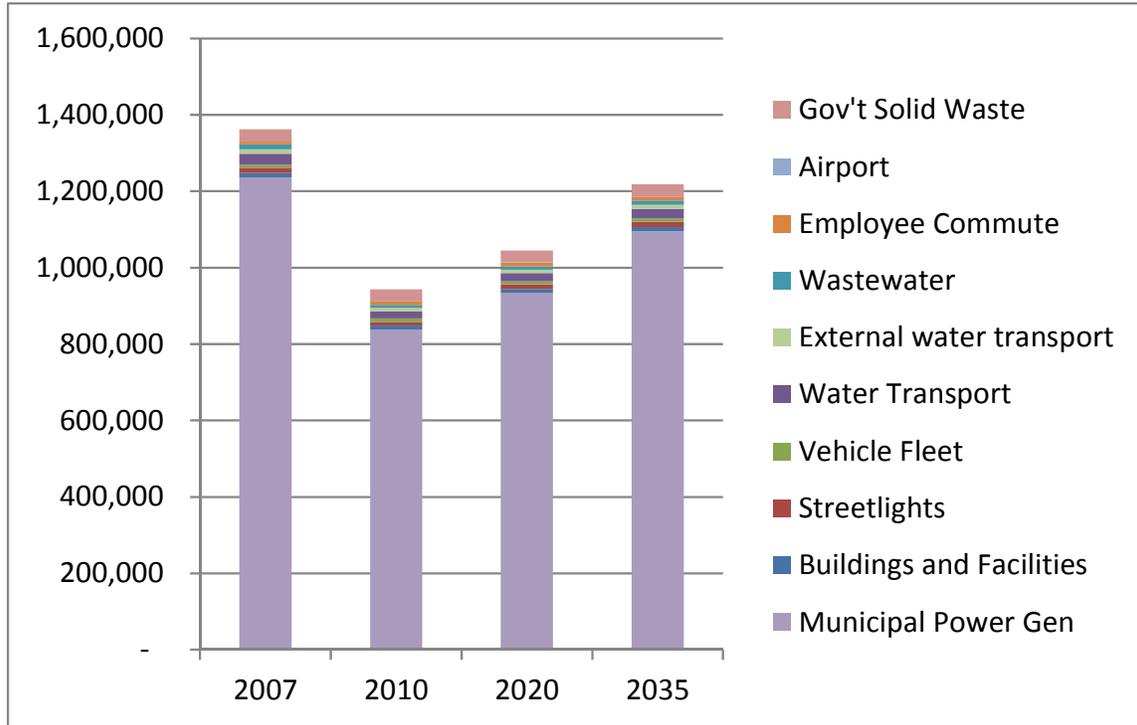


Figure B.2-9: Municipal Business-As-Usual Emissions Forecast, Excluding RPU

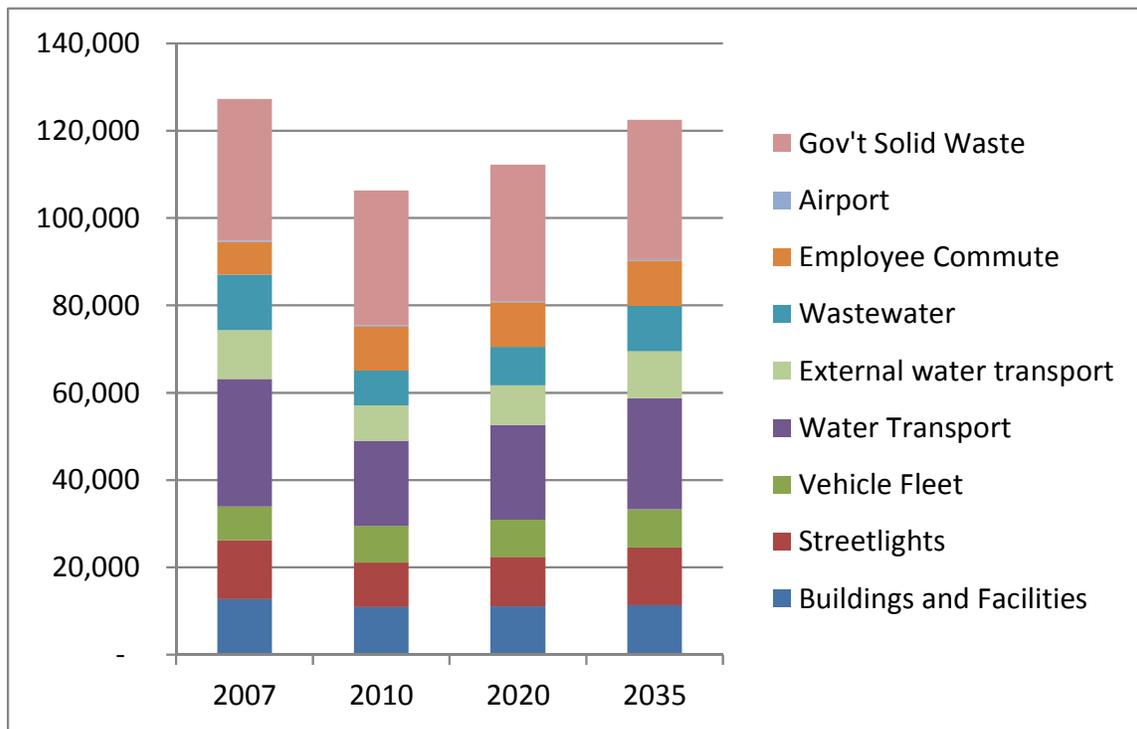
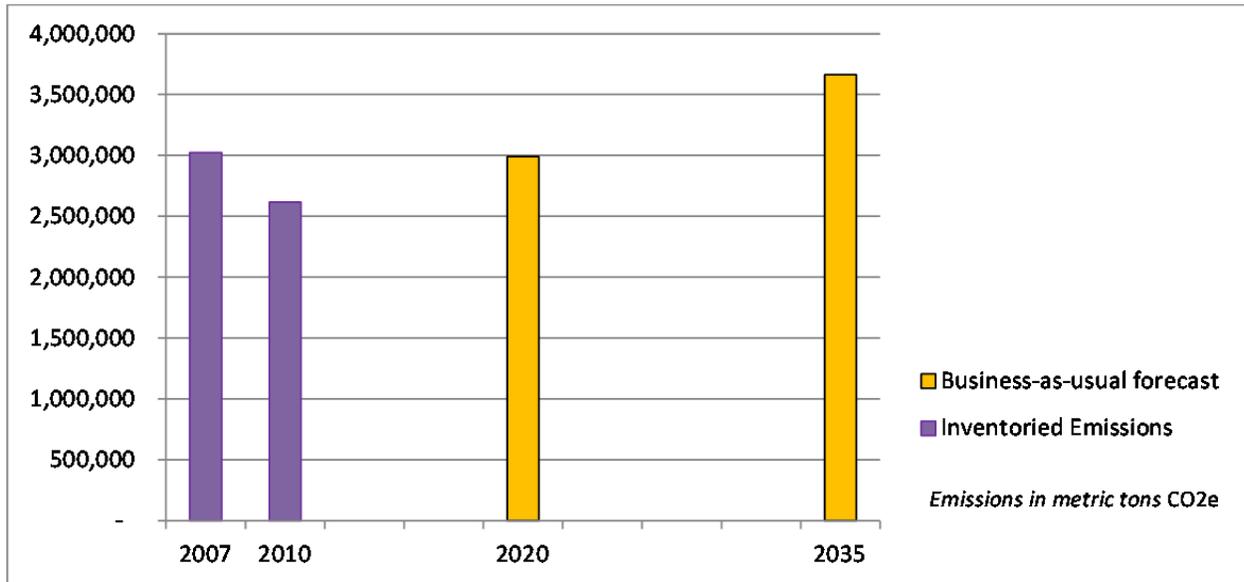


Figure B.2-10 shows the contribution to overall emissions from municipal operations, RPU electricity, and from the rest of the community, starting in 2007, continuing through 2010 and forecasted out to 2035 using business-as-usual assumption.

Figure B.2-10: City of Riverside GHG Emissions Forecast through 2035  
(values in metric tons CO<sub>2</sub>e)



## EMISSIONS REDUCTION TARGETS

Through participation in the WRCOG Subregional CAP, the City of Riverside has adopted a 2020 community-wide emissions target of 2,224,908 MT CO<sub>2</sub>e, representing a 15% reduction from the City’s 2010 emissions inventory. A 15% reduction target is deemed by CARB and the California Attorney General to be consistent with the state-wide AB 32 goal of reducing emissions to 1990 levels<sup>4</sup> and is in line with current best practice for developing climate action plans. The Subregional CAP does not establish a reduction target for 2035 or future years; however the Subregional CAP identifies a reduction goal of 49% below baseline emissions levels to set the WRCOG subregion on a trajectory to meet targets identified in SB 375 and Executive Order (EO) S-3-05 recognizing that information, methodologies, and data availability may change between now and 2035.

<sup>4</sup> In its Climate Change Scoping Plan of September 2008, CARB recommends that local governments adopt a GHG reduction target consistent with the State’s commitment to reach 1990 levels by 2020. This is identified as equivalent to 15% below “current” levels at the time of writing (2008).

## COMMUNITY EMISSIONS

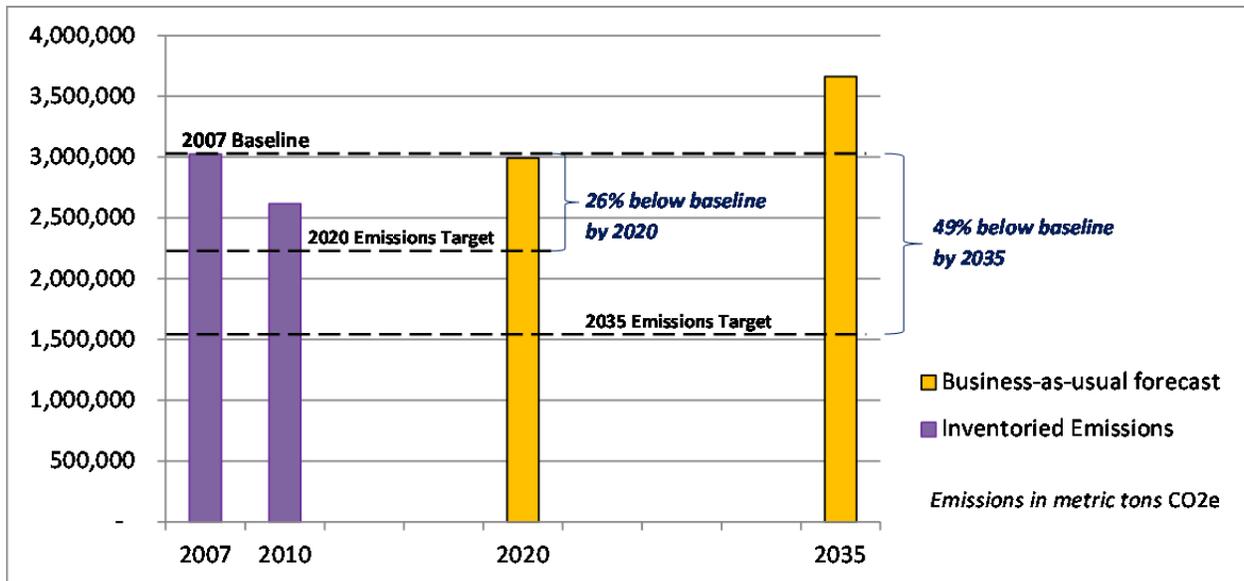
### 2020 Target

The City is committed to the 2020 target for City of Riverside in the WRCOG Subregional CAP. The RRG-CAP will remain consistent with that target of 2,224,908 MT CO<sub>2</sub>e per year, which is 26.4% below the City's 2007 baseline and 15% below 2010 emissions. This represents a reduction of 779,304 MT CO<sub>2</sub>e from the 2020 BAU forecast. The communitywide emissions reduction target for 2020 is depicted graphically in **Figure B.2-11**, which depicts what community emissions would look like through the year 2035 if sufficient reductions were achieved at the same percentage across all sectors.

### 2035 Target

The Subregional CAP suggests a goal for 2035 equivalent to 49 percent below baseline emissions. This is derived from a straight-line interpolation of the state-wide AB 32 goal and Executive Order (EO) S-3-05, which aims for 80% below 1990 levels by 2050.<sup>5</sup> Using this approach, the City of Riverside is setting its 2035 GHG emissions goal to 49% below the 2007 baseline, which is equivalent to 1,542,274 MT CO<sub>2</sub>e per year. This represents a reduction of 2,120,931 MT CO<sub>2</sub>e from the 2035 BAU forecast. The community-wide emissions reduction target for 2035 is also depicted graphically in Figure 2-11.

Figure B.2-11: City of Riverside GHG Reduction Targets for 2020 and 2035  
(values in metric tons CO<sub>2</sub>e)



<sup>5</sup> 2035 is the midpoint between 2020 and 2050. The 49% reduction is equivalent to 40% below 1990 levels (an additional 40% below 1990 levels =  $0.6 \times (0.85 \times \text{baseline}) = 51\%$  of baseline, equivalent to a 49% reduction)

## MUNICIPAL OPERATIONS EMISSIONS

Though the municipal operations emissions are a subset of the emissions from the overall community, a reduction target for municipal operations is appropriate because many of the measures included in the RRG-CAP apply to facilities or operations under the direct control of the City, and because the City will continue to lead by example in meeting the state's GHG emissions goals. The municipal emissions targets below do not include emissions from the RPU, since those emissions are included in the communitywide target, and they far outweigh emissions from other sources in the Municipal Inventory affected by the policies and operations of City departments that control those sources.<sup>6</sup>

### **2020 Target**

Applying the 15% reduction criteria to the City's 2007 baseline emissions from municipal operations (excluding RPU) results in a 2020 target of 108,163 MT CO<sub>2</sub>e, representing a reduction of 4,075 MT CO<sub>2</sub>e from the 2020 BAU forecast.

### **2035 Target**

Applying the 49% reduction criteria to the City's 2007 baseline emissions from municipal operations (excluding RPU) results in a 2035 target of 64,898 MT CO<sub>2</sub>e, representing a reduction of 57,628 MT CO<sub>2</sub>e from the 2020 BAU forecast.

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<sup>6</sup> Note: The Subregional Climate Action Plan does not set targets for municipal operations emissions.



# CHAPTER B.3 REDUCTION MEASURES

## PROCESS AND OVERVIEW

The emissions forecasts described in Chapter 2 of the Riverside Restorative Growthprint Climate Action Plan (RRG-CAP) illustrate the need for the City to implement strategies to reduce GHG emissions by 2020 and beyond. This chapter discusses how the City will achieve its 2020 and 2035 reduction targets through anticipated reductions from State and Federal legislation, measures the City has committed to in the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan (Subregional CAP), and additional local measures that the City will implement.

The RRG-CAP expands upon the efforts of the WRCOG Subregional CAP, employing local measures to help the City achieve its GHG reduction target for 2035. The process of developing the WRCOG Subregional CAP included ongoing coordination and information sharing among participating jurisdictions. The WRCOG Planning Directors' Technical Advisory Committee (PD TAC) served as the primary technical working group. The PD TAC met regularly over the course of three years to discuss the Subregional CAP and provide feedback. Perspectives from jurisdictions participating in the Subregional CAP and those in the subregion who had already prepared a local CAP were shared. In addition, WRCOG staff met individually with each participating jurisdiction to review emissions inventories, discuss potential emissions reduction measures and participation levels, and review Draft Versions of the Subregional CAP. Regular presentations were made to the WRCOG Public Works Committee, TAC, and Executive Committee (all committees include representatives from the City of Riverside) to keep jurisdictional staff, management officials, and elected leaders informed.

To further develop local GHG reduction measures for the RRG-CAP, the City conducted a more detailed assessment of local strategies and actions related to the measures in the Subregional CAP, expanding the discussion and analysis with respect to implementation (for post-2020 in particular), costs and funding, performance metrics, and local co-benefits. Some new measures were added, many of which support the

subregional measures. In addition, the discussions identify local economic opportunities that represent points of integration with the Riverside Restorative Growthprint Economic Prosperity Action Plan (RRG-EPAP), which supports local, regional, and global GHG reductions through local entrepreneurship.

The Green Accountability Performance (GAP) Committee, a group of dedicated volunteers that together ensure the successful implementation of the City's Green Action Plan, served as the primary technical working group for the RRG-CAP. The GAP met quarterly over the course of a year to discuss the RRG-CAP and provide feedback, predominantly on the reduction measures.

In addition, the City conducted community outreach that included several public presentations and meetings to inform and involve residents and stakeholders in the plan development and decision-making process. Presentations and updates were made to the Greater Riverside Chamber of Commerce Economic Development Council to gather input from the local business community and further develop synergy between the RRG-CAP and RRG-EPAP planning efforts. The City also engaged with University of California, Riverside (UCR) by presenting to the Chancellor's Committee on Sustainability Executive Committee and conducting interviews with key UCR staff responsible for implementation of UCR's Long Range Development Plan, Sustainability Plan and Carbon Neutral Plan. UCR shared their best practices and lessons learned. These discussions were particularly informative in refining reduction measures and developing the RRG-CAP implementation and monitoring plan. **Appendix C** provides a comprehensive summary of the above mentioned meetings and presentations.



## COORDINATION WITH THE RRG-EPAP

The City recognizes that achieving the deep GHG reductions needed to reach its 2035 GHG reduction target will depend on market transformations that value clean energy and low-carbon solutions to meeting the everyday needs of its residents and businesses. The companion document to the RRG-CAP, the RRG-EPAP is intended to accelerate market penetration of new technologies and service solutions that reduce energy

demand, electrify vehicle fleets, and decarbonize electricity and fuel supplies. This directly supports state policy, as expressed by the AB 32 Scoping Plan and the Governor's Office of Planning and Research (OPR) *Environmental Goals and Policy Report*, which calls for commitments to support innovation and entrepreneurial business enterprises that can greatly reduce GHG emissions at the state and local levels. The RRG-EPAP represents a plan to steer investment and promote local entrepreneurial activity to achieve deep GHG reductions locally, but also to the development of technologies that can be exported to the rest of the state throughout the world to reduce GHG emissions globally.

## SUMMARY OF REDUCTIONS

### STATE AND FEDERAL REDUCTIONS

In addition to local measures that City of Riverside will implement within the city, significant emissions reductions are achieved through the efforts of federal, state, and regional programs. State and federal emissions reductions are primarily achieved through regulations, such as efficiency standards for passenger vehicles (e.g., Pavley I standards), reduction in carbon content of transportation fuels (e.g., the Low Carbon Fuel Standard), and minimum renewable energy supply requirements for utilities (e.g., the Renewables Portfolio Standard). Measures regulated and implemented by the state and federal government achieve reductions without additional action by the city. That is, even if vehicle miles traveled (VMT) within the city remain constant over time, resulting GHG emissions would decrease because as new vehicles are purchased, they would in general be more GHG-efficient than those they replace.

Some state and federal programs also require local action within communities. The California Green Building Standards Code (CALGreen) requires, at a minimum, that new buildings and renovations throughout California meet certain design standards. New residential and commercial buildings must meet certain baseline efficiency and sustainability standards. Additional voluntary building code provisions, known as Tier 1 and Tier 2 requirements, can be adopted locally, providing even greater energy savings and emissions reductions.

The Water Conservation Act of 2009, known as SB X7-7, requires the State to reduce urban per capita water use 20% by 2020. Regional Urban Water Management Plans provide strategies and create incentives to achieve these targets, but regional and local implementation strategies vary and consumer participation is necessary to realize water use reductions. Local implementation strategies typically include tiered pricing or water budget-based (i.e., pricing water according to the amount consumed); water-efficient landscape requirements for water and irrigation management, planting location, and plant materials; and incentives where a regional or local utility pays for turf grass removal and replacement with efficiently-irrigated landscaping.

## REGIONAL REDUCTIONS

Regional programs are those developed or administered at a level of government above the local jurisdiction but below the state. These programs often are more responsive to local context than statewide programs. They require local participation but do not require local administration to achieve GHG reductions.

The WRCOG HERO Program, described in Chapter 1, is a regionally-administered program that offers financing options for home and business owners to retrofit or install energy-efficient, water conservation, and/or renewable energy generating products. This program is voluntary and therefore also up to individuals to implement, but regional administration lowers the burden to local governments and has already led to demonstrable reductions in the subregion since the HERO Program's inception in 2011.

WRCOG also administers the Transportation Uniform Mitigation Fee (TUMF) Program. The TUMF Program establishes a funding source to mitigate the cumulative regional transportation impacts of new development on regional arterials. TUMF fees are collected locally, and WRCOG works with its member agencies to identify priority projects to fund using fee revenues in order to reduce subregional transportation impacts caused by development. Facilitating movement on roads, by encouraging non-motorized transportation, increasing access to transit, or easing congestion on critical roadways may lead to GHG reductions. Therefore, TUMF can fund projects that meet this objective. Because the project relies on locally-collected fees, available funding depends on the economic vitality and development opportunities in the region.

A number of other transportation-related programs and projects under the primary control of the Riverside Transit Agency (RTA), Riverside County Transportation Commission (RCTC), California Department of Transportation (Caltrans), and other transportation entities are being implemented to reduce GHG emissions. The long-term planning of major transportation infrastructure is not under the City of Riverside's direct control; however, the City participates in transportation planning decisions in a way that benefits the subregion. The City of Riverside is in direct control of land uses, which can dictate how future transit is shaped. Individuals also play an important role in how they choose to move throughout the subregion; therefore, while the City does not implement these programs, local input is critical to their success. Additional projects anticipated to reduce the City's GHG emissions include California High Speed Rail, Metrolink expansion, express lanes, congestion pricing, goods movement measures, high frequency transit service, and electric vehicle infrastructure implementation.

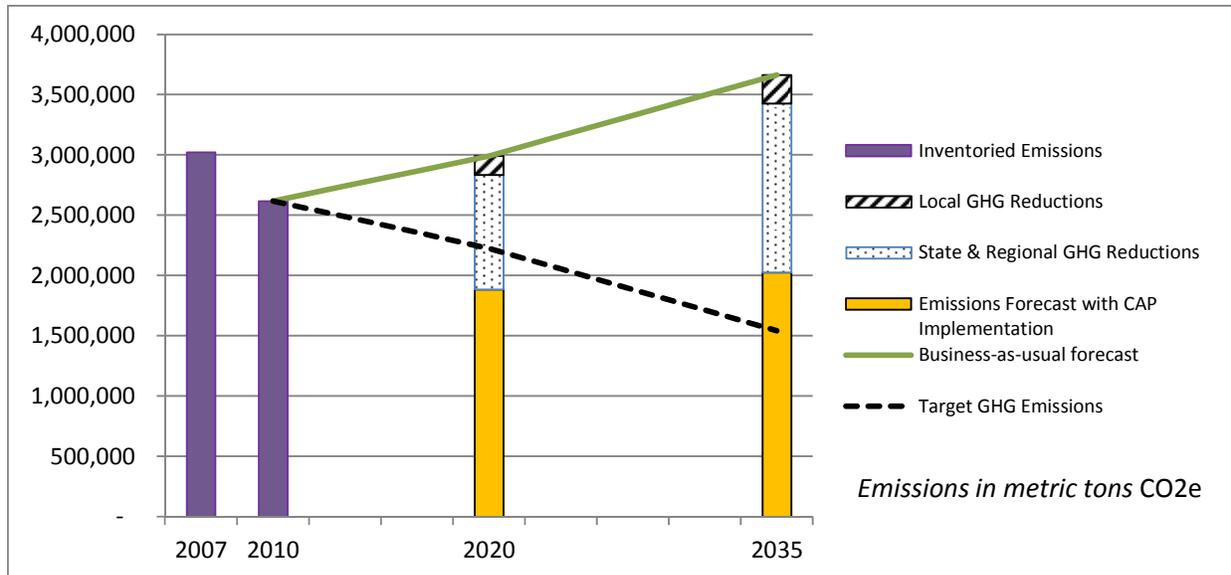
Federal, state and regional measures in the RRG CAP are organized into four major sectors, similar to the emissions inventory:

- Energy – including electricity and natural gas consumption
- Transportation and Land Use
- Water
- Solid Waste

Through federal, state, and regional measures implemented at the subregional level, the City of Riverside anticipates reductions of 949,572 MTCO<sub>2e</sub> and 1,398,918 MTCO<sub>2e</sub> from the City's 2020 and 2035 BAU emissions forecasts. **Figure B.3-1** shows the impact

that the RRG-CAP measures have on reducing GHG reductions from business-as-usual projections of community-wide GHG emissions.

**Figure B.3-1: Impact of RRG-CAP Implementation on Community-wide GHG Emissions**



## LOCAL REDUCTIONS

While federal, state, and regional measures are critical to meet emission reduction goals, local government programs and policies, as well as choices made by the City's local residents and business owners, will determine the City's ability to achieve the overall emissions reduction targets for 2020 and 2035. Through outreach campaigns, incentives, zoning changes, ordinances, and changes in local government operations, the City will achieve the additional local reductions identified in the RRG-CAP.

Local reduction measures in the RRG-CAP are organized into four major sectors, similar to the emissions inventory:

- Energy – including electricity and natural gas consumption
- Transportation and Land Use
- Water
- Solid Waste

Through locally-implemented measures, the City of Riverside anticipates reductions of 189,399 MTCO<sub>2</sub>e and 275,273 MTCO<sub>2</sub>e from the City's 2020 and 2035 BAU emissions forecasts, respectively, as illustrated in **Figure B.3-1**. This is more than enough to reach the City's 2020 target, but falls short of the 2035 target by approximately 446,740 MTCO<sub>2</sub>e.

## MEASURE DESCRIPTION AND ANALYSIS

Individual measures were evaluated to identify the greatest opportunities for GHG reduction that can be achieved with minimum cost. For each measure included in the RRG-CAP, a general description is provided, along with a timeframe and specific actions that the City is taking (or intends to take) to implement the measure. For those measures included in the WRCOG Subregional CAP, the City of Riverside's participation level is referenced (e.g., Silver, Gold, or Platinum), and the 2020 annual GHG reduction estimates in the RRG-CAP are consistent with those in the Subregional CAP.

Estimates of the 2035 reductions for each measure are an added component of the RRG-CAP. Recognizing that the RRG-EPAP is an essential component of achieving the deep reductions needed to reach the 2035 emissions target, the description of each local measure assesses its synergy with the RRG-EPAP, and provides a general discussion of how implementation can boost local economic activity.

Each local measure was evaluated using the following criteria:

- GHG Reduction Potential (MT CO<sub>2</sub>e/year): This is quantified for each measure in terms of metric tons of carbon dioxide equivalents achieved annually by the target year.
- Synergy with RRG-EPAP (high, medium, low): Assessment of the opportunities linked to clean technologies, new business concepts and infrastructure project that hold the most promise for entrepreneurship in Riverside.
- Relative Cost Effectiveness (high, medium, low): Assesses the potential GHG reduction versus the relative upfront costs to the City and ongoing staff resources needed for implementation. Also, whether the measure represents a good use of public funds.
- Ease of Implementation (high, medium, low): Considers consistency with other City planning efforts and ease of implementation with respect to current City operating patterns/paradigms; whether the measures can be incorporated into the way the City and the private sector does business without major negative impacts; whether there are technological, regulatory and/or legal and regulatory barriers to implementation.

*What is a metric ton of CO<sub>2</sub>e?*

GHG emissions are reported as metric tons (MT) of CO<sub>2</sub>e. Emitting 1 MT CO<sub>2</sub>e is equal to the following:

- 102 gallons of gasoline
- 41 propane cylinders used for home barbecues
- One month's worth of energy used in a house

In contrast, reducing 1 MT CO<sub>2</sub>e would require:

- Growing 25 tree seedlings for 10 years
- Recycling 600 pounds of waste instead of throwing it away

Note: Equivalencies are approximate and are adapted from:

<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

## GHG REDUCTIONS

The GHG reduction potential of each measure is quantified based on the assumption that past trends will continue into the future (e.g., energy consumption, VMT) and standard methods and assumptions recommended by the State (e.g., CAPCOA 2010). For voluntary programs, the level of participation anticipated was developed using case studies and evidence of success with similar programs.

## PROGRESS METRICS

For locally implemented measures in particular, monitoring emissions and reporting reductions will be necessary to validate the success of the measures or to identify measures that are not achieving anticipated reductions. Metrics for monitoring progress are provided for individual measures, although periodic re-inventorying of local government and community-wide emissions will be needed to validate progress.



## LOCAL ECONOMY AND OTHER COMMUNITY BENEFITS

CAP measures often have benefits that go beyond reducing GHG emissions. The Riverside CAP is designed to integrate with the RRG-EPAP, which will help entrepreneurs and investors bring innovative GHG-reducing products, services, and technologies to market that will benefit the City, the region, and the world at large. Entrepreneurial Opportunity Areas (EOAs) that are synergistic with CAP measures are identified, and a discussion is provided on how the measure offers opportunity to local businesses and entrepreneurs and investors. Many measures offer financial co-benefits such as providing development and retrofitting incentives, or reducing energy use and lowering utility bills; others improve public health by encouraging walking and biking or reducing air pollution. Some measures preserve natural resources by consuming and wasting less; while others increase mobility through alternative transportation measures. The following icons are used to identify co-benefits that the City can achieve by implementing local GHG reduction measures.



Energy Savings



Public Health



Local Jobs



Resources



Local Mobility



Placemaking

## STATE AND REGIONAL MEASURES

**Table B.3-1** lists the state and regional measures included in the Subregional CAP and provides a breakdown of the GHG reduction potential for these measures, for the City of Riverside and for the WRCOG subregion.

**Table B.3-1: 2020 and 2035 Reductions from State and Regional Measures**

State and Regional Measures by Sector		2020 WRCOG (MT CO <sub>2</sub> e/yr)	2020 Riverside (MT CO <sub>2</sub> e/yr)	2035 Riverside (MT CO <sub>2</sub> e/yr)
SR-1	Renewables Portfolio Standard	434,606	363,096	372,020
SR-2	2013 California Building Energy Efficiency Standards (Title 24, Part 6)	30,923	19,156	62,927
SR-3	HERO Residential Program	71,649	38,681	64,964
SR-4	HERO Commercial Program	10,079	6,618	86,276
SR-5	Edison Energy Action Plans	9,182	N/A	N/A
<b><i>Energy Subtotal</i></b>		<b><i>547,257</i></b>	<b><i>427,551</i></b>	<b><i>586,187</i></b>
SR-6	Pavley & Low Carbon Fuel Standard	1,095,555	429,447	694,841
SR-7	Metrolink Expansions	23,074	9,045	11,289
SR-8	Express Lanes	60,864	23,858	29,779
SR-9	Congestion Pricing	3,246	1,272	1,588
SR-10	Telecommuting	40,576	15,905	19,853
SR-11	Goods Movement	22,688	8,893	10,811
SR-12	Electric Vehicle Plan and Infrastructure	81,152	31,811	39,705
<b><i>Transportation Subtotal</i></b>		<b><i>1,327,155</i></b>	<b><i>520,232</i></b>	<b><i>807,866</i></b>
SR-13	Construction and Demolition Waste Diversion	3,574	1,789	4,865
<b><i>Solid Waste Subtotal</i></b>		<b><i>3,574</i></b>	<b><i>1,789</i></b>	<b><i>4,865</i></b>
<b>TOTAL REDUCTIONS from State and Regional Measures</b>		<b>1,877,986</b>	<b>949,572</b>	<b>1,398,918</b>

**Note:** Total may not add up due to rounding.

## STATE AND REGIONAL ENERGY MEASURES

The following are state and regional measures that are expected to reduce GHG emissions associated with the energy sector.



### Measure SR-1: Renewables Portfolio Standard

*Utilities must secure 33% of their power from renewable sources by 2020.*

**2020 GHG Reduction Potential: 363,096 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 372,020 MT CO<sub>2</sub>e/yr**

Through a series of increasingly stringent bills first enacted in 2002, California has placed requirements on electric utilities to procure a portion of their energy from renewable sources. The standard, known as the Renewables Portfolio Standard (RPS), applies to investor-owned utilities, publicly-owned utilities, electricity service providers, and community choice aggregators. Therefore, Riverside Public Utilities (RPU) must meet these targets:

- 20% of retail sales from renewables by 2013
- 25% of retail sales from renewables by 2016
- 33% of retail sales from renewables by 2020
- 40% of retail sales from renewables by 2035<sup>1</sup>

RPU exceeded the 2013 target, achieving 23% of retail sales by qualifying renewables and is well on its way to meeting these targets. Prior to 2007, RPU began positioning itself to achieve significant reductions in GHG emissions associated with its electricity portfolio by shifting its resource mix from carbon intensive sources to renewable sources. In 2003, RPU was one of the first electric utilities in California to voluntarily procure renewable resources (the Salton Sea geothermal resource in Imperial Valley and the Wintec wind resource in Palm Springs) to meet a portion of Riverside's electric power needs. This commitment accelerated in 2005 when RPU amended its contract with Salton Sea geothermal resource to more than double its procurement of renewable energy. To further its commitment to clean power, RPU terminated its power purchase agreement with Deseret Generation and Transmission Cooperative for Hunter and Bonanza coal generating plants in Utah at the end of 2009. These changes in the City's electricity portfolio, which occurred primarily in the 2009-2010 timeframe, led to a reduction in communitywide emissions of more than 13% from 2007 to 2010, and additional reductions through the year 2012. While not mandated at this time, the City intends to continue to reduce its carbon portfolio beyond 2020 to include 40% renewables by 2035.

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<sup>1</sup> There is currently no RPS requirement for a percentage increase beyond the 2020 target.



## Local Economic Opportunities

### *Synergistic EOA: RPU Clean Technology Funding*

The RPS is generating business opportunities by ensuring a growing market for low-carbon energy. Qualifying renewable energy sources applicable to Riverside include solar thermal electric, photovoltaics, wind, biomass, geothermal electric, municipal solid waste, energy storage, anaerobic digestion, small hydroelectric, biodiesel, and fuel cells using renewable fuels.

A local opportunity for RPU includes arranging power purchase agreements (PPA) and financing photovoltaics (PV) on private property. A PPA is a financial arrangement in which a third-party developer (i.e., RPU) owns, operates, and maintains the PV system, and a host customer (i.e., local property owner) agrees to site the system on its roof or elsewhere on its property and purchases the system's electric output from the solar services provider for a predetermined period. This financial arrangement allows the host customer to receive stable, and sometimes lower cost electricity, while the solar services provider acquires valuable financial benefits such as tax credits and income generated from the sale of electricity to the host customer. PPA arrangements enable the host customer to avoid the high up-front capital costs, system performance risk, and complex design and permitting processes and can be cash flow positive from the day the system is commissioned.

Local renewables research and development opportunities exist in partnership with the UCR. UCR has a recently adopted mandate to achieve carbon neutrality by 2025, which poses an even greater need for utilizing renewables for its energy needs. See local measure E-5 for more information on UCR's carbon neutral program.

## Other Community Co-Benefits





## Measure SR-2: 2013 California Building Energy Efficiency Standards (Title 24, Part 6)

*Mandatory energy efficiency standards for buildings.*

**2020 GHG Reduction Potential: 19,156 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 62,927 MT CO<sub>2</sub>e/yr**

Building energy efficiency standards are designed to ensure new and existing buildings achieve energy efficiency and preserve outdoor and indoor environmental quality. The 2013 California Building Energy Efficiency Standards (Title 24, Part 6) are listed in the California Code of Regulations. These standards began in 1978 and are updated every 5 years. The 2013 standards differ from the 2008 standards by requiring usage of less energy for lighting, heating, cooling, ventilation, and water heating. Buildings are also required to be solar-ready, allowing for easier and less expensive installation of photovoltaic or solar thermal panels in the future. The California Energy Commission estimates that the 2013 standards will result in residential construction that is 25% more efficient and nonresidential construction that is 30% more efficient than the 2008 standards. The new standards went into effect on July 1, 2014.

The California Energy Efficiency Strategic Plan (CEESP), published in 2008, established a goal that all new residential buildings will be zero net energy (ZNE) by 2020, and all new commercial buildings will be ZNE by 2030. Renewable energy is likely to play a major part in meeting that those goals, but Title 24 will continue to impose more rigorous energy efficiency requirements over time. Measure SR-2 conservatively assumes that Title 24 will require a 30% improvement in energy efficiency over the current (2013) standard by 2035; it does not account for the renewable energy contribution toward ZNE, as that is accounted for by other RRG-CAP measures. Note that the state has not yet established the rules or defined how renewable energy sources are accounted for in determining ZNE status of a building or a set of buildings.



### Local Economic Opportunities

*Synergistic EOA: Green Building Standards*

Requirements for more energy efficiency buildings creates business opportunities for new or existing contractors specializing in green building practices related to energy efficiency. Additional opportunities may exist for local businesses that specialize in energy efficient lighting, heating, cooling, ventilation, and water heating solutions and/or equipment.

### Other Community Co-Benefits





## Measure SR-3: HERO Residential Program

*Financing for homeowners to make energy efficient, renewable energy, and water conservation improvements.*

**2020 GHG Reduction Potential: 38,681 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 64,964 MT CO<sub>2</sub>e/yr**

The HERO Program is a public-private partnership administered by WRCOG, offering financing to homeowners in the subregion for the installation of energy efficient, renewable energy, and water conservation improvements. This property assessed clean energy (PACE) financing program offers a continually expanding list of eligible products for financing and an ever-growing cadre of trained contractors who can assist property owners with selecting and installing eligible products. The HERO program is helping Riverside Public Utilities (RPU) meet its obligation under California's Assembly Bill 2021, which requires public energy utilities (including RPU) to reduce energy use by its customers by 10% over 10 years (to 2020). It also supports RPU's commitment to expanding solar installations in the City as an administrator of Senate Bill 1 (SB 1) that funds Governor Schwarzenegger's Million Solar Roofs initiative, with statewide goals to install 3,000 megawatts of solar energy systems, and establish solar energy systems as a viable mainstream option for residential buildings.

Products eligible for HERO Financing include, but are not limited to:

- Energy audits
- Insulation of attics, floors, walls, and home perimeter
- Lighting upgrades
- Drip and weather-based irrigation systems
- Rainwater catchment systems
- Pool pumps and heaters
- Energy-efficient windows
- Solar PV panels
- Air sealing and weatherization
- Cool roof system
- Cool wall coatings

This award-winning program is offered to eligible home owners in the City of Riverside who wish to participate. WRCOG's Residential Program partner, Renovate America, collects data regarding participation, energy savings, renewable energy installation, job creation, and economic development by jurisdiction in the subregion. Since program inception in 2011, more than 3,400 Riverside homeowners have been approved to fund over \$123 million in eligible renewable energy, energy efficiency and water efficiency projects. Nearly 2,000 projects, totaling approximately \$33 million, have been completed for Riverside homeowners through the WRCOG HERO Program.

WRCOG will continue to partner with Renovate America to track ongoing participation and energy savings on a monthly and annual basis. Emissions reduction estimates for this CAP were calculated based on program participation assumptions developed by Renovate America. Since its inception in 2011, the HERO program has funded more than \$175 million worth of eligible projects, and created more than 1,300 jobs. The program's growth has led to energy savings, GHG reductions, water conservation, and local job creation in each of its participating communities. The HERO program has also been an award-winning model for other PACE programs, earning recognition from various industry organizations including the Southern California Association of Governments, the U.S. Green Building Council, the Urban Land Institute, and the Governor of California.



## Local Economic Opportunities

### *Synergistic EOA: Energy and Water Upgrades for Homes*

The HERO Program provides business opportunities to Riverside contractors. As of July 2014, 230 contractors in the City of Riverside were registered with the HERO Program and eligible to install solar, HVAC, windows and doors, roofing, water and other projects to HERO customers. The products installed have saved local residential customers over \$1.8 million. Since its inception in 2011, the HERO Program has created 359 local jobs in the City of Riverside resulting in over a \$73 million economic impact to the community including indirect, direct and induced economic benefit.

Local research and development opportunities exist to develop and add to the more than 900,000 home energy, water efficient, and renewable energy systems products eligible for HERO financing.

## Other Community Co-Benefits





## Measure SR-4: HERO Commercial Program

*Financing for business owners to make energy efficient, renewable energy, and water conservation improvements.*

**2020 GHG Reduction Potential: 6,618 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 86,276 MT CO<sub>2</sub>e/yr**

The HERO Program is a public-private partnership administered by WRCOG, offering financing to business owners in the subregion for the installation of energy efficient, renewable energy, and water conservation improvements. This PACE financing program offers a continually expanding list of eligible products for financing and an ever-growing cadre of trained contractors who can assist property owners with selecting and installing eligible products. The HERO program is helping Riverside Public Utilities (RPU) meet its obligation under California's Assembly Bill 2021, which requires public energy utilities (including RPU) to reduce energy use by its customers by 10% over 10 years (to 2020). It also supports RPU's commitment to expanding solar installations in the City as an administrator of Senate Bill 1 (SB 1) that funds Governor Schwarzenegger's Million Solar Roofs initiative, with a statewide goal to install 3,000 megawatts of solar energy systems, and establish solar energy systems as a viable mainstream option for commercial buildings.

Products eligible for HERO Financing include, but are not limited to:

- Energy audits
- Insulation of attics, floors, walls, and home perimeter
- Lighting upgrades
- Drip and weather-based irrigation systems
- Rainwater catchment systems
- Pool pumps and heaters
- Energy-efficient windows
- Solar PV panels
- Air sealing and weatherization
- Cool roof system
- Cool wall coatings

This award-winning program is offered to eligible property owners in the WRCOG subregion who wish to participate. WRCOG's Commercial Program partner, Samas Capital, collects data regarding participation, energy savings, renewable energy installation, job creation, and economic development by jurisdiction in the subregion.



## Local Economic Opportunities

*Synergistic EOA: Energy and Water Upgrades for Businesses*

The HERO Program provides business opportunity to local Riverside contractors. As of July 2014, 230 contractors in the City of Riverside were registered with the HERO

Program and eligible to install solar, HVAC, windows and doors, roofing, water and other projects to HERO customers.

Local research and development opportunities exist to develop and add to the more than 900,000 home energy, water efficient, and renewable energy systems products eligible for HERO financing.

### **Other Community Co-Benefits**



## STATE AND REGIONAL TRANSPORTATION MEASURES

The following are state and regional measures that are expected to reduce GHG emissions associated with the transportation sector.



### Measure SR-6: Pavley and Low Carbon Fuel Standard

*Requirements for vehicles to use cleaner fuels.*

**2020 GHG Reduction Potential: 429,447 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 694,841 MT CO<sub>2</sub>e/yr**

In 2002, California adopted AB 1493, referred to as “Pavley I”, which directed CARB to develop fuel-efficiency standards for passenger vehicles in California by 2005. Through a series of rulings, CARB and the federal government agreed on federal standards that began in 2009 and increase through 2016. CARB and the federal government are currently finalizing fuel-efficiency standards that continue to become increasingly-stringent from 2017 through 2025. Building from Pavley 1, Executive Order S-1-07, known as the Low Carbon Fuel Standard (LCFS), requires the carbon-intensity of California’s transportation fuel to be reduced by at least 10% by 2020.



### Local Economic Opportunities

*Synergistic EOA: Clean Vehicles and Charging/Fueling Stations*

The opportunities created by this measure occur in the development of new technology for vehicles and fueling facilities. Meeting the LCFS and Pavley goals will require the testing and deployment technologies such as improved batteries for electric cars, more efficient gasoline engines, and fuel cells. These vehicles will also require charging stations or fueling stations. The research facilities at UCR can participate in the development and testing of these technologies. Additionally, entrepreneurs wanting to research and develop components associated with these technologies will likely want to locate near UCR to take advantage of their faculty and student body, leading to synergies between the research and implementation. There is the potential to create a clean-tech hub proximate to UCR to facilitate further progress in the area.

### Other Community Co-Benefits





## Measure SR-7: Metrolink Expansion

*Additional Metrolink transit service provided to Western Riverside County.*

**2020 GHG Reduction Potential: 9,045 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 11,289 MT CO<sub>2</sub>e/yr**

Identified in SCAG's 2012 RTP/SCS, the Metrolink Perris Valley Line will be extended from Riverside to Perris in Western Riverside County, allowing for alternative transportation, reducing VMT and GHG emissions in Western Riverside County. Service along this route is expected to begin in 2015.

The Perris Valley Line is anticipated to have four stations, with the first station to be located near Columbia Avenue within the Hunter Park industrial area in the northern portion of the City of Riverside. According to the Riverside County Transportation Commission (RCTC), this station location would provide access to the Hunter Park, Highgrove, and Grand Terrace areas. Additionally, the Hunter Park area is home to the UC Riverside College of Engineering, Center for Environmental Research and Technology (CE-CERT).



### Local Economic Opportunities

*Synergistic EOAs: Eco Business Zone; Clean-Tech Incubator*

Local economic opportunities associated with this measure include development or redevelopment opportunities associated with the Metrolink station. The current land uses around the station are primarily commercial and light industrial. Rail stations can be catalysts for higher density development such as higher density office. Occupants of these projects often tend to prioritize access to transit stations when deciding on locations. Another opportunity is related to the marketing of future development projects or businesses such as CE-CERT. Proximity to the train station could be used to attract businesses with younger workers, who may prefer to commute via transit instead of driving. Marketing collateral for buildings that are adjacent to transit stations tends to promote the proximity as a selling point for buyers and renters.

### Other Community Co-Benefits





## Measure SR-8: Express Lanes

*Additional express lanes added along major freeways in Western Riverside County.*

**2020 GHG Reduction Potential: 23,858 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 29,779 MT CO<sub>2</sub>e/yr**

SCAG's analysis of critical corridors found inter-county trips account for over 50% of all trips. Ongoing congestion issues—and therefore increased idle time and GHG emissions—have led to SCAG proposing increasing the network of express lanes that connect counties, including Riverside County. Extension of express lanes along State Route-91 (SR-91) and Interstate-15 (I-15) would be operational by 2017 and 2020 respectively, and would lead to reduced congestion according to regional transportation modeling. The SR-91 extension project is currently under construction. The I-15 Toll Express Lanes from State Route-60 (SR-60) to Cajalco Road has entered the preliminary engineering phase, and the anticipated opening year is 2020.

The primary effect of these express lanes would be to reduce the travel time to the City of Riverside along the SR-91, which may make areas within the City more attractive for those currently commuting via the SR-91 to Orange and Los Angeles Counties. These express lanes may also reduce the travel time for those commuting into the City of Riverside from areas west of the City such as Corona and locations in Orange County.



## Local Economic Opportunities

The primary local economic benefit of the express lanes would be as an incentive for additional development in Riverside, particularly along SR-91 because of a reduction in travel time between work and housing locations. The City could look for opportunities to intensify development/redevelopment along the SR-91 Corridor to accommodate additional housing and employment locations. These express lanes could also be used to market specific sites which are adjacent to the freeway because of this reduced travel time.

## Other Community Co-Benefits





## Measure SR-9: Congestion Pricing

*Expansion of the toll lanes along the SR-91.*

**2020 GHG Reduction Potential: 1,272 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,588 MT CO<sub>2</sub>e/yr**

Transportation demand management (TDM) consists of methods used to encourage transportation other than single-occupancy vehicle travel at peak traffic times. TDM strategies are generally categorized as “soft” or “hard” strategies. Soft mechanisms are incentive-based and include measures like preferential parking for carpoolers, while hard mechanisms are associated with pricing or an enforceable policy or ordinance.

Congestion pricing is a hard TDM strategy examined by SCAG through its Express Travel Choices Study. Pricing mechanisms may include toll lanes/roads or mileage-based user fees, which discourage automobile traveling by increasing travel costs. Currently an expansion of the toll lanes on SR-91 is planned to continue these toll lanes through Corona and into Riverside.

The effectiveness of congestion pricing reflects the regional share of VMT reduction associated with this strategy, in addition to local actions. This approach accounts for the high degree of out-commuting that currently occurs in Western Riverside County as residents travel to jobs in Los Angeles, San Bernardino, and Orange Counties.

This measure would have limited application to the City of Riverside given the regional nature of its effectiveness.



### Local Economic Opportunities

There are no specific economic opportunities associated with this measure given its regional application.

### Other Community Co-Benefits





## Measure SR-10: Telecommuting

*Work arrangement in which employees do not commute to a central place of work.*

**2020 GHG Reduction Potential: 15,905 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 19,853 MT CO<sub>2</sub>e/yr**

Telecommuting is a soft TDM mechanism that has increased considerably over the past decade. According to SCAG, telecommuting could increase even more by 2020 (to 5% of workers in the region) and 2035 (to 10% of workers), from the current 2.6% that currently telecommute. By telecommuting, GHG emissions associated with vehicles no longer on the road are reduced, as are idling or congestion-related emissions from vehicles remaining on the road. Similar to Measure SR-9: Congestion Pricing, this strategy reflects the regional share of TDM strategies that may be implemented on a regional level given the high degree of out-commuting that occurs in Western Riverside County.

Telecommuting would be applicable to the City of Riverside, particularly for large employers such as UC Riverside, AT&T and The Press Enterprise. The City could encourage telecommuting by providing informational material to large employers, describing the advantages of telecommuting.

Additional TDM strategies implemented by local employers are accounted for in the RRG-CAP local measures.



## Local Economic Opportunities

*Synergistic EOAs: Eco Business Zone; Clean-Tech Incubator*

There are two main opportunities presented by telecommuting as it relates to the City of Riverside. First, major regional employers may consider if there are opportunities to set up satellite offices or locations where workers can telecommute in a collaborative environment. These facilities would be similar to executive suite office buildings, of which there are several already in the City of Riverside. Second, the City may want to expand the coverage of any publicly provided wireless internet system (Wi Fi or equivalent), given that a significant percentage of telecommuting occurs spontaneously in café's, coffee shops, and public gathering places. For example, the City could provide high quality internet access in the downtown, where people already gather. These people may then choose to patronize adjacent shops and restaurants during their time.

## Other Community Co-Benefits





## Measure SR-11: Goods Movement

*Efficient movement of goods through inland Southern California.*

**2020 GHG Reduction Potential: 8,893 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 10,811 MT CO<sub>2</sub>e/yr**

Southern California is a major hub for importing and exporting goods. SCAG estimates that over \$2 trillion in cargo was moved across the region in 2010 alone, much of which travels through inland Southern California, including Western Riverside County. However, the many warehouses and distribution facilities employ non-passenger vehicles that contribute to GHG emissions. At the state level, more standards are being implemented to increase vehicle efficiencies and the 2012 RTP/SCS and AQMD are supporting greater penetration of low-emission trucks in the region. While goods will continue to be moved to support local and regional economies, electrification and other low-emission technologies installed in vehicles can reduce the GHG emissions of goods movement. The GHG reductions estimated here account for the region's "share" of SCAG and AQMD's anticipated investments and the effect of the investment on GHG emissions. These investments include both policies as well as physical improvements such as "truck climbing" lanes on State Route-60 (SR-60), funded by RCTC.



### Local Economic Opportunities

A primary local economic opportunity of efficient goods movement is the research and development of new technologies which would reduce GHG emissions from freight vehicles. This research could be conducted by entrepreneurs in conjunction with faculty and staff at UC Riverside at facilities such as CE-CERT. This topic, along with innovative vehicle and fuel technologies identified in SR-6, SR-12 and T-19 could be facilitated by encouraging businesses to locate in areas proximate to CE-CERT by providing various incentives.

### Other Community Co-Benefits





## Measure SR-12: Electric Vehicle Plan and Infrastructure

*Facilitate electric vehicle use by providing necessary infrastructure.*

**2020 GHG Reduction Potential: 31,811 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 39,705 MT CO<sub>2</sub>e/yr**

SCAG has developed a regional plug-in electric vehicle (PEV) readiness plan, and WRCOG has a similar subregional plan for PEV readiness. Together, these plans identify viable locations for charging stations, changes to development codes, and other strategies to encourage the purchase and use of electric vehicles. PEV chargers are already being installed in the WRCOG subregion. Through these plans and outreach efforts, alternative-fuel vehicles will be promoted as one strategy to reduce GHG emissions associated with passenger vehicles. This measure is anticipated to reduce nearly 82,000 MT CO<sub>2</sub>e in participating WRCOG jurisdictions by 2020.

For the City of Riverside, this measure would be implemented by providing both public and private charging facilities and also by updating development codes to encourage or facilitate charging stations.



### Local Economic Opportunities

*Synergistic EOAs: Clean Vehicles and Charging/Fueling Stations; Eco Business Zone; Clean-Tech Incubator*

Similar to other regional measures, UC Riverside could be a focus for research into new vehicle and fuel technologies, as discussed in SR-6, SR-11 and T-19. In addition, the need to install charging facilities at locations throughout the City will create a demand for service businesses and persons with the requisite skills. There may be benefit to developing facilities for training persons in the installation and maintenance of these charging stations (similar to training facilities for solar installation).

### Other Community Benefits



## STATE SOLID WASTE MEASURES

The following state measure is expected to reduce GHG emissions associated with the solid waste sector.



### Measure SR-13: Construction & Demolition Waste Diversion

*Meet mandatory requirement to divert 50% of C&D waste from landfills by 2020 and exceed requirement by diverting 90% of C&D waste from landfills by 2035.*

**2020 GHG Reduction Potential: 1,789 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 4,865 MT CO<sub>2</sub>e/yr**

Recycling construction and demolition materials reduces GHG emissions by removing material from landfills that would otherwise generate methane. Construction and demolition (C&D) debris can include lumber, drywall, metals, masonry, carpet, plastic, and other materials. Buildings that are deconstructed, as opposed to demolished, are carefully disassembled and component parts are recycled or locally repurposed and reused. C&D waste recycling is a component of green building construction as it reduces the need to harvest and transport new raw construction materials in addition to reducing landfill methane emissions from the decomposition of organic components.

Effective July 1, 2014, CALGreen, the state's Green Building Standards Code, requires jurisdictions to divert a minimum of 50% of their nonhazardous C&D waste from landfills. Reductions for the year 2020 assume that 100% of new construction and applicable retrofit projects meet the minimum diversion rates established by the State. For 2035, this measure assumes that C&D waste diversion would increase to 90% for new construction and retrofit projects. This increase is in line with GAP Goal 6.A which aims to develop measures to encourage that a minimum of 90% of recoverable waste from all construction sites be recycled throughout Riverside by 2015, beginning with 40% in 2010 and increasing by 10% each year thereafter.



### Local Economic Opportunities

*Synergistic EOAs: Waste Reduction and Diversion; Buy and Produce Local Initiative; Green Building Standards*

Increased C&D waste diversion presents opportunities and resources for local businesses that specialize in materials reuse and upcycling. In addition, increased diversion targets would create additional business for new or existing contractors specializing in building deconstruction and other green building practices related to waste management.

## Other Community Co-Benefits



## LOCAL REDUCTION MEASURES

**Table B.3-2** lists the Subregional CAP measures and local measures, providing a breakdown of the GHG reduction potential for each measure.

**Table B.3-2: 2020 and 2035 Reductions from Local Measures**

Local Measures by Sector		2020 Reductions (MT CO <sub>2</sub> e/yr)	2035 Reductions (MT CO <sub>2</sub> e/yr)
E-1	Traffic and Street Lights	549	4,153
E-2	Shade Trees	96	841
E-3	Local Utility Programs – Electricity	32,197	43,491
E-4	Renewable Energy Production on Public Property	Supporting	Supporting
E-5	UC Riverside Carbon Neutral Program	32,959	32,959
E-6	Riverside Public Utilities Technology Grants	Supporting	Supporting
<b><i>Energy Subtotal</i></b>		<b><i>65,801</i></b>	<b><i>81,444</i></b>
T-1	Bicycle Infrastructure Improvements	15,905	20,889
T-2	Bicycle Parking	2,168	2,889
T-3	End of Trip Facilities	1,119	1,491
T-4	Promotional Transportation Demand Management	909	1,212
T-5	Traffic Signal Coordination	51,693	68,754
T-6	Density	1,259	1,887
T-7	Mixed-Use Development	769	1,153
T-8	Pedestrian Only Areas	1,399	1,824
T-9	Limited Parking Requirements for New Development	17,482	24,757
T-10	Bus Rapid Transit Services	1,399	2,330
T-11	Voluntary Transportation Demand Management	2,185	3,095

Local Measures by Sector		2020 Reductions (MT CO <sub>2</sub> e/yr)	2035 Reductions (MT CO <sub>2</sub> e/yr)
T-12	Accelerated Bike Plan Implementation	3,496	4,951
T-13	Fixed Guideway Transit	-	13,981
T-14	Neighborhood Electric Vehicle Programs	3,496	4,660
T-15	Subsidized Transit	3,496	4,951
T-16	Bike Share Program	210	280
T-17	Car Share Program	2,797	3,728
T-18	SB 743 as Alternative to LOS	2,028	2,703
T-19	Alternative Fuel and Vehicle Technology and Infrastructure	5,245	6,991
T-20	Eco-Corridor	Supporting	Supporting
<b>Transportation Subtotal</b>		<b>111,811</b>	<b>172,526</b>
W-1	Water Conservation and Efficiency	10,748	10,748
<b>Water Subtotal</b>		<b>10,748</b>	<b>10,748</b>
SW-1	Yard Waste Collection	468	1,238
SW-2	Food Scrap and Paper Diversion	571	9,317
<b>Solid Waste Subtotal</b>		<b>1,039</b>	<b>10,555</b>
A-1	Local Food and Agriculture	Supporting	Supporting
<b>TOTAL LOCAL ACTION REDUCTIONS</b>		<b>189,399</b>	<b>275,273</b>

## LOCAL ENERGY MEASURES

The following are local measures that can be implemented to reduce GHG emissions associated with the energy sector.



### Measure E-1: Traffic and Street Lights

*Replace traffic and street lights with high-efficiency bulbs.*

**2020 GHG Reduction Potential: 549 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 4,153 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Synergy with RRG-EPAP:	Medium
Relative Cost Effectiveness:	Medium (Requires grant funding or assistance from RPU, City staff time and promotional materials)
Ease of Implementation:	High
Responsibility:	Public Works Department, in conjunction with RPU
Objectives:	By 2020: Convert 50% of traffic lights and 1% of street lights to high-efficiency bulbs By 2035: Convert 100% of traffic lights and street lights to high-efficiency bulbs
Progress Indicators and Metrics:	By 2035: Expect 1.26 million kWh/year in savings from Streetlights and Traffic Signals/Controllers subsector of Local Government GHG Inventory
Local Co- Benefits:	Lower energy bills; reduced maintenance costs; generates work for local contractors (green jobs)
Alignment with Other City Efforts:	Supports all of the City's energy efficiency goals by reducing energy consumption

Similar to many household light fixtures, traffic lights are typically illuminated with inefficient incandescent bulbs. Street lights commonly use high-pressure sodium (HPS)

bulbs, which also produce light inefficiently. Newer lighting technology, such as light-emitting diodes (LEDs), last significantly longer than traditional incandescent or HPS bulbs, and use much less energy to perform the same task. The City of Riverside will have replaced 50% of their traffic signals and 1% of their street light fixtures with LEDs or other high-efficiency bulbs by 2020. By 2035 the City estimates that 100% percent of both traffic lights and street lights will have been converted to high-efficiency bulbs. Upgrading these fixtures would both lower municipal utility costs and reduce maintenance costs associated with bulb replacement.



### **Local Economic Opportunities**

The City can contract with local installers to complete the full retrofit of all fixtures. The City may include a preference in their contract for products of more local manufacturing companies, if available. In addition, the City may consider partnering with UC Riverside to replace outdoor lighting on campus roads and in campus parking lots.

The City may partner with UC Riverside or local green technology firms that are researching and developing new traffic and streetlight technology, and potentially develop a pilot program to be implemented in the potential eco-corridor/green enterprise zone, as further discussed in Measure T-20 and the Economic Prosperity Action Plan.

### **Other Community Co-Benefits**





## Measure E-2: Shade Trees

*Strategically plant trees at new residential developments to reduce the urban heat island effect.*

**2020 GHG Reduction Potential: 96 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 841 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	In progress
Synergy with RRG-EPAP	Low
Relative Cost Effectiveness:	Medium (City staff time and promotional materials)
Ease of Implementation:	High
Responsibility:	Community Development and Public Works Departments in conjunction with RPU
Objectives:	By 2020: 6,000 new shade trees shall be planted By 2035: 18,800 additional new shade trees shall be planted
Progress Indicators and Metrics:	By 2020: 12,200 new shade trees planted By 2035: 18,800 new shade trees shall be planted representing one tree for every new residential unit built
Local Co-Benefits:	Lower energy bills; generates work for local contractors (green jobs)
Alignment with Other City Efforts:	Aligns with GAP Goal 12 to annually plant at least 1,000 trees in City parks and right-of-ways and encourage the planting of at least 3,000 shade trees on private property. City of Riverside Urban and Community Forestry Program (see Measure A-2)

Planting additional trees in urban environments has a number of benefits, including lowering peak-load energy demands during the hottest months, enhancing the visual aesthetic of a community, and naturally sequestering carbon dioxide. Properly selected and located shade trees can help keep indoor temperatures low, thereby reducing air conditioner demands and utility costs. Trees can also provide shade for parking lots and

other paved areas, reducing the urban heat island effect communitywide. As part of the City's Urban Forestry Program (see Measure A-2), the Free Shade Tree program offers RPU customers a coupon for the purchase of a qualifying shade tree that can be redeemed at one of four local nurseries in Riverside. In addition to lower energy costs, RPU customers can also receive a rebate on their energy bill for planting up to five shade trees in a year. As a participant in the WRCOG Subregional CAP, the City has committed to planting one shade tree per new residential unit.



### **Local Business Opportunities**

The City could expand the Free Tree program to partner with additional local nurseries. The City could leverage its nursery partnerships to increase shade tree education and program promotion from within each nursery.

RPU could share data on energy use with researchers studying the impacts of shade trees on building energy and the urban heat island effect.

### **Other Community Co-Benefits**





## Measure E-3: Local Utility Programs - Electricity

*Financing and incentives for business and home owners to make energy efficient, renewable energy, and water conservation improvements.*

**2020 GHG Reduction Potential: 32,197 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 43,491 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Subregional
Implementation Status:	In progress
Synergy with RRG-EPAP	High
Relative Cost Effectiveness:	Medium (City staff time and promotional materials)
Ease of Implementation:	Medium
Responsibility:	Community Development in conjunction with RPU
Objectives:	By 2020: RPU saves 87.2 million kWh/yr By 2035: RPU saves 131.5 million kWh/yr
Progress Indicators and Metrics:	Continued implementation of existing RPU programs
Local Co-Benefits:	Lower energy and water bills; generates work for local contractors (green jobs)
Alignment with Other City Efforts:	Supports state legislative efforts, including SB 1037, AB 2021, and SB 1

This measure quantifies the beneficial impacts of the various energy savings programs that Riverside Public Utilities (RPU) provides to its customers. These programs are required as part of SB 1037, but also help RPU achieve its 1% per year reduction by 2020 as required by AB 2021, and support the state’s SB1 solar energy commitments. This measure assumes that RPU continues to reduce its energy use by 1% per year through 2035. RPU offers a selection of rebates and other incentives to assist property owners (residential and commercial) with the installation of energy- and water-saving products. The following list provides a sample of RPU programs currently offered:

- Domestic Time-of-Use Tiered Rate Plan: Offers special rates for customers who manage their energy use by switching some uses to off-peak hours.

- Whole House Rebate Program: Rebate increase for customers participating in two or more energy and/or water efficiency programs; up to 250% of listed rebate for maximum participation.
- ENERGY STAR<sup>TM</sup> Appliances and Devices: Rebates for purchasing Energy Star refrigerators, AC units, dishwashers, clothes washer, ceiling fans, and televisions.
- Residential Photovoltaic Rebate Program: Provides financial incentives to RPU electric customers who purchase and install photovoltaic systems.
- Tree Power Rebates: Credited towards utility bill for planting up to five trees per year.
- Weatherization: Rebates are available for attic and exterior wall insulation, whole house fans, attic fans (solar and electric), duct insulation and sealing, window film, and Cool Roof coatings or products.
- Pool & Spa Pump Rebate: Installing qualifying multi-flow or variable-speed pool pumps with appropriate controllers (two speed pumps do not qualify) on in-ground pools or spas.
- Pool Pump Billing Credit: Five dollar (\$5) credit towards bill for using pool pump during off-peak hours.
- Air Conditioning Incentives: Rebates to residential customers for installation of new high energy-efficient air conditioning systems or heat pumps, or replace old units.
- Energy Audit Tool: Online audit tool for residential or commercial RPU customers.
- Lighting Retrofit Outreach: Promotes installation of high efficiency light bulbs.
- Green Power Premium: Helps RPU purchase renewable energy.
- Direct Install: Helps small business customers lower their utility bills by installing energy and water efficiency upgrades at low or no cost.
- Lighting Rebate: Incentives for commercial customers who replace older, inefficient lighting with the most energy-efficient fixtures; includes daylighting and occupancy sensors, along with solar tubes and sky lighting

RPU has entered into a Master Inter-Utility Agreement (Agreement) with the Southern California Gas Company to jointly undertake various programs aimed at reducing natural gas, water, and electricity usage by customers who use both utilities' services. The Agreement provides a method for a collective approach to energy efficiency and resource savings and allows for more effective and efficient program implementation. Under the Agreement, new programs may arise for customers in the joint service territory that would increase energy savings while dividing and reducing the cost of program implementation and marketing for both utilities.



## Local Economic Opportunities

*Synergistic EOAs: Energy and Water Upgrades for Home or Business; Eco Business Zone*

The programs offered by RPU generate business for local retailers and contractors who supply and install the various energy efficient fixtures that are covered under RPU's rebates. Several of the rebates offered by RPU can only be redeemed at local businesses. The City can leverage relationships with local contractors to promote program participation. As more efficient technologies continue to develop, RPU can create new programs to incentivize their installation.

## Other Community Co-Benefits





## Measure E-4: Renewable Energy Production on Public Property

*Large scale renewable energy installation on publicly owned property and in public rights of way.*

**2020 GHG Reduction Potential: Supporting Measure**

**2035 GHG Reduction Potential: Supporting Measure**

WRCOG Participation Level:	NA
Implementation Status:	Within 2-3 years
Synergy with RRG-EPAP:	High
Relative Cost Effectiveness:	Medium
Ease of Implementation:	Medium
Responsibility:	Public Works and RPU
Objectives:	By 2020: Complete feasibility study By 2035: Install priority projects identified in feasibility study
Progress Indicators and Metrics:	Number of feasibility/pilot studies and projects implemented per year
Local Co-Benefits:	Increase public health; creates research and development and local business opportunities
Alignment with Other City Efforts:	Supports GAP Goal 1 to increase use of clean energy to 50% by 2020 and Goal 3 to install at least 20 MW solar PV by 2020

This measure encourages the City to seek opportunities to install renewable energy projects on public property, public facilities and in public rights of way. Projects could include solar photovoltaic projects, wind energy, and other emerging energy generation technologies. These projects could include large scale installations on land that the City owns that cannot be used for other purposes, or small scale (and even temporary) installations, such as solar powered trash cans, solar powered lighting, and small scale wind turbines.

The City should work with RPU to complete a feasibility study that identifies opportunities to install both large and small scale renewable energy projects on public property, public facilities and in the public right of way. The study should also identify partners in the community that are developing more advanced large and small scale renewable energy systems that could be installed as a pilot project. The Study should identify priority projects that the City could implement by 2020, and additional projects to implement by 2050, that would contribute to the City's GHG reduction.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

The City could partner with UC Riverside or green technology firms seeking to research and develop new renewable energy generating technologies. The City could partner on various pilot projects and focus efforts in the proposed eco-corridor/green enterprise zone(s) (see Measure T-20), where installed technologies could be accompanied by informational signs to explain the technology and its benefits to those interested.

## Other Community Co-Benefits





## Measure E-5: UCR Carbon Neutrality

*Collaborate with UCR to achieve a carbon neutral campus.*

**2020 GHG Reduction Potential: 32,959**

**2035 GHG Reduction Potential: 32,959**

WRCOG Participation Level:	N/A
Implementation Status:	In progress
Synergy with RRG-EPAP:	High
Relative Cost Effectiveness:	Medium
Ease of Implementation:	Medium
Responsibility:	UCR and RPU
Objectives:	By 2025: Achieve a carbon neutral campus By 2035: Maintain a carbon neutral campus
Progress Indicators and Metrics:	Number of feasibility/pilot studies and projects implemented since 2007
Local Co-Benefits:	Increase public health; improve air quality; lowers energy bills; creates research and development and local business opportunities
Alignment with Other City Efforts:	Supports GAP Goal 1 to increase use of clean energy to 50% by 2020 and Goal 3 to install at least 20 MW solar PV by 2020

In 2007, the Chancellor of UCSF signed the American College and University President's Climate Commitment (ACUPCC) to complete an emissions inventory, set target dates and interim milestones for becoming climate-neutral, take steps to reduce GHG emissions, and prepare public progress reports. As an intermediate target, UCOP established the goals of reducing GHG emissions to 2000 levels by 2014; 1990 levels by 2020; and achieving climate neutrality as soon as possible after reaching the 2014 and 2020 reduction targets. More recently, UCR committed to achieving climate neutrality by the year 2025. These goals pertain to Scope 1 and Scope 2 emissions of the six Kyoto greenhouse gases originating from sources specified in the ACUPCC, as well as Scope 3 emissions from business airline travel and commuting by UCSF staff and students. The Regents' policy specifies that these goals will be pursued while maintaining the primary research and education mission of the University.

This measure encourages RPU and the City of Riverside to collaborate with UCR to achieve their carbon neutrality goals. RPU and UCR are partnering on a number of projects to advance clean energy technology and low-carbon solutions including polymer-zeolite nanocomposite high-temperature proton-exchange-membrane (PEM) for Fuel Cells; the control of NO<sub>x</sub> (nitrogen oxides), SO<sub>x</sub> (sulfur oxides), and particulate matter in biological filters; Southern California –Research Institute for Solar Energy; and clean automated electric power, heating and cooling from urban waste.

This is considered a supporting measure until the University's carbon neutrality goals can be more specifically defined with respect to energy savings.



### **Local Economic Opportunities**

*Synergistic EOAs: RPU Clean Technology Funding; Clean-Tech Incubator*

The City can partner with UC Riverside to achieve carbon neutrality, by implementing new technologies as pilot studies and showcasing successes to other institutions and businesses interested in reducing their carbon footprint. Possible joint activities identified at the Green Leadership Conference in February 2014 include the creation of an eco-corridor or green enterprise zone adjacent to the UCR campus (see Measure T-20); mobile solar on vacant city lands (see Measure E-4); waste to energy for converting organic waste into biogas; pilot on-site water retention and treatment at UCR; and simply continuing to partner and host innovative conferences and seminars.

### **Other Community Co-Benefits**





## Measure E-6: RPU Technology Grants

*RPU grant programs to foster research, development and demonstration of innovative solutions to energy problems.*

**2020 GHG Reduction Potential: Supporting Measure**

**2035 GHG Reduction Potential: Supporting Measure**

WRCOG Participation Level:	N/A
Implementation Status:	In progress
Synergy with RRG-EPAP:	High
Relative Cost Effectiveness:	Medium
Ease of Implementation:	High
Responsibility:	RPU
Objectives:	By 2020: N/A By 2035: N/A
Progress Indicators and Metrics:	Number of grants issued since 2007
Local Co-Benefits:	Creates research and development and local business opportunities
Alignment with Other City Efforts:	Supports and implements energy policies and programs outlined in the Seizing Our Destiny report.

RPU offers energy technology grant programs to help foster the development of innovative solutions to energy problems. The Custom Energy Technology Grant is available for small business customers to fund the research, development, and demonstration of innovative energy technologies that are unique to that particular business or industry's specific manufacturing techniques or processes. Another program, the Energy Innovations Grant, is available for post-secondary institutions focusing on the science and technology advancements in the energy sector.

Targeted research areas include:

- Building end-use efficiency
- Environmentally preferred advanced generation
- Renewables generation
- Energy-related environmental research
- Strategic energy research

- Electric transportation

This is considered a supporting measure until the resulting technologies and advancements in the energy sector that result from these grants can be more specifically defined with respect to energy savings and GHG reduction potential.



### **Local Economic Opportunities**

*Synergistic EOAs: Energy and Water Upgrades for Home or Business; Clean-Tech Incubator; Eco Business Zone; Global Markets*

This measure is included as one of the ten EOAs in the RRG-EPAP. These grant programs are another resource to attract businesses in the “green” fields to the City. This measure could be part of an incentive package available as part of a potential eco-corridor/green enterprise zone, as further discussed in Measure T-20 and the RRG-EPAP.

### **Other Community Co-Benefits**



## LOCAL TRANSPORTATION MEASURES

The following are local measures that can be implemented to reduce GHG emissions associated with the transportation sector.



### Measure T-1: Bicycle Infrastructure Improvements

*Expand on-street and off-street bicycle infrastructure, including bicycle lanes and bicycle trails.*

**2020 GHG Reduction Potential: 15,905 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 20,839 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Synergy with RRG-EPAP:	Medium
Relative Cost Effectiveness:	Medium (\$200,000 at 2020 for maintaining additional bicycle facilities. Total capital cost for the full completion of the City's Bicycle Master Plan is approximately \$30M. Pro-rata share of City's Bicycle Master Plan would therefore be \$15M)
Ease of Implementation:	Medium
Responsibility:	Community Development and Public Works Departments
Objectives:	By 2020: Achieve a 50% increase in bicycle lane mileage from baseline levels. By 2035: Achieve a 75% increase in bicycle lane mileage from baseline levels.
Progress Indicators and Metrics:	Percent increase in bicycle lane mileage from 2010 baseline
Local Co-Benefits:	Health, recreation and mobility benefits; improved air quality; generates work for local contractors
Alignment with Other City Efforts:	Bicycle Master Plan; Draft city-wide bicycle design guidelines; consistent with regional Active Transportation Programs and SCAG's RTP/SCS.

By providing more bicycle lanes and better connections between existing bicycle lanes, Riverside can increase the viability of bicycling as an emission-free commute option. Several WRCOG jurisdictions have adopted or are preparing bicycle master

plans. Implementing these plans will increase alternative transportation options in the sub-region and can reduce vehicle miles traveled and congestion for vehicles. Community health benefits from increased bicycling include improved air quality and exercise.

The City of Riverside completed a Bicycle Master Plan in 2007 and has been implementing the Plan's recommendations. As an example, City recently completed a "green" or painted bike lane in the Downtown area. Given the City's terrain and climate, there are significant opportunities to encourage cycling by residents, visitors, and employees.



## Local Economic Opportunities

*Synergistic EOAs: Expand Bicycle Infrastructure; Eco Business Zone*

One significant opportunity in the City would be the creation of a bike friendly district, such as was done in the City of Long Beach. This bike friendly district would have extensive bicycle facilities, bike shops, and business which support cycling. For example, businesses could specifically advertise that they allow for bicycles to park at the business. This bike friendly district would also create additional foot traffic, which would be conducive to more having more patrons at restaurants, café's, and shops. One likely application would be in the Downtown, where a nexus of bicycle facilities and supportive land uses could be easily achieved.

## Other Community Co-Benefits





## Measure T-2: Bicycle Parking

*Provide additional options for bicycle parking.*

**2020 GHG Reduction Potential: 2,168 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 2,889 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Synergy with RRG-EPAP:	Low
Relative Cost Effectiveness:	High (Cost for bicycle parking facilities assumed to be associated with private development that would install the bicycle parking is sites develop or redevelop)
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division
Objectives:	By 2020: Amend zoning to require provision of bike parking for all multi-family or mixed-use projects consisting of a mix of residential, retail, and office space.
Progress Indicators and Metrics:	Number of new bike parking spaces added since 2010.
Local Co-Benefits:	Health, recreation, and mobility benefits; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; Draft city-wide bicycle design guidelines.

Safe and convenient bicycle parking is a relatively low-cost action that leads to a demonstrated shift from automobile use to bicycle use. Helping business owners understand the potential benefits of bicycle parking and requiring new development projects to include bike racks as a condition of approval can facilitate implementation of this measure.

The City is currently developing Citywide Bicycle Design Guidelines, which will address bicycle parking as sites develop and redevelop.



## Local Economic Opportunities

*Synergistic EOAs: Expand Bicycle Infrastructure; Green Building Standards; Eco Business Zone*

Bicycle parking would provide many of the same benefits as with T-1. Ample bike parking allows bicyclists to park their bikes in public area, providing them with opportunities to patronize nearby businesses.

## Other Community Co-Benefits





## Measure T-3: End of Trip Facilities

*Encourage use of non-motorized transportation modes by providing appropriate facilities and amenities for commuters.*

**2020 GHG Reduction Potential: 1,119 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,491 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Relative Cost Effectiveness:	High (limited cost to the City since any incremental costs associated with these facilities would be related to the development or redevelopment of individual sites)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Public Works Department; Community Development Department, Planning Division
Objectives:	By 2020: Amend zoning code to require installation of end-of-trip facilities for new commercial buildings greater than 50,000 square feet.
Progress Indicators and Metrics:	Number of development projects installing end-of-trip facilities since 2010
Local Co-Benefits:	Health, recreation, and mobility benefits; improved air quality; generates work for local contractors
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; Draft city-wide bicycle design guidelines

End-of-trip commuter facilities further incentivize alternative transportation modes, such as walking and biking. Within the City of Riverside, this measure would require larger commercial buildings (new construction only) to provide end of trip facilities including showers, changing areas and bicycle storage, which will encourage persons to walk and bike to their employment locations.



## Local Economic Opportunities

*Synergistic EOAs: Expand Bicycle Infrastructure; Green Building Standards; Eco Business Zone*

This measure may generate work for local contractors who would be required to install these facilities into new commercial buildings and local businesses who want to manufacture such products.

## Other Community Co-Benefits





## Measure T-4: Promotional Transportation Demand Management

*Encourage Transportation Demand Management strategies.*

**2020 GHG Reduction Potential: 909 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,212 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Silver
Implementation Status:	In Progress
Relative Cost Effectiveness:	High (\$35,000 based on the likelihood that an existing staff member would be assigned this task in lieu of existing duties. This cost may also cover some additional costs to the City related to publications, materials, and other promotional activities. Approximately \$25,000 would reflect offsetting staff costs and another \$10,000 would be for promotional materials)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division and Public Works
Objective:	By 2020: Train an existing staff person to promote TDM strategies to existing businesses.
Progress Indicators and Metrics:	Number of jurisdictions with full-time or part-time staff promoting TDM programs to be established through an annual survey conducted by WRCOG.
Local Co-Benefits:	Health, recreation, and mobility benefits; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; consistent with SCAG's RTP/SCS.

Transportation demand management (TDM) describes strategies to reduce demand for roadway travel, particularly in single-occupancy vehicles. TDM strategies can include both “carrot” and “stick” approaches to change travel behavior patterns. Specific examples include preferential parking for carpoolers and parking pricing.

While SCAG offers regional approaches such as high-occupancy vehicle lanes, this measure focuses on efforts by individual existing business owners in the WRCOG sub-region to develop TDM strategies, such as parking “cash out” programs and allowing telecommuting. Several TDM strategies can be offered; often, multiple programs can enhance one another rather than being redundant. In addition to reducing GHG emissions, TDM strategies often ease congestion and improve air quality.

Although TDM strategies have application within the larger region, this measure would focus on City actions needed to support TDM within private businesses. Chapter 19.880 of the City’s Municipal Code includes regulations for TDM. Trip reduction plans to reduce work-related vehicle trips by six and one-half percent from the number of trips related to the project are required for all new developments or businesses generating one hundred or more employees. A combination of strategies may be included in the plan to achieve the required vehicle reduction targets including but not limited to, alternative work schedules/flex-time; preferential parking for carpool vehicles; rideshare vehicle loading areas; vanpool vehicle accessibility; bus stop improvements; on-site child care facilities; and on-site amenities such as cafeterias, restaurants, automated teller machines and other services that would eliminate the need for additional trips, etc. The City would designate and train a staff person to proactively market these TDM strategies and ensure enforcement of the Municipal Code, particularly at larger businesses where these strategies are the most effective. There would be limited applicability of this measure to employment centers such as UC Riverside where TDM measures are already applied.



## Local Business Opportunities

*Synergistic EOA: Eco Business Zone*

There are limited local business opportunities related to this measure.

## Community Benefits





## Measure T-5: Traffic Signal Coordination

*Incorporate technology to synchronize and coordinate traffic signals along local arterials.*

**2020 GHG Reduction Potential: 51,693 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 68,754 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Relative Cost Effectiveness:	Medium (Annual cost to the City may be as much as \$1M per year. City 2011-2015/2016 CIP has allocated approximately \$600,000 for traffic signal coordination and maintenance. With additional signals coordinated throughout the City, there will be a greater need to maintain the system)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	Medium
Responsibility:	Public Works Department
Objective(s):	By 2020: Achieve a 75% increase in arterials roads that have coordinated traffic signals.  By 2035: Achieve a 90% increase in arterials roads that have coordinated traffic signals.
Progress Indicators and Metrics:	Percentage of arterial roads with signal coordination from 2010 baseline.
Local Co-Benefits:	Increased mobility; improved air quality
Alignment with Other City Efforts:	N/A

Traffic signal coordination describes a method of timing groups of traffic signals along an arterial to provide smooth movement of traffic with minimal stops. This technique reduces motorist stops and delays, lowers the amount of fuel need to move a certain distance, and reduces GHG emissions. Signal coordination also lessens congestion and resulting tail pipe emissions, which reduces GHG emissions and improves air quality.

The City of Riverside has an extensive traffic management system which includes coordination along major corridors, video cameras, and an integrated traffic management center in City Hall.



### **Local Economic Opportunities**

As the City extends traffic signal coordination to additional roadways, there are significant opportunities for local contractors, particularly those who are experienced in these types of projects. Retrofitting an existing corridor to accommodate signal coordination can sometimes require excavating work, installing conduit, repairing sidewalks as necessary, and installing items like cameras and traffic signal controllers. Given the work required, large scale signal coordination projects often have budgets in the hundreds of thousands or even millions of dollars. Local contractors could bid on these projects, which would benefit the City economy and its residents directly.

### **Other Community Co-Benefits**



## Measure T-6: Density

*Improve jobs-housing balance and reduce vehicle miles traveled by increasing household and employment densities.*

**2020 GHG Reduction Potential: 1,259 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,887 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	2016
Relative Cost Effectiveness:	High (Cost to the City would only accrue when supporting documents such as the General Plan, Development Code, etc.) are updated or modified)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division; Economic Development Department
Objective(s):	By 2020: Achieve a 10% increase in community-wide household and employment density over baseline conditions.  By 2035: Achieve a 15% increase in community-wide household and employment density over baseline conditions.
Progress Indicators and Metrics:	Percentage change in community-wide household and employment density from 2010 baseline.
Local Co-benefits:	Increased health and mobility; improved air quality.
Alignment with other City efforts:	GAP Goal10A to apply urban planning principles that encourage high density, mixed-use, walkable/bikeable neighborhoods; GAP Goal 14 to decrease VMT; General Plan 2025; Specific Plan and Zoning Code updates; consistent with SCAG's RTP/SCS.

Density describes the number of people, jobs, or housing units in a given area. Increasing density generally results in shorter distances between locations, making transit and non-motorized transportation options such as walking and biking more

viable. GHG emissions associated with vehicle miles traveled (VMT) are reduced as more individuals choose alternative transportation modes. Increases in density must generally fit within assumptions of a jurisdiction's General Plan, although amendments can be made to increase density in certain areas.

The City is undergoing a specific plan and Zoning Code update with the goal of re-envisioning much of the commercial, office and industrial zoned properties throughout the City that encompasses nearly 20% of the City area. As part of this effort, the City may create incentives for higher-density development, particularly along major transit corridors.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

There may be opportunities for local contractors, who would be involved in the higher density development that may be envisioned as part of the specific plan and Zoning Code updates; though these contractors would likely be involved in new construction regardless of this measure.

## Other Community Co-Benefits





## Measure T-7: Mixed-Use Development

*Provide for a variety of development types and uses.*

**2020 GHG Reduction Potential: 769 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,153 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Silver
Implementation Status:	In progress
Relative Cost Effectiveness	High (Cost to the City would only accrue when supporting documents such as the General Plan, Development Code, etc. are updated or modified)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division
Objectives:	By 2020: Achieve a 5% improvement in the jobs/housing ratio over baseline conditions. By 2035: Achieve a 10% improvement in the jobs/housing ratio over baseline conditions.
Progress Indicators and Metrics:	Percentage change in jobs/housing ratio within new development areas from 2010 baseline.
Local Co-Benefits:	Increased health and mobility; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; GAP Goal 10A encourage high density, mixed-use, walkable/bikeable neighborhoods; General Plan 2025; Specific Plan and Zoning Code updates; consistent with SCAG's RTP/SCS.

Development can occur in many forms, ranging from single-family homes on large plots of land to multi-family housing with high vertical construction for residential areas, and single-use to multi-use zoning for commercial properties. While land development choices are typically made at the household or business level, recent studies show that individuals are more frequently demanding higher-density, multi-use regions that are more walkable. Most WRCOG jurisdictions have identified portions of their communities where future higher-density development is desirable. Such development reduces both

VMT and GHGs, as individuals can accomplish many tasks in a single mixed-use area. This also can improve community health by encouraging bicycling and walking, improve air quality by reducing tailpipe emissions, and increase the community's sense of place.

For the WRCOG subregion, mixed-use development is classified as having at least three of the following features either on-site or within ¼ mile:

- Residential development;
- Retail development;
- Park;
- Open space; or
- Office.

Within the City of Riverside, there are significant opportunities for mixed-use, particularly within the Downtown Core area. There is already a mix of retail, housing, and office within the Downtown and additional mixed-use development will only improve the current mix of uses.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

There may be opportunities for local contractors, who would be involved in the construction of these buildings; though these contractors would likely be involved in new construction regardless of this measure.

## Other Community Co-Benefits





## Measure T-8: Pedestrian-Only Areas

*Encourage walking by providing pedestrian-only community areas.*

**2020 GHG Reduction Potential: 1,399 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,824 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Relative Cost Effectiveness	Low (Cost associated with this measure would be for any additional maintenance and other services (police, cleaning, etc.)
Synergy with RRG-EPAP:	Medium
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division
Objectives:	By 2020: Designate one additional major activity center as permanent pedestrian-only area. By 2035: Designate one additional major activity center as permanent pedestrian-only area
Progress Indicators and Metrics:	Change in the number of temporary or permanent pedestrian-only zones from 2010 baseline.
Local Co-Benefits:	Increased health, recreational, and mobility; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; General Plan 2025; Specific Plan and Zoning Code updates.

Also referred to as an urban non-motorized zone, a pedestrian-only area restricts certain portions of a central business district or major activity center to non-motorized transportation.

There is one current pedestrian only zone in the City, which is located in the Downtown. The City could choose to expand this area or designate another area in the City to operate as a pedestrian only area.



## Local Economic Opportunities

### *Synergistic EOA: Eco Business Zone*

An additional or expanded pedestrian only area could create opportunities for local businesses who provide food, drink, and shopping. The current pedestrian only area in the Downtown is next to numerous restaurants and shops which are heavily patronized by the employees, visitors, and residents. Pedestrian only areas could be prioritized within the proposed eco-corridor/green enterprise zone.

## Other Community Co-Benefits





## Measure T-9: Limit Parking Requirements for New Development

*Reduce requirements for vehicle parking in new development projects.*

**2020 GHG Reduction Potential: 17,482 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 24,757 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In Progress
Relative Cost Effectiveness:	High (Cost to the City would only accrue when parking code requirements in the Municipal Code are updated. Absent cost associated with this update, no incremental cost would accrue to the City)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division
Objectives:	By 2020: Amend zoning to reduce parking requirements by 25% for non-residential development. By 2035: Amend zoning to reduce parking requirements by 33% for non-residential development.
Progress Indicators and Metrics:	Change in the number of WRCOG jurisdictions who have amended their parking requirements to reduce parking spaces required within new development or redevelopment areas from 2010 baseline.
Local Co-Benefits:	Increased health and mobility; improved air quality.
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; Specific Plan and Zoning Code updates.

Limiting parking requirements for new development in certain areas may encourage alternative individual transportation choices, but caution should be taken to minimize

the resulting incentive to travel to more distant locations with plenty of parking. This can be accomplished by:

- Eliminating (or reducing) minimum parking requirements;
- Creating maximum parking requirements; and
- Implementing shared parking.

Limiting parking requirements would encourage modes of transportation other than single-occupancy vehicles, thereby reducing VMT and GHG emissions. If these alternative transportation modes include walking and biking, mobility and health benefits would also be realized.

The City's current Zoning Code authorizes a reduction in the number of required parking spaces for mixed-use development and/or stand-alone uses in mixed-use zones subject to the approval of a shared parking arrangement. In addition, the Zoning Administrator may grant a mixed-use parking reduction credit of up to 15 percent of the total required number of spaces where there are multiple uses in a complex with different operating characteristics, such as day time office and nighttime commercial entertainment oriented uses. Another factor in favor of granting a credit is proximity to a transit stop.

The City's future specific plan and Zoning Code updates will provide an opportunity for the City to comprehensively review its parking requirements and further incorporate state of the art techniques such as shared parking, parking cash out, and other specific strategies.



## Local Economic Opportunities

*Synergistic EOAs: Green Building Standards; Eco Business Zone*

Reducing parking requirements, particularly if it is tailored to specific areas within the City, has the potential to incentivize certain types or forms of development within sub-areas of the City. For example, this strategy is likely to be most effective in the more dense areas of the City such as the Downtown Core. Local land owners and developers within these areas could benefit as a reduction in parking requirements will reduce cost of development by reducing the need to provide parking areas on site. Additionally, land may be freed up for buildings as the City reduces parking requirements.

## Other Community Co-Benefits





## Measure T-10: High Frequency Transit Service

*Implement bus rapid transit service in the subregion to provide alternative transportation options.*

**2020 GHG Reduction Potential: 1,399 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 2,330 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	2016
Relative Cost Effectiveness:	N/A- Any incremental cost associated with this measure would accrue to RTA as the transit operator.
Synergy with RRG-EPAP:	High
Ease of Implementation:	High
Responsibility:	Public Works Department in conjunction with RTA
Objectives:	By 2020: Work with RTA to offer high frequency transit service within one (1) corridor. By 2035: Work with RTA to offer high frequency transit service within two (2) corridors.
Progress Indicators and Metrics:	Number of corridors in which high frequency transit service has been implemented since 2010 baseline.
Local Co-Benefits:	Increased mobility and improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; GAP Goal 14 to decrease VMT; General Plan 2025; Specific Plan and Zoning Code updates; consistent with SCAG's RTP/SCS and Statewide Cap & Trade program.

The WRCOG subregion is one of the fastest growing areas in California. As more residents and employees occupy the area, there will be increased need to move people efficiently in and out of the area. A high frequency transit system such as bus rapid transit (BRT) would provide an alternative to constructing more roadways and allow commuters and residents additional transportation options. Jurisdictions participating in this measure have an objective to work with RTA to identify corridors where BRT service would provide an effective and logical transportation option.

The City of Riverside has several corridors where BRT service could be implemented including University Avenue and Magnolia Avenue. As these corridors may be prioritized for the proposed Streetcar, BRT could represent either an interim solution prior to the construction of the Streetcar or as a complement to the Streetcar.



## **Local Economic Opportunities**

*Synergistic EOA: Eco Business Zone*

The implementation of BRT along selected corridors within the City could serve as a way to direct future development to areas which have higher densities and supporting non-motorized facilities (sidewalks and bike lanes). Landowners along these corridors may see an increase in value and there may be opportunities for developers to redevelop parcels to transit supportive uses such as offices and multi-family housing.

## **Other Community Co-Benefits**





## Measure T-11: Voluntary Transportation Demand Management

*Encourage employers to create TDM programs for their employees.*

**2020 GHG Reduction Potential: 2,185 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 3,095 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	Ongoing
Relative Cost Effectiveness:	N/A - Any additional costs associated with this measure would accrue to building owners, building operators, and other private parties
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division
Objectives:	By 2020: 25% of employees within the City participate in voluntary TDM programs. By 2035: 33% of employees within the City participate in voluntary TDM programs.
Progress Indicators and Metrics:	Percent change in the number of employees participating in voluntary TDM programs since 2010.
Local Co-Benefits:	Increased health and mobility; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT

TDM describes strategies to reduce demand for roadway travel, particularly in single-occupancy vehicles. TDM strategies can include both “carrot” and “stick” approaches to change travel behavior patterns. Specific examples include preferential parking for carpoolers and parking pricing.

While SCAG offers regional approaches such as high-occupancy vehicle lanes, this measure focuses on efforts by individual existing business owners in the WRCOG subregion to develop TDM strategies, such as parking “cash out” programs and allowing telecommuting. Several TDM strategies can be offered; often, multiple programs can enhance one other rather than being redundant. In addition to reducing GHG emissions, TDM strategies often ease congestion and improve air quality.

Within the City of Riverside, these strategies would be applied by individual employers in conjunction with Measure T-4 (Promotional TDM). Larger employers would be encouraged to offer TDM programs to their employees. The City would act as a resource for local businesses who may need technical assistance, example programs, and other related items.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

There limited local business opportunities related to this measure.

## Other Community Co-Benefits





## Measure T-12: Accelerated Bike Plan Implementation

*Accelerate the implementation of all or specified components of a jurisdiction’s adopted bike plan.*

**2020 GHG Reduction Potential: 3,496 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 4,951 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Relative Cost Effectiveness:	Medium - \$100,000 at 2020 for maintaining additional bicycle facilities beyond Measure T-1. Total capital cost for the full completion of the City’s Bicycle Master Plan is approximately \$30M. Pro-rata share of City’s Bicycle Master Plan would therefore be \$7.5M.
Synergy with RRG-EPAP:	Low
Ease of Implementation:	Medium
Responsibility:	Community Development and Public Works Departments
Objectives:	By 2020: 75% of all bike facility miles identified in the City’s Bike Plan shall be installed  By 2035: 100% of all bike facility miles identified in the City’s Bike Plan shall be installed
Progress Indicators and Metrics:	Percent change in the number of bicycle facility miles installed since 2010.
Local Co-Benefits:	Increased health, recreation and mobility; improved air quality
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; Bicycle Master Plan; Draft city-wide bike design guidelines; consistent with regional Active Transportation Program and SCAG’s RTP/SCS.

Several jurisdictions within WRCOG are currently implementing existing Bicycle Master Plans and/or Trails Plans. These plans outline a series of on-street and off-street facilities to increase bicycle use within the community. This measure addresses accelerated implementation of these Master Plans to provide additional facilities by 2020 beyond those identified in Measure T-1.

The City is currently implementing their bicycle plan, as described in Measure T-1. One recent implementation action was to designate “green” bicycle lanes along Brockton Avenue in the Downtown.



## Local Economic Opportunities

*Synergistic EOAs: Expand Bicycle Infrastructure; Eco Business Zone*

The primary economic benefit would occur through the creation of a Bicycle Friendly District as noted in T-1.

## Other Community Co-Benefits





## Measure T-13: Fixed Guideway Transit

*By 2020, complete feasibility study and by 2025 Introduce a fixed-route transit service in the jurisdiction.*

**2020 GHG Reduction Potential: 0 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 13,981 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In progress
Relative Cost Effectiveness:	Low - Feasibility study assumed to be complete by 2020. No additional expenses assumed until fixed-guideway system is operational.
Synergy with RRG-EPAP:	High
Ease of Implementation:	Low
Responsibility:	Community Development and Public Works Departments
Objectives:	By 2020: Complete feasibility study for a fixed-guideway system. By 2035: Implement a fixed-guideway transit system
Progress Indicators and Metrics:	Annual community-wide fixed guideway transit ridership.
Local Co-Benefits:	Increased health and mobility; economic opportunities
Alignment with Other City Efforts:	Riverside Reconnects Streetcar Feasibility Study; GAP Goal 14 to decrease VMT; consistent with SCAG's RTP/SCS and the statewide Cap & Trade program.

This measure applies specifically to the City of Riverside's efforts on the "Riverside Reconnects" Streetcar feasibility study that would determine the economic feasibility of a future Streetcar alignment. This Streetcar would provide fixed-route transit service through the City of Riverside, providing access to major destinations such as the University of California, Riverside, Downtown Riverside, and other major destinations throughout the city. The City would plan, design, construct, and operate the streetcar.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

There are significant local business opportunities related to the Streetcar. Streetcars have a demonstrated history of increasing land values along parcels adjacent to the lines. That increase in value often occurs concurrent with additional development and redevelopment, as with other communities where Streetcars have implemented. Similar to other measures, the Streetcar provides the ability for the City to direct growth to areas of the City with existing infrastructure.

## Other Community Co-Benefits





## Measure T-14: Neighborhood Electric Vehicle Programs

*Implement development requirements to accommodate Neighborhood Electric Vehicles and supporting infrastructure.*

**2020 GHG Reduction Potential: 3,496 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 4,660 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status	In progress
Relative Cost Effectiveness:	Medium (\$100,000- Based on cost for additional signage and education program, which might require additional staff resources or retasking of existing staff)
Synergy with RRG-EPAP:	High
Ease of Implementation:	Medium
Responsibility:	Community Development and Public Works Departments
Objectives:	By 2020: Adopt a comprehensive NEV program including signage for NEVs and an educational program related to NEV use.  By 2035: Adopt a comprehensive NEV program including signage for NEVs and an educational program related to NEV use.
Progress Indicators and Metrics:	Implementation of NEV program
Local Co-Benefits:	Increased mobility and improved air quality
Alignment with Other City Efforts:	Four City Electric Vehicle Plan; GAP Goal 14 to decrease VMT

Neighborhood electric vehicles (NEVs) emit fewer GHGs than traditional passenger vehicles and reduce local air pollution. NEVs generally are used in areas with speed limits of 35 miles per hour or less for relatively short (less than 30 miles) trips. This measure

introduces development requirements for signage and educational programs related to the use of NEVs consistent with state regulations.

Within the City of Riverside, NEV's can address short-distance trips, which may be difficult to complete by walking or biking. Therefore, NEV's would be a complement to the Streetcar, the BRT, or other strategies which additional connectivity is required and the use of a personal automobile would be problematic or otherwise undesirable.



## **Local Economic Opportunities**

*Synergistic EOAs: Clean Vehicles and Charging/Fueling Stations; RPU Clean Technology Funding; Eco Business Zone*

The local business opportunity associated with this measure would likely occur at facilities where NEV's may park or otherwise congregate. For example, if the City were to install NEV charging stations or parking lots, those facilities could attract a high level of foot traffic. This level of foot traffic could then support restaurants, cafes, and shops similar to other strategies such as T-1.

## **Other Community Co-Benefits**





## Measure T-15: Subsidized Transit

*Increase access to transit by providing free or reduced passes.*

**2020 GHG Reduction Potential: 3,496 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 4,951 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Platinum
Implementation Status:	In Progress
Relative Cost Effectiveness:	Low (\$1M per year, assuming expansion of passes beyond those already offered to students at locations such as UCR)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	RTA, UCR and City
Objectives:	<p>By 2020: Provide subsidized or discounted transit passes to 2% of residents, students, and employees living, working or going to school in the community.</p> <p>By 2035: Provide subsidized or discounted transit passes to 2.5% of residents, students, and employees living, working or going to school in the community</p>
Progress Indicators and Metrics:	Change in the number of discounted transit passes provided per total residents, students and employees living, working, or going to school in Riverside since 2010.
Local Co-Benefits:	Increased mobility and improved air quality
Alignment with other City efforts:	

One approach to increase transit use within a jurisdiction is lowering the cost of using transit. Within Western Riverside County, the typical approach has been to provide reduced cost transit passes such as those provided by several universities. This approach is generally targeted at groups such as students or seniors who may lack access to vehicles.

Within the City of Riverside, the primary recipients of discounted transit passes currently are students and staff at UC Riverside, who are able to ride RTA buses to and from campus for free.



## Local Economic Opportunities

*Synergistic EOA: Eco Business Zone*

There limited local business opportunities related to this measure.

## Other Community Co-Benefits





## Measure T-16: Bike Share Program

*Create nodes offering bike sharing at key locations throughout the City.*

**2020 GHG Reduction Potential: 210 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 280 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	N/A
Implementation Status:	2015
Relative Cost Effectiveness:	Medium (Based on assumption that private vendor operates bike share as turnkey operation, as is done with other larger cities currently)
Synergy with RRG-EPAP:	High
Ease of Implementation:	Low
Responsibility:	Community Development Department, Planning Division
Objectives:	2020: Complete pilot study for bike sharing and install four bike sharing station in the City of Riverside 2035: Install bike sharing in eight or more locations in the City of Riverside
Progress Indicators and Metrics:	Number of bike sharing stations in the City of Riverside
Local Co-benefits:	Increased health and mobility; improved air quality
Alignment with other City efforts:	GAP Goal 14 to decrease VMT; Air Quality Improvement Fund

Bike sharing allows users to rent bicycles for a nominal fee, use them on a temporary basis, and then return the bicycle to either the same location or another designated location. Bike sharing allows a person to use a bicycle on a temporary basis, removing the need to purchase and own a bicycle. Bike sharing is becoming increasingly common in larger Cities such as Chicago and New York, where they serve as a usual adjunct to transit. Bike sharing is most often run by third-party vendors, who are responsible for maintaining and operating the system. These vendors typically set up stations where bikes are rented and returned. The number of stations would vary based on the size of the system.

In the City of Riverside, bike sharing would most likely be implemented in either the Downtown, transit stations or in areas with high density and mix of uses such as along University Avenue. The City of Riverside is currently conducting a pilot study on bike sharing, using grant funding. This pilot study will explore implementing bike sharing at one or more locations in the City.

In June 2014, the City Council approved a Bike Share project that will provide four bicycle stations at key destinations linking Downtown to the Metrolink Station and the University of California, Riverside to promote bicycle usage. The estimated cost including design is \$303,000. The City was approved for \$240,000 in grant funds if the City will provide a \$63,000 match.



### **Local Economic Opportunities**

*Synergistic EOAs: Expand Bicycle Infrastructure; Eco Business Zone; Buy and Produce Local Initiative*

Bike sharing stations can be operated through private, turn-key vendors or through public-private partnerships. Business opportunities related to bike sharing would generally revolve around those locations in which bike sharing stations are implemented. Those stations often generate a certain level of economic activity such as small restaurants, cafes, shops, and other similar uses.

### **Other Community Co-Benefits**





## Measure T-17: Car Share Program

*Offer Riverside residents the opportunity to use car sharing to satisfy short-term mobility needs.*

**2020 GHG Reduction Potential: 2,797 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 3,728MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	N/A
Implementation Status:	In progress at UC Riverside
Relative Cost Effectiveness:	High (Based on assumption that car share program is operated privately by vendor. Car share program would therefore be a turnkey operation with no cost or revenue accruing to City)
Synergy with RRG-EPAP:	High
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division and Public Works
Objectives:	2020: Install one location in the City of Riverside where car sharing is available. 2035: Develop two locations in the City of Riverside where car sharing is available.
Progress Indicators and Metrics:	Number of car sharing stations in the City of Riverside
Local Co-Benefits:	Improve air quality and mobility
Alignment with Other City Efforts:	GAP Goal 14 to decrease VMT; Air Quality Improvement Fund

Similar to bike sharing, car sharing allows persons to rent cars for short periods of time. Unlike traditional rental cars, car sharing may be used only for one trip or one day instead of multi-day periods. Also, car sharing often requires less effort than traditional rental cars. Obtaining a car at a location might require only the use of a smart phone app unlike the more extensive rental car process. Car sharing stations are also much smaller than traditional rental car locations, in which only 4-5 cars might be available at one time. Similar to bike sharing, car sharing also typically occurs through a third party vendor who operates and maintains the facility.

There is an existing car sharing station at UC Riverside. This strategy would involve the deployment of car sharing to additional locations in the City. Potential locations could include the three Metrolink Stations in the City (two existing plus one proposed) and the Downtown.



## Local Economic Opportunities

*Synergistic EOAs: Eco Business Zone; Buy and Produce Local Initiative*

Business opportunities related to car sharing would generally revolve around those locations in which car sharing stations are implemented. Those stations often generate a certain level of economic activity such as small restaurants, cafes, shops, and other similar uses. Car sharing is often co-located with transit, bike sharing, and other similar uses.

## Other Community Co-Benefits





## Measure T-18: SB 743- Alternative to LOS

*Use SB 743 to incentivize development in the downtown and other areas served by transit.*

**2020 GHG Reduction Potential: 2,028 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 2,703 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	N/A
Implementation Status:	In Progress
Relative Cost Effectiveness:	High (No additional cost to City unless supporting documentation such as traffic study guidelines are updated during this time frame)
Synergy with RRG-EPAP:	High
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division & Public Works Department, Traffic Engineering Division
Objectives:	2020: Develop guidelines to direct development to Downtown and other desired locations  2035: Develop guidelines to direct development to Downtown and other desired locations
Progress Indicators and Metrics:	Development of new City guidelines for traffic studies and CEQA which encourage development in high priority areas such as Downtown and those areas served by transit.
Local Co-Benefits:	Increased health and mobility; improved air quality
Alignment with Other City Efforts:	Complies with SB 743

SB 743 removes Level of Service (LOS) as an analysis metric under CEQA. Instead, the Vehicle Miles Traveled (VMT) is used as the primary evaluation criteria to determine traffic impacts. The primary purpose of this effort is to avoid penalizing in-fill development, which often generates LOS impacts in urbanized areas with limited opportunities where such impacts are not easily mitigated.

For the City of Riverside, the primary benefits of SB 743 will occur as development and redevelopment occurs in areas such as the Downtown, where a traditional traffic analysis would likely generate a long list of intersection and roadway impacts based on the application of LOS criteria. As such, the use of VMT instead of LOS could reduce traffic impacts for projects in the Downtown. The City could potentially apply the provisions of SB 743 to streamline or incentivize development in the Downtown. This streamlining will change how the City evaluates traffic impacts under CEQA.



### **Local Economic Opportunities**

The local business opportunity associated with this measure would be associated with new development. Land owners in areas could benefit from additional development, leading to higher land prices. Contractors could also benefit as they are hired to build new buildings and redevelop existing buildings. The economic benefits for this strategy would likely be similar to T-8 and T-9.

### **Other Community Co-Benefits**





## Measure T-19: Alternative Fuel & Vehicle Technology and Infrastructure

*Promote the use of alternative fueled vehicles such as those powered by electric, natural gas, biodiesel, and fuel cells by Riverside residents and workers.*

**2020 GHG Reduction Potential: 5,245 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 6,991 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	N/A
Implementation Status:	In Progress
Relative Cost Effectiveness:	Medium (Assumes that City costs for alternative fueled vehicle infrastructure is limited to lower cost items such as electric vehicle charging stations and costs are offset through the use of grants from CARB, the Air District, and other agencies.)
Synergy with RRG-EPAP:	Medium
Ease of Implementation:	Medium
Responsibility:	Community Development Department, Planning Division & Public Works Department, Traffic Engineering Division
Objectives:	2020: Install 10 alternative fuel vehicle charging or filling stations throughout the City  2035: Install 20 alternative fuel vehicle charging or filling stations throughout the City
Progress Indicators and Metrics:	Number of alternative fueled vehicle stations installed
Local Co-Benefits:	Improved air quality
Alignment with Other City Efforts:	Consistent with Statewide Cap & Trade, Air District Air Quality Management Plan, SCAG SCS/RTP

The State of California, SCAG, the Air District, and other agencies have been aggressively promoting the use of alternative fueled vehicles which use other power sources besides gasoline. Plug-in hybrids and electrically powered vehicles are available from many of the major car manufacturers as of 2015. Other available technologies include hydrogen, compressed natural gas (CNG), fuel cells, and biodiesel.

While there are ongoing programs to incentivize the purchase of these vehicles using funding from sources such as Cap and Trade, there is also a significant need to provide fueling stations for these vehicles since they derive their power from facilities other than typical gasoline service stations. As such, the City of Riverside can play a significant role by building and maintaining these alternative vehicle fueling stations.

A likely implementation strategy would be for the City to provide these fueling stations in conjunction with other City facilities. For example, the City provides electric vehicle charging stations at City Hall and could provide them within public parking garages. Additionally, the City could provide hydrogen fueling facility if they were to build one for City. The City currently provides public access to a CNG fueling facility for City vehicles.



## Local Economic Opportunities

*Synergistic EOAs: RPU Clean Technology Funding; Eco Business Zone; Clean-Tech Incubator*

Local business opportunities would occur as these facilities are constructed. There would be opportunities for local contractors to install these facilities, which could require extensive electrical or other infrastructure work. Additionally, there will be opportunities to work with local innovators and researchers at facilities such as UC Riverside as new technology is developed and deployed.

## Other Community Co-Benefits





## Measure T-20: Eco- Corridor / Green Enterprise Zone

*Create a geographically defined area(s) featuring best practices in sustainable urban design and green building focused on supporting both clean-tech and green businesses.*

**2020 GHG Reduction Potential: Supporting Measure**

**2035 GHG Reduction Potential: Supporting Measure**

WRCOG Participation Level:	N/A
Implementation Status:	In Progress
Relative Cost Effectiveness:	Medium (Cost to prepare sustainable development and design standards/ performance measures for the defined area including incentive package for attracting businesses and development)
Synergy with RRG-EPAP:	High
Ease of Implementation:	Medium
Responsibility:	Community Development Department, Planning Division and Economic Development Department
Objectives:	2020: Form Eco-Corridor/Green Zone - define location/area, develop performance standards/guidelines to direct development and incentivize businesses.  2035: Promote and manage Eco-Corridor/Green Zone.
Progress Indicators and Metrics:	Development and promotion of an Eco-Corridor/Green Business Zone
Local Co-Benefits:	Increased health and mobility; improved air quality
Alignment with Other City Efforts:	Seize our Destiny report and Job Creation Strategy

Eco-Corridors/Green Business Zones are districts where neighbors, community institutions, and businesses join with city leaders and utility providers to set and meet ambitious sustainability performance goals, co-develop and implement innovative district-scale projects and track the results over time. A defined Eco-Corridor/Green Business Zone would create comprehensive policy and implementation strategy at the

city level and accelerate district-scale sustainability by integrating building and infrastructure projects with community and individual action. It is a new model of public-private partnership that emphasizes innovation and deployment of district-scaled best practices to create a neighborhood/district of the future – resilient, vibrant, resource efficient and just.

Technologies and strategies for enhancing district sustainability include smart grid, district energy and water management, bike sharing, rainwater harvesting, green streets, zero waster programs, district composting, water to energy, safe routes to school, tree planting campaigns, transportation demand management, car sharing, bike lanes, sidewalk improvements, urban agriculture, public art, green maps, multi-modal transit and resource sharing. Many of these strategies are reflected as reductions measures in the Riverside CAP and could be scaled to a district level with higher performance goals. A potential location for an Eco-Corridor/Green Business Zone in Riverside is the Magnolia-University Avenue corridor, known as the “L-Corridor”, which connects the Downtown to the UCR campus.



## Local Economic Opportunities

*Synergistic EOAs: multiple, including Global Markets*

This measure represents one of the key EOAs in the RRG-EPAP, and it is synergistic with most of the other EOAs. The economic benefits of this measure create competitive and livability advantages to the defined area/district while providing long-term value for existing businesses and creative job opportunities. Potential opportunities and outcomes include improved environmental performance, local deployment of emerging technologies, equitable distribution of investments, improved community participation, new patterns of behavior, economic benefits for local businesses and job creation. Clean-tech and green businesses can be incentivized through a dedicated Green Business Program, enterprise zone incentives, and special showcasing opportunities. As recommended in the EPAP, a physical incubator office could be located within the district/zone to offer counsel, funding resources, office space and R&D lab space to clean-tech companies looking to launch and grow with Riverside as their base.

## Other Community Co-Benefits



## LOCAL WATER MEASURES

The following local measure is expected to reduce GHG emissions associated with the water sector.



### Measure W-1: Water Conservation and Efficiency

*Reduce per capita water use by 20% by 2020.*

**2020 GHG Reduction Potential: 10,748 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 10,748 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	N/A
Implementation Status:	In progress
Relative Cost Effectiveness:	High
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	RPU in conjunction with Community Development Department, Planning Division
Objectives:	Prior to 2020: Reduce per capita water use by 10% from baseline level by 2015 2020: Reduce per capita water use by 20%
Progress Indicators and Metrics:	N/A
Local Co-Benefits:	N/A
Alignment with Other City Efforts:	Complies with SBX7-7

SB X7-7 is part of a California legislative package passed in 2009 that requires urban retail water suppliers to reduce per-capita water use by 10% from a baseline level by 2015, and to reduce per-capita water use by 20% by 2020. GAP Goal 16 directly aligns with SB X7-7. In Southern California, energy costs and GHG emissions associated with the transport, treatment, and delivery of water from outlying regions are high. Therefore, the region has extra incentive to reduce water consumption. While this is considered a state measure, it will be up to the local water retailers, jurisdictions, and water users to meet these targets. A number of policies have been established at the local level within

the subregion requiring more efficient use of water, including landscape ordinances that require native or low-irrigation landscaping. Water retailers also offer resources that incentivize purchase of high-efficiency appliances and provide information on best management practices, landscaping, and the use of recycled and gray water systems.

While emissions reductions associated with water conservation efforts are likely, the emissions inventories conducted for the WRCOG Subregional CAP did not include a water emissions sector. To be conservative in estimating the RRG-CAP's emissions reduction potential, reductions associated with this measure are not quantified here. Future WRCOG and City of Riverside emissions inventory updates may include a separate water emissions sector, in which case it would be appropriate to estimate the reduction potential of water conservation efforts.

Current efforts by the City that aid in implementing this measure include adoption of the City's Water Efficient Landscape Ordinance (Riverside Municipal Code Chapter 19.570) in compliance with AB 1881 in 2009 and pending Draft Water Efficient Landscape Design Guidelines. Other related Ordinances include Recycled Water Ordinance (RMC Chapter 14.28) and Water Conservation Ordinance (RMC Chapter 14.22). All of these efforts and more are outlined in the City's Urban Water Management Plan.



## Local Economic Opportunities

*Synergistic EOAs: Energy and Water Upgrades for Home or Business; Green Building Standards; Eco Business Zone*

There is a wide array of products on the market that aim to enhance water use efficiency for households and businesses. RPU offers incentives for the installation of products that reduce water use, including low-flow shower heads, high efficiency toilets, and drip irrigation systems. RPU also offers incentives for installing water efficient landscaping, such as drought tolerant native plants, and for replacing grass areas with artificial turf. The City can partner with local vendors and installers to increase promotion of its incentive programs, while also increasing local business.

There are endless opportunities in the research and development of new water savings technologies, and the promotion of existing but less common technologies, as water scarcity and security continue to be a primary concern for California.

## Other Community Co-Benefits



## LOCAL SOLID WASTE MEASURES

The following are local measures that can be implemented to reduce GHG emissions associated with the solid waste sector.



### Measure SW-1: Yard Waste Collection

*Provide green waste collection bins community-wide.*

**2020 GHG Reduction Potential: 468 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 1,238 MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	In progress
Relative Cost Effectiveness:	Low (Coordination with contracted waste hauler)
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Public Works
Objectives:	By 2020: Provide residential green waste bins for collection and transport to an organic waste processing facility. By 2035: Continue to provide yard waste collection services.
Progress Indicators and Metrics:	Achievement of 95% diversion of residential yard waste from landfill waste stream by 2020.
Local Co-Benefits:	Public health benefits, increase life of landfill
Alignment with Other City Efforts:	Aligns with GAP Goal 6 to implement programs to reduce waste by 75% by 2020.

The City will continue to offer green waste collection bins for residential yard waste. Diverting yard waste from landfills helps to extend the life of the City's contracted landfills. In addition, grass clippings and leaves can be composted into nutrient-rich topsoil amendments, and branches can be chipped into mulch for reuse in

landscaping. Removing beneficial organic materials from landfills also helps avoid the creation of landfill methane, a potent GHG.



## **Local Economic Opportunities**

*Synergistic EOA: Buy and Produce Local Initiative*

This measure represents a continuation of current services. Opportunities for local composting and mulching services may exist for local service providers.

## **Other Community Co-Benefits**





## Measure SW-2: Food Scrap and Compostable Paper Diversion

*Divert food and paper waste from landfills by implementing commercial and residential collection program.*

**2020 GHG Reduction Potential: 571 MT CO<sub>2</sub>e/yr**

**2035 GHG Reduction Potential: 9,317MT CO<sub>2</sub>e/yr**

WRCOG Participation Level:	Gold
Implementation Status:	Implement targeted commercial composting program through 2020. Accept residential food scraps in waste bins by 2020. Implement mandatory commercial composting by 2020.
Relative Cost Effectiveness:	Low
Synergy with RRG-EPAP:	Medium
Ease of Implementation:	High
Responsibility:	Public Works
Objective(s):	Prior to 2020: 20% of businesses divert 90% of compostable waste from landfills By 2035: Accept residential food scraps in waste bins so that 90% of residents and businesses divert 75% of compostable waste.
Progress Indicators and Metrics:	20% of businesses divert 90% by 2020 90% of residents and businesses divert 75% by 2035
Local Co-benefits:	Public health benefits, increase life of landfills
Alignment with other City efforts:	Aligns with GAP Goal 6 to implement programs to reduce waste by 75% by 2020.

Food scraps are unwanted cooking preparation and table scraps, such as banana peels, apple cores, vegetable trimmings, bones, egg shells, meat, and pizza crusts.

Compostable paper, sometimes called food-soiled paper, usually comes from the kitchen and is not appropriate for paper recycling due to contamination. Materials such as stained pizza boxes, uncoated paper cups and plates, used coffee filters, paper food cartons, napkins, and paper towels are all compostable paper. Food scraps alone represent nearly 20% of total landfilled solid waste statewide. Diverting these organic items from landfills helps to reduce landfill methane gas generation, and can help prolong the lifespan of area landfills.

The City would work with its waste hauler to accept food scraps and organic waste in residential green waste bins by 2020. The City would also implement a pilot food scrap and organic waste composting program to be implemented by businesses in special focus areas that could include eco-corridor/green enterprise zone(s), and other businesses throughout Riverside that are interested in participating. By 2035 the City would extend the commercial composting program to all businesses in Riverside.



### Local Economic Opportunities

*Synergistic EOAs: Buy and Produce Local Initiative; Eco-Corridor*

A market could be created or tapped into for recycling and re-purposing of materials to promote diversion of food and other solid waste from landfills. Specifically, the measure could create opportunities for businesses specializing in composting, and training companies to reduce their landfill waste by diverting compostable waste.

### Other Community Co-Benefits



## LOCAL FOOD, AGRICULTURE AND URBAN FOREST MEASURES

The following are local measures that can be implemented to reduce GHG emissions associated with the urban forest and the local food and agricultural sectors.



### Measure A-1: Local Food and Agriculture

*Promote local food and agricultural programs.*

**2020 GHG Reduction Potential: Supporting Measure**

**2035 GHG Reduction Potential: Supporting Measure**

WRCOG Participation Level:	N/A
Implementation Status:	In progress
Relative Cost Effectiveness:	Low
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Community Development Department, Planning Division; Public Works Department, Parks and Recreation
Objective(s):	N/A
Progress Indicators and Metrics:	Number of new community gardens since 2007; Acres of Ag land preserved since 2007
Local Co-benefits:	Public health, local economic, benefits, energy reduction from local transport
Alignment with other City efforts:	Aligns with GAP Goal 18 to implement programs to create a 5% increase in community participation in and community gardening programs aimed at reducing population obesity; aligns with GrowRIVERSIDE program

Conventional food production is recognized as one of the nation’s largest sources of environmental degradation. Globally, one-third of greenhouse gas emissions result from the food system, when accounting for importation, soil degradation and deforestation. While not captured in a traditional sector-based GHG emissions inventory, choosing more sustainable and less-carbon intensive food yields significant individual and collective benefit.

How we spend our food dollars, as individuals, businesses, and as a city, can improve the quality of life in our community, and in the communities where our food is produced. Eating locally produced, fresh food, and choosing grains, fruits, and vegetables instead of meat, has the dual benefits of lowering greenhouse gas emissions associated with food production and improving health.

CARB recognizes agriculture as one of six economics sectors that are key to meeting the state’s long term GHG reduction goals.<sup>2</sup> Eleven percent of the total acreage of the City of Riverside is designated for agricultural use, unparalleled for a Southern California city of its size. Local growers maintain more than 1,000 acres of citrus groves. As Riverside continues to grow, so does local pride for the City’s rich agricultural history and consumer demand for healthful local foods. Riverside can support sustainable, local, and organic food through its own purchasing, and by helping to make sustainable food more accessible to its residents. The City can reduce carbon emissions from food by promoting its thriving Farmers Markets and limiting municipal purchasing of meat and dairy products.

Riverside is taking steps to create a sustainable food ecosystem of innovation, entrepreneurship and investment through its annual GrowRIVERSIDE conference which provides a platform to examine the city’s initial steps to build its local food system as well as explore through keynotes, plenary discussions and breakout sessions, the agricultural methodologies, technologies and business models to further strengthen the community, environment and economy.



## Local Economic Opportunities

*Synergistic EOAs: Buy and Produce Local Initiative; Eco-Corridor*

Economic opportunities represented by this measure include:

- Production – Increasing local food production in a sustainable manner; Economically viable urban farming business models; Innovative growing technologies;
- New Business Creation – Creating new farming enterprises and food businesses; creating additional capacity in the form of new farmers and agricultural entrepreneurs;
- Local Food Sales and the Marketplace – Understanding what buyers want; investigation of the various local food sales channels; and
- Community Impact – Local food access for all; food policy to benefit community, economy and environment; health impact.

## Other Community Co-Benefits



<sup>2</sup> California Air Resources Board (CARB), 2014: First Update to the Climate Change Scoping Plan, May 2014, p. 27



## Measure A-2: Urban Forest

*Augment City’s Urban and Community Forest Program to include an Urban Forest Management Plan*

**2020 GHG Reduction Potential: Supporting Measure**

**2035 GHG Reduction Potential: Supporting Measure**

WRCOG Participation Level:	N/A
Implementation Status:	2017
Relative Cost Effectiveness:	Medium
Synergy with RRG-EPAP:	Low
Ease of Implementation:	High
Responsibility:	Riverside Park and Recreation Commission; Public Works Department
Objective(s):	Incorporate carbon sequestration as a key objective of Urban Forest Management Program
Progress Indicators and Metrics:	Adoption of Urban Forest Management Plan Urban tree canopy percent increase
Local Co-benefits:	Cleaner air; street beautification; recreation assets; increased property values
Alignment with other City efforts:	Aligns with GAP Goal 12 to annually plant at least 1,000 trees in City parks and right-of-ways and encourage the planting of at least 3,000 shade trees on private property.

Trees provide aesthetic, environmental, and economic values, including cleaner air, arboreal habitats, and increased property values. The AB 32 Scoping Plan recognizes the key role that forests, including urban forests, and all natural and working lands must play in meeting California’s GHG emission reduction goals, by providing a carbon sink that removes CO<sub>2</sub> from the atmosphere.

As a “Tree City, USA” Riverside is proud of its Free Shade Tree program (see Measure E-2), which has successfully contributed to increasing the urban forest canopy. The City of Riverside’s Urban and Community Forestry Program is overseen by the Parks, Recreation and Community Services Commission, which is appointed by the City Council. The

City's Urban Forestry Policy Manual, last updated in August 2015, provides guidelines for the planting, pruning, preservation and removal of all trees in city rights-of-ways. The Policy Manual values the City's 150,000 street trees and 40,000 park and open space trees at more than \$332,000,000, but it does not account for the carbon sequestration value of the trees.

In the next update of the Urban Forestry Policy Manual, the City will incorporate carbon sequestration and resilience to climate change as key management objectives. The City will consider the following policies and actions:

- Staff a certified Urban Forester to orchestrate the planning and management of Riverside's urban forest, and to coordinate and educate between city departments, government agencies and the public.
- Develop an Urban Forest Management Plan with public involvement, to include a tree inventory, canopy and carbon sequestration assessments, canopy increase goals, goals to plant diverse and resilient tree species, and plans for highest and best use of harvested urban woods and biomass. The plan might also include incentives for planting and properly maintaining carbon sequestering landscapes on private property.
- Adopt/update and enforce ordinances as needed to regulate the removal and replacement of significant trees, prevent the sale of invasive tree species, prevent unlicensed tree trimming and unauthorized pruning, and update zoning requirements for bike lane and parking lot landscaping to increase shading.



## Local Economic Opportunities

*Synergistic EOAs: Buy and Produce Local Initiative; Eco-Corridor*

- Local markets for products harvested from local trees including fruit, nuts, oils, and wood.
- Local business opportunity and job creation associated with tree planting, maintenance, and harvesting.
- Trees can increase property values by as much as 15%.
- Trees provide aesthetic value that helps attract tourists to the City and customers to commercial business districts
- Decreased health care costs: Trees remove or trap lung-damaging dust, ash, pollen and smoke from the air. Greenspace and shaded sidewalks encourage outdoor activity.

## Other Community Co-Benefits



# CHAPTER B.4 MEETING POST-2020 TARGETS

## MOVING FORWARD

Successful implementation of the Riverside Restorative Growthprint Climate Action Plan (RRG-CAP) will enable the City of Riverside (City) to surpass its community-wide GHG emissions target for 2020, but more aggressive action by the City, the WRCOG sub-region, and the state is needed to reach the 2035 target. In addition to the measures in Chapter 3, reductions of nearly half a million metric tons of CO<sub>2</sub>e will be needed to close the gap. **Figure B.4-1** depicts graphically the expected impact of current RRG-

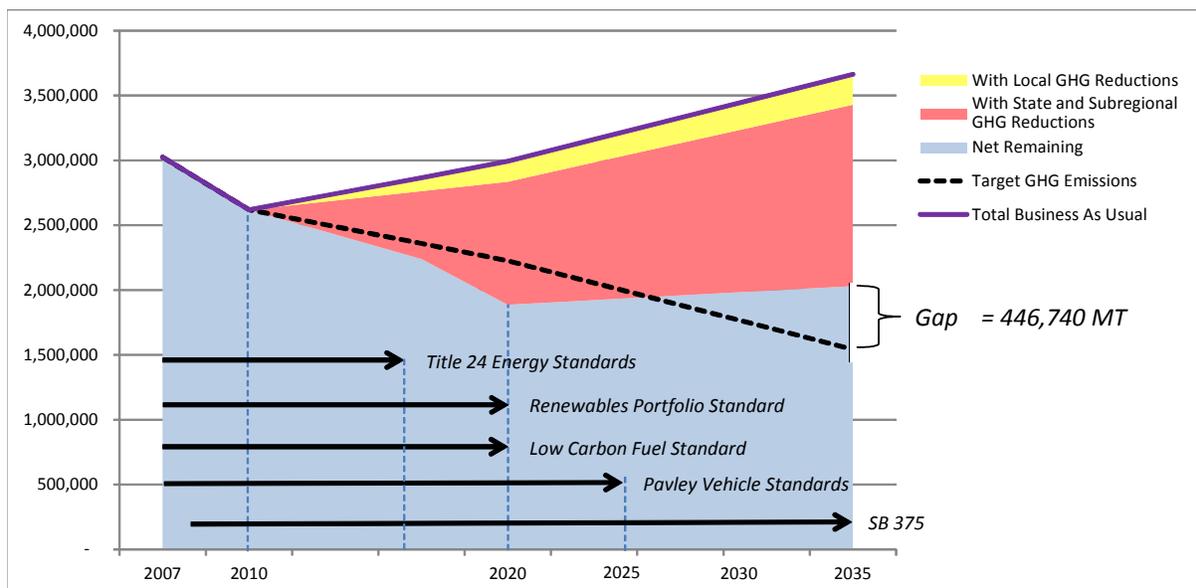


Figure B.4-1: Impact of Chapter 3 Reduction Measures on GHG Targets

CAP measures through the year 2035, showing that the measures are sufficient to keep the City on track with meeting its long-term GHG reduction goal until approximately 2026. After that point, a gap emerges between needed reductions and expected reductions, a gap that steadily grows until reaching a deficit of approximately 446,740 MT CO<sub>2</sub>e.

As Figure B.4-1 shows, state and sub-regional measures provide the bulk of GHG emission reductions in the RRG-CAP through 2020 and beyond. As indicated by recent policy developments and pronouncements by the state, we can reasonably expect this trend to continue. With the exception of SB 375, the RRG-CAP planning horizon extends beyond the time horizon addressed by the most influential state policies and regulations aimed at reducing GHG emissions. **Table B.4-1** summarizes these state measures, which all grew out of the first AB 32 Scoping Plan of 2008. While SB 375 is designed to increasingly reduce transportation emissions through 2035, the rest of the state measures, as currently legislated, achieve a steady state of GHG reduction impact well before then. As described in the following section, it is highly likely that the state of California will expand its current regulations and GHG reduction programs in the coming years to strengthen the ability of the state as a whole to reach its long-term climate protection targets.

**Table B.4-1: Time Horizon of Current State GHG Measures**

State Policy or Regulation	Sector / Source	Planning Horizon
Title 24	Title 24: Building energy standards	2017
Renewables Portfolio Standard (RPS)	Electricity: 33% renewables by 2020	2020
Low-Carbon Fuel Standard (LCFS)	Vehicle fuels: 10% reduction in fuel carbon by 2020	2020
Pavley Vehicle standards	Transportation: Vehicle efficiency standards through 2025	2025
SB 375 – Sustainable Communities Strategies (SCS)	Transportation and Land Use	2035

Additional action at the state and subregional level is critical to the City’s ability to attain its long-term GHG targets. However, the City recognizes its vital role in closing the emissions reduction gap through more aggressive local action that is synergistic with state action. The following discussion explains how reaching the state’s long term climate protections goal (80% below 1990 GHG emissions levels by 2050) will require a coordinated effort across all levels of government and all sectors of the economy. Analysis of two policy scenarios helps illustrate the challenge and identify possible solutions.

## CLOSING THE GAP

In support of its long-term climate protection goals, the state of California has been evaluating potential pathways to achieving deep economy-wide GHG reductions since the passage of AB 32 in 2006. Numerous developments in policy, technology and markets must occur for the state to achieve an economy-wide 80% reduction in GHG emissions by the year 2050 (relative to 1990). Potential pathways for achieving the state's long term goals are presented in recent policy documents including the Climate Change Scoping Plan Update (CARB, 2014) and technical reports by the California Energy Commission (CEC), California Public Utilities Commission (CPUC) and the California Independent System Operator (CAISO).

### 2014 CLIMATE CHANGE SCOPING PLAN UPDATE

Building on CARB's initial Climate Change Scoping Plan of 2008, the 2014 Update establishes a broad framework for continued emission reductions beyond 2020, across all sectors of the economy, to reduce GHG emissions to 80 percent below 1990 levels by 2050. Achieving reductions of this magnitude requires a continuation of existing policies as well as new strategies and policies to significantly scale market adoption of new technologies. The Scoping Plan Update identifies six sectors that must undergo profound transformation in order for the state to meet its 2050 goal:

1. Energy
2. Transportation (Vehicles/Equipment, Land Use, Fuels, and Infrastructure)
3. Agriculture
4. Water
5. Waste Management
6. Natural and Working Lands

Already, public and private investment in the six sectors listed above has reaped broad economic benefits for the state along with significant GHG reductions. Energy policies in particular have enabled the state to emerge as the national leader in both clean energy jobs and clean energy investment. Title 24 and other energy standards have saved Californians \$74 billion in energy costs since 1977. California has the fourth lowest per-capita energy-related GHG emissions in the country and produces on average twice as much economic value for every unit of electricity used. The Scoping Plan Update references multiple studies that show how businesses in the U.S. could collectively cut energy-related GHG emissions by more than 20 percent by 2020, and generate hundreds of billions of dollars in net savings.<sup>1</sup>

Current state polices, including SB 375, Cap and Trade, the state's Zero Emission Vehicle (ZEV) standards, and the LCFS, are aimed toward reducing per-capita fuel costs and GHG emissions from light-duty vehicles and fuel use by about 30 percent from current levels in 2020, and by about 50 percent in 2035. Many of the technologies needed to decrease fossil-fuel dependency of mobility solutions are cost-competitive and

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<sup>1</sup> California Air Resources Board (CARB), 2014: First Update to the Climate Change Scoping Plan, May 2014.

available today. As technologies improve and supporting infrastructure becomes available, costs will come down, accelerating the uptake of low-carbon transportation systems and saving consumers money that will be re-directed elsewhere into the economy.

Market transformation is a recurring theme of the Scoping Plan Update, which acknowledges targeted investment and state supported infrastructure will be needed to establish commercial markets for low-carbon solutions to grow to the scale required. Convergence of technologies and market objectives is needed across multiple sectors, requiring integrated planning among dozens of state agencies and closely coordinated efforts with locally-driven GHG reduction efforts, such as the RRG-CAP. Following are just a few examples of where cross-cutting issues will drive coordination of investment, policy and planning:

- Electrification in the transportation and building sectors must coincide with decarbonization of electricity supply. New electricity loads from these sectors, as well as increasing levels of renewable generation, will change the operational requirements of the electricity grid, which in turn affects emissions and operations for electric transportation.
- Changes in the energy sector will affect the water and agricultural sectors due to the significant amount of energy used to move water throughout the state and the important and evolving role of hydropower in the electricity system.
- Green and net zero energy buildings create new accounting requirements and interactions between utilities and customers and buildings and the electricity grid.
- The growing role of bioenergy for transportation fuels, heat production, and electricity generation will impact the agricultural, natural lands, water, and waste management sectors.
- All of this will have direct or indirect effects on land use that will require integrated planning and a closely coordinated effort with locally driven GHG emission reduction initiatives.

## SUPPORTING TECHNICAL STUDIES

Providing support to the statewide goal of reducing emissions 80% below 1990 levels by the year 2050 are several technical studies, including the CEC report *Scenarios for Meeting California's 2050 Climate Goals*<sup>2</sup> and the California State Agencies' PATHWAYS Project, commissioned by CARB, the CEC, CPUC, and CAISO to evaluate the feasibility and cost of a range of GHG reduction scenarios in California.<sup>3</sup>

The PATHWAYS study evaluated several potential paths for reducing GHG emissions in California using existing technologies and assuming a continuation of current lifestyles and economic growth. The scenarios explore the potential pace at which emission reductions can be achieved as well as the mix of technologies and practices that

<sup>2</sup> Wei, Max; Jeffrey Greenblatt; Sally Donovan; James Nelson; Ana Mileva; Josiah Johnston; Daniel Kammen. (University of California, Berkeley and Lawrence Berkeley National Laboratory). 2013. *Scenarios for Meeting California's 2050 Climate Goals*. California Energy Commission. Publication number: CEC-500-YYYY-XXX.

<sup>3</sup> Energy and Environmental Economics (E3), Summary of the PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios, available at [https://www.ethree.com/documents/E3\\_Project\\_Overview\\_20150127.pdf](https://www.ethree.com/documents/E3_Project_Overview_20150127.pdf), accessed on April 13, 2015.

could be used to reduce GHG emissions 80% by 2050.

The study found that successfully reducing California's GHG emissions requires significant progress on all of the following:

- Increasing the achievement of energy efficiency in buildings and transportation;
- Switching to lower carbon fuel sources in buildings and transportation;
- Producing lower carbon electricity;
- Producing lower carbon liquid or gaseous fuels; and
- Reducing non-energy GHGs.

The PATHWAYS study also found that under "base-case cost assumptions" the average household direct cost to implement these strategies would be \$8 per month in 2030. This estimate includes all direct effects, including changes in the average household's cost of transportation fuel, electricity and natural gas bills as well as the incremental capital outlays on energy efficiency and low-carbon vehicles. If all commercial and industrial costs are assumed to be passed on to households, the average household cost impact is expected to be \$12 per month in 2030 relative to current policy.

Consistent with the PATHWAYS study in many respects, the CEC study found that achieving the state's 2050 target will require aggressive energy efficiency, clean electricity, low carbon biofuels, and large-scale electrification of light duty vehicles, and building and industrial heating. The CEC study concludes that the transition to a low-carbon economy will require "supporting policies such as tightening existing policies in the buildings and electricity sector and developing effective policies to decarbonize building and industry heating and address the non-energy sector. Sustained technology development is required to scale up and reduce costs of existing technologies (e.g., batteries for ZEV, low carbon biofuels). Finally, greater integration of sectors is needed to achieve the long-term climate target (e.g., coordinated planning, regulation, and research across transportation, electricity sector, buildings, and industry sectors)."

## STATE POLICY DIRECTION

The state is clearly confronting the 2050 challenge head on. In his 2015 Inaugural Address, Governor Jerry Brown proposed three ambitious goals to be accomplished by 2030:

1. Increase from one-third to 50 percent our electricity derived from renewable sources;
2. Reduce today's petroleum use in cars and trucks by up to 50 percent; and
3. Double the efficiency of existing buildings and make heating fuels cleaner.

Governor Brown soon backed this up with Executive Order (EO) B-30-15, which establishes a new "interim" target to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. EO B-30-15 requires the California Air Resources Board (CARB) to update the Climate Change Scoping Plan to reflect this target and for all State agencies to take climate change into account in their planning and investment decisions, giving priority to actions that both build climate preparedness and reduce GHG emissions.

These developments are designed to keep the state on track to meet the ambitious goals set by former Governor Schwarzenegger's Executive Order S-3-05 of 80 percent below 1990 levels by 2050.

## RECENT LEGISLATIVE ACTIONS

To support the Governor's goals, legislation was introduced in 2015 that would codify GHG reduction targets post-2020 and enact law to ensure these targets are fully implemented. In September 2015, members of the State Assembly rejected a bill (SB 32) that would have amended AB 32 to establish GHG emissions reduction targets for 2030 and 2050. This leaves in place significant long-term planning uncertainty for local governments and regional planning entities, but a revised version of SB 32 is expected to be taken up by the legislature in 2016.

Shortly after rejecting SB 32 the California legislature passed the Clean Energy and Pollution Reduction Act of 2015 (SB 350), calling for energy efficiency in buildings to increase by 50 percent and for 50 percent of the state utilities' power to come from renewable energy by 2030. Dropped from the final bill drop was the requirement for a 50 percent reduction in petroleum use for cars and trucks by 2030.

## LOCAL SCENARIOS

The City of Riverside, with a coordinated RRG-CAP and RRG-EPAP effort, is well-positioned to leverage opportunities created by emerging state and regional policies and programs. Riverside can meet its 2035 GHG emissions target through various combinations of state, subregional, and local actions, while opening up new opportunities for local business growth. Once the state has adopted a mid-term target (e.g., 2030) and released its plan for reaching that target, the role of local action will be more defined, and Riverside will be well-positioned to take advantage of state assistance and emerging funding opportunities. In lieu of an updated Climate Change Scoping Plan, the Governor's EO B-30-15 along with recent policy and technology developments suggest that the greatest potential for additional reductions in the City of Riverside is represented by the following strategies:

- Reduce vehicle miles traveled (VMT)
- Low-carbon fuels and vehicles (e.g., biofuels; electric vehicles)
- Low-carbon electricity (e.g., renewables)
- Energy efficiency

**Figure B.4-2** shows conceptually how the City's 2035 GHG reduction gap can be closed with a mix of these four strategies. With a municipally owned utility (RPU) and local control over land use, the City has the ability to directly control or influence three of these four strategies. Only "Low Carbon Fuels and Vehicles" is largely beyond the influence of the City, but even that strategy is dependent on local support to some extent (e.g., local infrastructure is needed for widespread electric vehicle adoption), while City programs have the potential to speed the development and adoption of critical technologies (e.g., RRG-CAP Measure E-6: RPU Technology Grants). The

following two scenarios explore the planning implications for City of Riverside when differing assumptions are made about state policy development, local land use changes, local energy policy, technological advancements, and market developments. One scenario emphasizes technological development and market transformation, realms over which the state can exert much more influence than local governments, while the other scenario emphasizes local land use changes, where local governments retain control. Most likely, the future will be represented by a mix of the two scenarios. Scenario analysis, however, is valuable in considering the range of outcomes that can be expected.

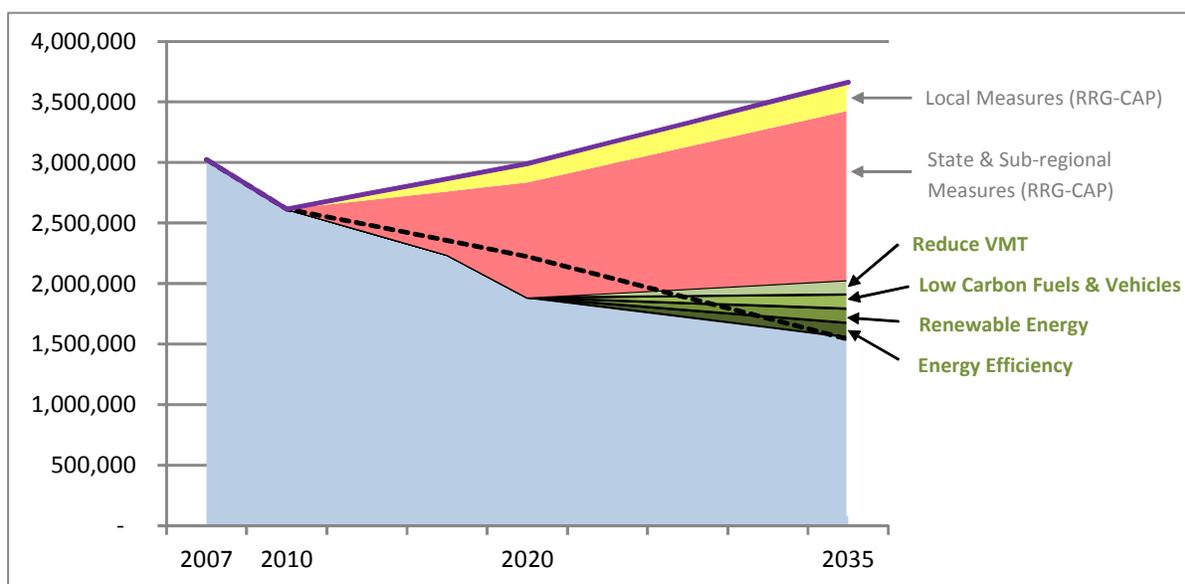


Figure B.4-2: Strategies for Closing the Gap to Reach 2035 Target

State and local governments share responsibility in meeting the state’s long-term GHG emissions goals. The RRG-CAP is designed to support and leverage state policy and programs, while positioning the City for funding that will enable full implementation of the RRG-CAP’s local GHG reduction measures. The RRG-CAP currently emphasizes implementation of near-term actions that will enable the City to meet its 2020 target, while identifying the long-term strategies that can reduce the GHG intensity of the local economy and the City’s land use patterns, so that emerging state and regional policies for GHG reduction can achieve maximum effectiveness locally.

The RRG-CAP provides a policy framework and a strong foundation for developing the more aggressive reduction measures needed to achieve longer term GHG targets consistent with state goals. As state planning evolves, the City will better understand what needs to happen at the local level to support and enhance state action. Anticipating a General Plan Update within the next few years, the City expects land use policy to be driven in large measure by the need to reduce GHG emissions associated with development and transportation.

## SCENARIO 1: EMPHASIS ON TECHNOLOGY AND MARKET TRANSFORMATION

Scenario 1 emphasizes GHG reduction strategies that are dependent on state policy, rather than local policy: namely, technology and market development. Since the transportation sector is the largest contributor to local GHG emissions (and to state emissions as well), any viable scenario for meeting long-term targets must achieve deep reductions in transportation-related emissions. Building energy, which contributes almost as much as transportation to local emissions, must also be addressed. Scenario 1 assumes that the state will continue to aggressively expand its mandates for motor vehicle efficiency and low-carbon fuels, while expanding its mandate for renewable energy, speeding technological development and market transformation. Under this scenario, it is reasonable to assume that the City's 2035 target will largely depend on state action, with the City providing support through a continuation or gradual intensification of policies and measures that are in the current RRG-CAP.

### Key State Actions:

- Advanced vehicle efficiency standards that go beyond Pavley II standards
- Stricter requirements for low carbon fuels
- Policies that promote electrification of the transportation and building sectors
- Policies that drive technological advancement in energy storage and transmission grid optimization
- Coordinated research, planning, and regulation across sectors
- More stringent renewables portfolio standard: mandate for electric utilities to achieve 50% to 60% renewables by 2035
- More stringent Title 24 energy efficiency standards for new buildings (e.g. net zero energy requirement for residential buildings)
- Programs and incentives to improve building energy efficiency in existing buildings (e.g., Cap & Trade funding directed toward low-income housing)

### Key Local Actions:

- RPU to achieve 50% to 60% renewables in electricity mix by 2035
- City to secure and dedicate funding and staff resources for local energy efficiency programs
- City to support low carbon vehicle/fuel infrastructure (e.g., publically accessible EV charging stations)
- City to incentive or require lower VMT associated with land use development, through transit-oriented development, parking restrictions, and transportation management programs
- City to enforce the state's increasingly stringent energy and green building standards
- Enhance water conservation

## SCENARIO 2: EMPHASIS ON LOCAL LAND USE CHANGES

Scenario 2 assumes either that state policy won't force technological change and market transformation, or that the technology and market development for low-carbon fuels and vehicles will not occur fast enough to enable the major reductions in transportation emissions assumed for Scenario 1. If technology cannot reduce transportation emissions, then reducing VMT is the viable alternative. Significant reductions in VMT will require changes in land use along with supportive transit systems to reduce dependency on the single-occupancy automobile. Local governments will be incentivized or required to reduce VMT associated with new development (i.e., continuing the trend started with SB 375), resulting in more compact development with higher densities/intensities, more mixed use development, and development located near transit. Meanwhile, improvements in energy efficiency and greater use of renewable energy will still be needed to achieve long term GHG targets. Since the transformation of energy markets has seen steady progress since adoption of AB 32, this scenario assumes a continuation of that progress, aided by state policy.

### Key State Actions:

- Regional land use and transportation policy and funding streams that further incentivizes transit system development and VMT reduction through transit-oriented development and other land use strategies;
- More stringent renewables portfolio standard: mandate for electric utilities to achieve 50% to 60% renewables by 2035
- More stringent Title 24 energy efficiency standards for new buildings (e.g. net zero energy requirement for residential buildings)
- Programs and incentives to improve building energy efficiency in existing buildings (e.g., Cap & Trade funding directed toward low-income housing)

### Key Local Actions:

- Same as Scenario 1, but with additional action to aggressively pursue local land use policies and zoning changes that significantly reduce VMT

## SCENARIO ANALYSIS

Both scenarios represent feasible paths to achieving local GHG emissions reductions consistent with state policy and the City's 2035 target. Under either scenario, it is assumed that City energy policy will remain in line with, if not more aggressive than, the energy goals called for in the Governor's EO B-30-15 and SB 350. Riverside Public Utility (RPU) will need to commit to increasing the renewables portion of their electricity portfolio, and pledge to more aggressive year-over-year efficiency improvements than the current objective of 1% per year (Measure E3: Local Utility Programs). By increasing renewables to 50% of the power mix and boosting the annual efficiency target to 2% per year for the 15 years following 2020, the City could reduce GHG emissions by as much as 120,000 MT CO<sub>2e</sub> per year by 2035.

The land use and transportation measures in Chapter 3 support the Governor's ambitious transportation-related GHG goal (reduce current petroleum use in cars and

trucks by 50 percent) by steering the City toward more efficient networks, better transit solutions, and infrastructure that supports electric vehicles. Regional measures supporting the MetroLink expansion, telecommuting, goods movement, and ZEV infrastructure will contribute to meeting the Governor’s goal, while local measures promoting compact, mixed use, transit-oriented development, as well as boosting transportation demand management, active transportation, car sharing, and more efficient local transit, will enhance the effectiveness of state policy and investment geared toward GHG reduction.

The current CAP measures related to land use and transportation are expected to reduce emissions approximately 1 million MT CO<sub>2</sub>e by 2035, which represents a 35% reduction relative to the City’s 2010 inventory. To achieve a local result consistent with the state’s 50% reduction goal (relative to current levels) means that approximately 327,000 MT CO<sub>2</sub>e in additional reductions are needed. Combined with the energy-related reductions described above, this is enough for the City to reach its 2035 target. By promoting green technology and green enterprise zones, and applying principles of smart growth, the RRG-CAP and EPAP will improve the jobs-housing balance and provide a foundation for the long-term planning and policy shift that must occur for state and subregional policy to be effective at the local level.

## FUNDING TRENDS

The RRG-CAP and EPAP will position Riverside to take advantage of emerging funding opportunities, including:

### The Greenhouse Gas Reduction Fund



In order to help achieve the goals established in AB 32, the California ARB adopted a regulation to establish a cap-and-trade program that places a “cap” on the aggregate GHG emissions from entities responsible for roughly 85 percent of the state’s GHG emissions. As part of the cap-and-trade program, the ARB conducts quarterly auctions where it sells emission allowances. These auctions are likely to generate billions of dollars in state revenue over the coming years. Through the state budget process, Cap-and-Trade auction proceeds are appropriated from the Greenhouse Gas Reduction Fund (GGRF) to state agencies and programs. Two categories under the Cap-and-Trade program will receive multi-year funding allocations: 1) Transit, Housing, and Sustainable Communities (35%); and 2) High-Speed Rail (25%). The remaining 40% of Cap-and-Trade funds will be subject to the annual budget process for other program areas.

The Governor’s 2014-15 budget appropriated \$832 million in auction revenue to various state programs, including programs related to sustainable communities, clean transportation, energy efficiency, natural resources, and waste diversion, with set-asides for projects benefiting disadvantaged communities. Specifically, in FY 2014-15, the GGRF provides funding for 11 programs organized into three investment categories, as shown in **Table B.4-2**. The GGRF will increase over time as the statewide GHG emissions

cap comes down and action revenue increases. The FY 2015-16 budget is expected to appropriate more than \$2 billion to the GGRF.

**Table B.4-2: Cap and Trade Expenditure Plan (Dollars in Millions)**

Investment Category	Department	Program	2014-15
<b>Sustainable Communities &amp; Clean Transportation</b>	High-Speed Rail percent	Authority High-Speed Rail Project	\$250
	State Transit Assistance	Low Carbon Transit Operations Program	\$25
	Caltrans Transit & Intercity Rail	Capital Program	\$25
	Strategic Growth Council	Affordable Housing & Sustainable Communities Program	\$130
	Air Resources Board	Low Carbon Transportation	\$200
<b>Energy Efficiency &amp; Clean Energy</b>	Department of Community Services & Development	Energy Efficiency Upgrades/Weatherization	\$75
	Energy Commission	Energy Efficiency for Public Buildings	\$20
<b>Natural Resources &amp; Waste Diversion</b>	Department of Food & Agriculture	Agricultural Energy & Operational Efficiency	\$15
	Department of Fish and Wildlife	Wetlands and Watershed Restoration	\$25
	Department of Forestry and Fire Protection	Fire Prevention & Urban Forestry Projects	\$42
	Cal Recycle	Waste Diversion	\$25
<b>Total</b>			<b>\$832</b>



**SCAG’s Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Funding Programs**

Allocating an equitable share of Cap and Trade funds to transportation and sustainable communities strategy implementation is a top legislative priority for the Southern California Association of Governments (SCAG). These critical funding programs are expected to help local jurisdictions, including the City of Riverside, and

SCAG’s partners implement the RTP/SCS.

The Affordable Housing and Sustainable Communities (AHSC) program is intended to further the regulatory purposes of AB 32 and SB 375 by investing in projects that reduce GHGs by creating more compact, infill development patterns, integrating affordable housing, encouraging active transportation and mass transit usage, and protecting agricultural land from sprawl development.

As shown in Table in 4.2, the Budget Act of 2014 appropriates \$130 million from the Greenhouse Gas Reduction Fund (GGRF) to develop and implement the AHSC. Accompanying legislation (SB 862) apportions 20 percent of GGRF annual proceeds to the AHSC beginning in FY 2015-16.

SCAG’s Sustainability Program combines technical assistance for integrated land use and transportation planning with new Green Region initiative assistance aimed at local sustainability and Active Transportation assistance for bicycle and pedestrian planning efforts. All SCAG-member local jurisdictions, including the city of Riverside, are eligible for funding for nearly any planning project that meets local needs and is consistent with the regional Sustainable Communities Strategy. The 2013-2014 Sustainability Program emphasizes projects that make measurable progress toward implementation of the RTP/SCS. Seventy-three (73) Sustainability Planning Grant Projects totaling over \$2.5 million are underway. This program provided the funding for the Riverside Restorative Growthprint.

The RTP/SCS identifies High Quality Transit Areas<sup>4</sup> (HQTAs) projected growth is expected to occur. Future funding for sustainable development and transportation projects is likely to be weighted toward these areas. **Figure B.4-3** shows where HQTAs exist along Magnolia Avenue in Riverside.

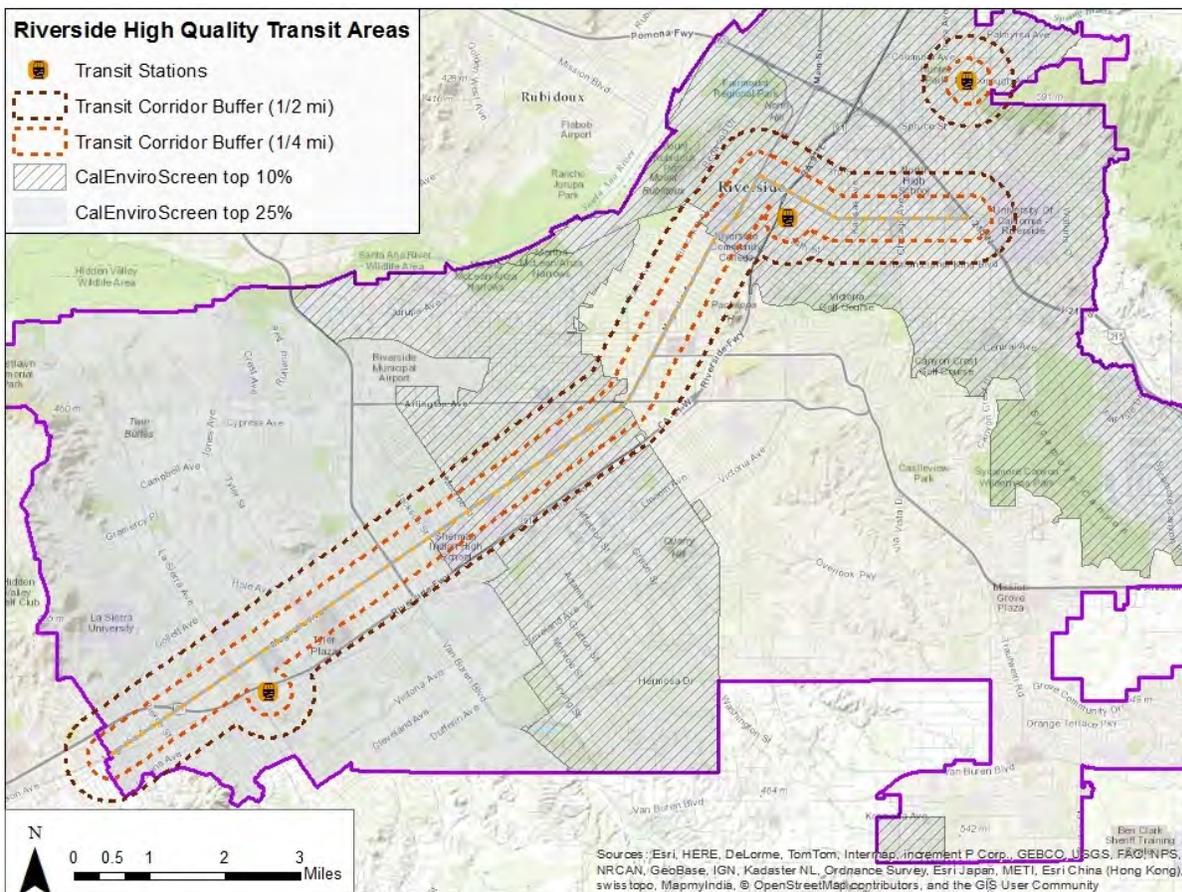


Figure B.4-2: Overlay of HQTAs and CalEnviroScreen Disadvantaged Community ratings

<sup>4</sup> A HQTA is a walkable transit village or corridor, consistent with the adopted RTP/SCS, that has a minimum density of 20 dwelling units per acre and is within a ½ mile of a well-served transit stop with 15-minute or less service frequency.

## Senate Bill 535 – Cap-and-Trade Investments to Benefit Disadvantaged Communities

A continuing focus on disadvantaged communities is an essential underpinning of the State's efforts to fight climate change. Senate Bill 535 (De León) requires state and local agencies to make significant investments that improve California's most vulnerable communities. That investment comes from the proceeds of quarterly cap-and-trade auctions held by CARB. Under SB 535, one-quarter of the proceeds of the cap-and-trade auctions are to be used for the benefit of the State's disadvantaged communities, including at least 10% to be invested directly in those communities. To inform the overall process under SB 535, the State is using CalEnviroScreen (California Communities Environmental Health Screening Tool), a science-based tool that identifies communities most burdened by pollution from multiple sources and most vulnerable to its effects. Figure B.4-3 shows that areas around Riverside's Magnolia Avenue are currently eligible for GGRF funding under SB 535, as indicated by their 25 percentile scores in CalEnviroScreen. Future development projects located where these areas overlap with HQTAs are particularly well-suited for funding.



### Active Transportation Program funding

The California Active Transportation Program (ATP) was created by Senate Bill 99 and Assembly Bill 101 to encourage increased use of active modes of transportation, such as

biking and walking, as well as to ensure compliance with the federal transportation authorization Moving Ahead for Progress in the 21st Century (MAP-21). The goals of the Active Transportation Program are to:

- Increase the proportion of trips accomplished by biking and walking.
- Increase the safety and mobility of non-motorized users.
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals as established pursuant to Senate Bill 375 (Chapter 728, Statutes of 2008) and Senate Bill 391 (Chapter 585, Statutes of 2009).
- Enhance public health, including reduction of childhood obesity through the use of programs including, but not limited to, projects eligible for Safe Routes to School Program funding.
- Ensure that disadvantaged communities fully share in the benefits of the program.
- Provide a broad spectrum of projects to benefit many types of active transportation users.

Funds awarded through the ATP program are selected by the State (60% of total funds) as well as regional MPOs (40% of total funds). The California Transportation Commission (CTC) is expected to issue the 2015 Call for Projects of approximately \$300 million programmed in three fiscal years starting 2016/17 and ending 2018/19. This includes approximately \$70 million that SCAG will program as part of the Regional or MPO component. ATP program funds may be eligible to implement RRG-CAP measures T-1, T-2, T-3, T-12, and T-16.

## SYNERGIES WITH THE RRG-EPAP

Together, the RRG-CAP and EPAP identify opportunities to link economic development with GHG emission reduction activities. The RRG-EPAP puts forth policies and strategies that support sustainable infrastructure, increase community connections, and foster smart growth. The RRG-EPAP's top 10 Entrepreneurial Opportunity Areas (EOAs) directly support RRG-CAP implementation by identifying areas where the City can grow its local economy while reducing GHG emissions. The table below identifies where there are important synergies between the RRG-CAP and EPAP, indicating where the City should focus its efforts in leveraging funding, and policy and program developments by the state subregional entities like WRCOG to achieve further GHG reductions.

**Table 4-3: CAP-EPAP Synergies**

EPAP EOA	Synergistic CAP Measures	Local Economic Opportunity	GHG Reduction Synergy
1. Energy and Water Upgrades for Home or Business	W-1: Water Conservation E-3: Local Utility Programs SR-3: Residential HERO Program SR-4: Commercial HERO Program	High	High
2. Green Building Standards	T-1: Expand Bicycle Infrastructure T-9: Limiting Parking Requirements for New Development W-1: Water Conservation SR-2: Title 24 SR-13: Construction & Demolition (C&D) Requirements	High	High
3. Clean Vehicles and Charging/Fueling Stations	T-14: Neighborhood EV Programs T-19: Alternative Fuel and Vehicle Technology and Infrastructure SR-6: Clean Vehicle and Low Carbon Fuel Standards SR-12: EV Plan and Infrastructure	High	High
4. RPU Clean Technology Funding	E-5: UC Riverside Carbon Neutrality T-14: Neighborhood EV Programs SR-1: Renewables Portfolio Standard	High	High
5. Waste Reduction and Diversion	SW2: Food Scrap and Paper Diversion SR-13: Construction & Demolition (C&D) Requirements	Medium	Medium
6. Expand Bicycle Infrastructure	Bicycle Programs (Measures T-1, T-2, T-3, T-12 and T-16)	Medium	Medium
7. Eco Business Zone	T-1: Bicycle Infrastructure Improvements T-6: Increase Development Densities T-7: Mixed Use Development	High	Medium

	<p>T-8: Implement Pedestrian Only Areas  T-14: Neighborhood EV Programs  T-16: Bike Share Program  T-17: Car Share Program  T-20: Eco-corridor/Green Enterprise Zone  E-3: Local Utility Programs  E-4: Renewable Energy on Public Property  W-1: Water Conservation  SW2: Food Scrap and Paper Diversion  SR-6: Clean Vehicle and Low Carbon Fuel Standards  SR-7: MetroLink Expansion</p>		
<b>8. Clean-Tech Incubator</b>	<p>E-5: UC Riverside Carbon Neutral Program  T-16: Bike Share Program  T-17: Car Share Program  T-20: Eco-corridor/Green Enterprise Zone  SR-6: Clean Vehicle and Low Carbon Fuel Standards  SR-7: MetroLink Expansion</p>	High	Medium
<b>9. Buy and Produce Local Initiative</b>	<p>A-1: Local Food and Agriculture  T-16: Bike Share program  T-20: Eco-corridor/Green Enterprise Zone  SW-1: Yard Waste Collection  SW2: Food Scrap and Paper Diversion  SR-13: Construction &amp; Demolition (C&amp;D) Requirements</p>	Medium	Low
<b>10. Global Markets</b>	<p>E-6: Riverside Public Utilities Technology Grants  T-20: Eco-corridor/Green Enterprise Zone</p>	High	High

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# CHAPTER B.5 IMPLEMENTATION & MONITORING

## PROGRAM OVERVIEW

Successful implementation of the Riverside Restorative Growthprint Climate Action Plan (RRG-CAP) measures laid out in Chapter 3 will enable the City to exceed its 2020 GHG reduction target, and achieve substantial progress toward meeting the much more aggressive 2035 GHG reduction target. This chapter outlines how the City will monitor the progress of the subregional and local measures to reduce community-wide GHG emissions. In some cases, turning strategies and measures into actual emission reductions will require new programs, City staff time for administration and promotion activities, and effective management systems for tracking and monitoring program implementation. Coordination between City departments and collaboration with residents, businesses, regional organizations, and other government agencies will be needed to ensure that programs are well-managed and cost-effective.

Community involvement is an essential component of the RRG-CAP implementation process, as many strategies depend on the active participation of residents and businesses. The City will be making a concerted effort to develop and strengthen community education and awareness through various promotional programs. These efforts will be monitored for their cost-effectiveness in influencing residents, businesses, and visitors to reduce their personal carbon footprints. The City's web site and social media programs will continue to be the primary means of communicating news and progress regarding RRG-CAP implementation and soliciting feedback from the community and other stakeholders.

## ADMINISTRATION

The City will pursue assistance from the Western Riverside Council of Governments (WRCOG) for staffing and administrative support at the subregional level, particularly in

implementing subregional programs such as the Transportation Uniform Mitigation Fee (TUMF), HERO Programs, and Clean Cities Coalition. The City and WRCOG will also work to align these programs, and future subregional initiatives, with the goals established in the RRG-CAP, where applicable.

The City will appoint a “RRG-CAP Coordinator” to oversee the successful implementation and tracking of local RRG-CAP reduction strategies. The RRG-CAP Coordinator will primarily be responsible for coordinating across municipal departments to gather data, report on progress, track completed projects, and ensure that scheduling and funding of upcoming projects is discussed at key meetings. The RRG-CAP coordinator may also participate in development review process for new projects and assisting Planning Department staff in determining whether development projects are consistent with the RRG-CAP.

The RRG-CAP Coordinator will coordinate with WRCOG as needed to support implementation of subregional measures and to support the Subregional CAP effort in general. **Table B.5-1** describes the anticipated responsibilities for WRCOG and the local RRG-CAP Coordinator.

**Table B.5-1: Local and Subregional CAP Implementation Responsibilities**

<b>WRCOG</b>	<b>RRG-CAP Coordinator</b>
Secure financing to implement subregional GHG reduction measures (i.e., grants)	Secure long-term financing to implement local GHG reduction measures
Coordinate meetings among member jurisdictions, regional partners and stakeholders	Coordinate meetings amongst local community stakeholders
Serve as the external communication hub to regional climate action organizations including California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), and Southern California Association of Governments (SCAG)	Serve as the communication hub to the community and local stakeholders
Conduct public outreach to inform the community of the subregion’s climate action planning efforts	Submit annual reports to governing bodies
Develop a protocol for monitoring the effectiveness of emissions reduction programs	Utilize tool developed by WRCOG to report and document emission reduction progress
Establish guidelines and develop a tool for reporting and documenting emissions reduction progress	Use City’s Monitoring tool to document emissions reduction progress
Submit annual reports to the WRCOG Executive Committee and member agency governing bodies	Submit annual reports to City Manager
Develop a protocol for utilizing the real-time information collected through the verification process to modify and revise existing reduction programs	Manage the revision of the RRG-CAP at least every 5 years
Track state and federal legislation and its applicability to member jurisdictions	Track state and federal legislation and its applicability to Riverside

## IMPLEMENTATION COMPONENTS

The City is responsible for initiating the local actions to reduce emissions, but success for many measures will ultimately depend on State and regional implementation as well as public participation. As noted above, WRCOG will lead implementation of the subregional measures, assisting in identifying funding, establishing partnerships, and tracking and monitoring subregional progress. Tasks that require active promotion may require updates to the City, WRCOG, and other member jurisdiction's websites, distribution of physical promotional materials, and other active outreach activities. The City will partner with WRCOG on public outreach, including public forums, workshops, and meetings to foster an open public input and commenting process. Collaboration and coordination with transportation agencies (e.g., Riverside Transit Agency (RTA), Riverside County Transportation Commission [RCTC]) will be essential to improving and increasing transit ridership, and enhancing mobility and transportation efficiency through better planning.

**Table B.5-2** provides a summary of implementation components for all of the measures described in Chapter 3, including implementation timeframe, the City department tasked with implementation, and information on the following aspects where relevant.

### **Cost-benefit Analysis**

The measure descriptions in Chapter 3 include simple cost estimates for program development and execution. For some measures, detailed cost estimates or program designs may be necessary to assess the cost-effectiveness of various implementation options and to identify City budget and staffing needs. Cost-benefit analysis should be based on a variety of participation, per-unit and other assumptions. As programs are developed, cost estimates should be refined and updated over time with more precise implementation-level data. Certain capital improvements, particularly those identified in Land Use/Transportation measures, will need to be added to the Capital Improvement Plan (CIP) and/or facility master plan programs used by the implementing agency.

### **City Ordinance and Code Updates**

Some local reduction measures represent a modification to existing codes or ordinances, while others may require new codes or ordinances. WRCOG developed a "plug and play" implementation toolkit of specific general plan policy language and zoning ordinance text to facilitate local implementation of the GHG reduction and climate adaptation measures in the Subregional CAP. The model "best practices and programs" aspect of the toolkit includes, those related to sustainable development, energy, water, transportation, stormwater management, building reuse, and waste reduction.

### **Implementation Partners**

Coordination with external agencies, the University of California Riverside (UCR), and the private sector is critical for the success of many strategies, including RPU's energy conservation and renewable energy programs, City-approved solid waste haulers for waste reduction actions, RPU for water saving actions, and other local jurisdictions for work-sharing partnerships designed to take advantage of the common goals across the

WRCOG subregion. Relevant partnerships with utilities, private sector entities, outside agencies, and other stakeholders are noted in the in the RRG-CAP measure description.

### **Implementation Timeframe**

The majority of RRG-CAP measures are already being implemented. For those that are not, the anticipated calendar year for initiation is provided. Actual implementation start dates may depend on a variety of factors, including availability of funding and City staff time, community priorities, evolving state regulations, and changing environmental demands.

### **Funding**

The GHG reduction measures in Chapter 3 were formulated with an understanding that the City has limited staff time and financial resources to implement them. The costs for implementation include the creation or promotion of voluntary programs, continuing administration of those programs, coordination and outreach with other government agencies and businesses, and—in some cases—exploration or study of potential legislative or regulatory mechanisms not yet codified. A few strategies require up-front capital expenditures by local agencies. The City will use a combination of staff time, grant funding, direct spending, and collaboration with other agencies and organizations to achieve RRG-CAP goals. Table 5-2 provides a summary of implementation considerations for each measure. Details on current and emerging funding opportunities are provided in the next section.

Table B.5-2: RRG-CAP Implementation Summary Table

ID #	Measure Name	Responsible Agency or Department	Timeframe	Cost-benefit Analysis needed?	Code update needed?	Implementation Partners
SR-1	Renewables Portfolio Standard	RPU	Through 2025	No	No	State
SR-2	2013 California Building Energy Efficiency Standards (Title 24, Part 6)	State	Next update in 2016	No	No	City as enforcement agency
SR-3	HERO Residential Program	RPU	Ongoing	Ongoing	No	WRCOG
SR-4	HERO Commercial Program	RPU	Ongoing	Ongoing	No	WRCOG
E-1	Traffic & Street Light Program	Public Works	In progress	Ongoing	No	RPU
E-2	Shade Trees	Public Works	In progress	No	No	Community Development and RPU
E-3	Local Utility Programs	RPU	In progress	Ongoing	No	Community Development Department
E-4	Renewable Energy on Public Property	Public Works	2017	Yes	Yes	UC Riverside and RPU
E-5	UC Riverside Carbon Neutral Program	UC Riverside	In progress	N/A	No	RPU
E-6	Riverside Public Utilities Technology Grants	RPU	In progress	Ongoing	No	UC Riverside
SR-6	Pavley + LCFS (State Measures)	State	Through 2025	N/A	No	
SR-7	Metrolink Expansion	RCTC	In progress	Ongoing	No	WRCOG
SR-8	Express Lanes	RCTC	In progress	Ongoing	No	SCAG
SR-9	Congestion Pricing	RCTC	In progress	Ongoing	No	SCAG
SR-10	Telecommuting	RCTC	In progress	No	No	WRCOG and SCAQMD
SR-11	Goods Movement	RCTC	In progress	Ongoing	No	WRCOG and SCAG
T-1	Bike Infrastructure (bike lanes)	Community Development	In progress	Yes	No	Public Works Department

ID #	Measure Name	Responsible Agency or Department	Timeframe	Cost-benefit Analysis needed?	Code update needed?	Implementation Partners
T-2	Bike Parking & Amenities	Community Development	In progress	No	Yes	Public Works Department
T-3	End of Trip Facilities	Community Development	In progress	Yes	Yes	Public Works Department
T-4	Promotional TDM	Community Development	In progress	Ongoing	No	Public Works Department
T-5	Traffic Signal Coordination	Public Works	In progress	Ongoing	No	Economic Development Department
T-6	Density	Community Development	2015	No	Yes	WRCOG and SCAG
T-7	Mixed-Use Development	Community Development	In progress	No	Yes	Economic Development Department, WRCOG and SCAG
T-8	Implement Pedestrian Only Areas	Community Development	In progress	Yes	Yes	Public Works and Economic Development Departments
T-9	Limiting Parking Requirements for New Development	Community Development	In progress	No	Yes	
T-10	Implement BRT Service	Public Works	2016	Yes	No	Riverside Transit Agency (RTA)
T-11	Voluntary TDM	Community Development	In progress	No	No	RCTC, WRCOG and SCAG
T-12	Accelerated Bike Plan Implementation	Community Development	In progress	Yes	No	Public Works Department
T-13	Fixed Guideway Transit	Community Development	In progress	In progress	No	Public Works Department
T-14	NEV Programs	Community Development	In progress	Yes	Yes	Public Works Department, WRCOG
T-15	Subsidized Transit	Community Development	In progress	In progress	No	Riverside Transit Agency (RTA) and UC Riverside
T-16	Bike Share program	Community Development	2015	Yes	Yes	UC Riverside (in progress on-site); Public Works Department

ID #	Measure Name	Responsible Agency or Department	Timeframe	Cost-benefit Analysis needed?	Code update needed?	Implementation Partners
T-17	Car Share Program	Community Development	2020	Yes	No	UC Riverside (in progress there); Public Works Department
T-18	SB 743 as Alternative to LOS	Community Development	In progress	No	Yes	Public Works Department; Traffic Engineering Division
T-19	Alternative Fuel Technology/Infrastructure	RPU	In progress	No	Yes	Community Development Department, Planning Division
T-20	Eco-Corridor / Green Enterprise Zone	Community Development	2020	Yes	Yes	Economic Development and Public Works Departments, UC Riverside
SR-13	Construction & Demolition (C&D) Requirements	CalRecycle	In progress	No	No	City approved solid waste haulers
SW-1	Yard Waste Collection	Public Works	In progress	No	No	City approved solid waste haulers
SW-2	Food Scrap and Paper Diversion	Public Works	2020	No	No	City approved solid waste haulers
W-1	SB-7X-7	RPU	In progress	No	No	Community Development Department
A-1	Local Food and Agriculture	Community Development	In progress	No	Yes	Economic Development, UC Riverside

## POTENTIAL FUNDING SOURCES

**Table B.5-3** presents a summary of funding and financing options available at the time this document was prepared. Some funding sources are not necessarily directed towards a jurisdiction, but to a larger regional agency such as WRCOG, SCAG, a Joint Powers Authority (JPA), or a waste services provider serving multiple jurisdictions. WRCOG and the City should continually monitor private and public funding sources for new grant and rebate opportunities and to better understand how larger agencies are accessing funds that can be used for GHG reductions at the local level. Leveraging financing sources is one of the most important roles the City and WRCOG can play in partnering to implement many of the GHG reduction measures.

As with most cities, internal funding sources are limited at the City of Riverside for RRG-CAP implementation. In some cases the City can appropriate funding from general sources or make changes in its fee schedules, utility rates, and other sources as needed to support implementation of GHG reduction measures. Many outside funding sources including state and federal agencies, as outlined in the next section, are available. The City should pursue these and other emerging funding sources as a part of its implementation efforts.

**Table B.5-3: Potential Funding Sources to Support RRG-CAP Implementation**

Federal Funds	
Energy Efficient Mortgages	<ul style="list-style-type: none"> <li>The Federal Housing Administration (FHA) offers an Energy Efficient Mortgage Loan program that assists current or future homeowners with lowering their utility bills. This would be accomplished by enabling homeowners to incorporate the cost of adding energy-efficient improvements into their home mortgage. Energy efficient upgrades could be chosen that would allow owners to realize net monthly savings. The goal is to provide owners additional financing for energy efficiency upgrades at a discounted interest rate.</li> </ul>
Moving Ahead for Progress in the 21 <sup>st</sup> Century (MAP-21)	<ul style="list-style-type: none"> <li>Federal funding through the MAP-21 program is administered through the state and regional governments. MAP-21 funding is administered through Caltrans, MPOs (SCAG in Southern California) and RTPAs (RCTC in Riverside County). Most of the funding programs are transportation versus recreation oriented, with an emphasis on reducing auto trips and providing an intermodal connection. In most cases, MAP-21 provides matching grants of 50 to 100%.</li> </ul>
Safe Routes to Schools	<ul style="list-style-type: none"> <li>Safe Routes to Schools is an international movement focused on increasing the number of children who walk or bike to school by funding projects that remove barriers to doing so. These barriers include a lack of infrastructure and non-infrastructure projects, safety, and limited programs that promote walking and bicycling. In California, two separate Safe Routes to School programs are available at both the state and federal level, and both programs fund qualifying infrastructure projects.</li> </ul>

<p>American Recovery and Reinvestment Act (ARRA) Community Partnerships</p>	<ul style="list-style-type: none"> <li>▪ Federal funding for local energy efficiency programs is available. Funding for energy efficiency has been provided to the California Department of Community Services and Development, which has dispersed funds locally through the Community Action Partnership of Riverside County. The Partnership provides free home weatherization and other energy assistance resources to low-income and elderly citizens of Riverside County. Programs include the Low-Income Home Energy Assistance Program and the Weatherization Assistance Program.</li> </ul>
<p><b>State Funds</b></p>	
<p>California Air Resources Board (CARB)</p>	<ul style="list-style-type: none"> <li>▪ CARB offers several grants, incentives, and credit programs to reduce on-road and off road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program.</li> </ul> <p>The following programs can be utilized to fund local measures:</p> <ul style="list-style-type: none"> <li>○ Low Carbon Transportation Program (GGRF)</li> <li>○ Air Quality Improvement Program (AB 118)</li> <li>○ Carl Moyer Program – Voucher Incentive Program</li> <li>○ Goods Movement Emission Reduction Program (Prop 1B Incentives)</li> <li>○ Loan Incentives Program</li> <li>○ Lower-Emission School Bus Program/School Bus Retrofit</li> <li>○ Replacement Account (Prop 1B and EPA Incentives)</li> </ul>
<p>California Energy Efficiency Financing</p>	<ul style="list-style-type: none"> <li>▪ For years, the California Energy Commission (CEC) has provided a loan program that supports local government energy retrofits and some new construction projects. Since 1979, more than \$272 million has been allocated to more than 773 recipients, as of 2012. The program provides low interest loans for feasibility studies and the installation of cost-effective energy projects in schools, hospitals, and local government facilities. The loans are repaid out of the energy cost savings and the program finances lighting, motors, drives and pumps, building insulation, heating and air conditioning modifications, streetlights and traffic signal efficiency projects, and certain energy generation projects, including renewable energy projects and cogeneration. Loans can cover up to 100% of project costs and there is a maximum loan amount of \$3 million.</li> </ul>
<p>California Department of Resources Recycling and Recovery (CalRecycle)</p>	<ul style="list-style-type: none"> <li>▪ CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams.</li> <li>▪ Incorporated cities and counties in California are eligible for funds.</li> <li>▪ Program funds are intended to:             <ul style="list-style-type: none"> <li>○ Reduce, reuse, and recycle all waste.</li> <li>○ Encourage development of recycled-content products and markets.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>o Protect public health and safety and foster environmental sustainability.</li> </ul>
Strategic Growth Council (SGC)	<ul style="list-style-type: none"> <li>▪ In September 2008, California Senate Bill 732 created the Strategic Growth Council, which is a cabinet level committee whose tasks include coordinating the activities of member state agencies to assist state and local entities in the planning of sustainable communities and meeting AB 32 goals, including administration of the Affordable Housing &amp; Sustainable Communities Program (AHSC).</li> </ul>
California Transportation Commission (CTC)	<ul style="list-style-type: none"> <li>▪ The California Active Transportation Program (ATP) was created by Senate Bill 99 and Assembly Bill 101 to encourage increased use of active modes of transportation, such as biking and walking, as well as to ensure compliance with the federal transportation authorization MAP-21. Funds awarded through the ATP program are selected by the State (60% of total funds) as well as SCAG. ATP program funds may be eligible to implement RRG-CAP measures T-1, T-2, T-3, T-12, and T-16.</li> </ul>
California Department of Food & Agriculture (CFDA)	<ul style="list-style-type: none"> <li>▪ The Agricultural Energy &amp; Operational Efficiency (GGRF) program is an environmental farming program to provide incentives to farmers whose practices promote energy efficiency. Funds may be eligible to implement RRG-CAP measures A-1.</li> </ul>
State Funding for Infrastructure	<ul style="list-style-type: none"> <li>▪ The state's Infill Infrastructure Grant Program may potentially be used to help fund measures that promote infill housing development.</li> <li>▪ Grants can be used for gap funding for infrastructure improvements necessary for specific residential or mixed-use infill development projects.</li> </ul>
Existing Capital Improvement Program	<ul style="list-style-type: none"> <li>▪ State and federal funds would most likely continue to local governments, builders, and homeowners in the following forms:             <ul style="list-style-type: none"> <li>o Grants</li> <li>o Transportation and transit funding</li> <li>o Tax credit and rebate programs</li> <li>o The Capital Improvement Program can be utilized for measures relating to traffic or transit.</li> </ul> </li> </ul>

**Private and Non-Governmental Support**

- Community-based non-profits, local businesses, and investor owned utilities should be considered as resources for direct and indirect support, including funding, for program activation and operations.
- Private investors may provide funding to local governments. For example, energy service companies can finance the up-front investments in energy efficiency, reimbursed by the local government over a contract period. Private companies may finance solar power installations, and then recoup their investment by selling the resulting power to the building owner.

## MONITORING AND REPORTING

Regular monitoring provides concrete data to document the City's progress in reducing GHG emissions. The RRG-CAP Coordinator will present an annual memorandum or report card to the City Manager summarizing progress implementation of RRG-CAP measures. The report will evaluate the successes and challenges in meeting the City's GHG reduction goals (as they become known or apparent), provide the status of implementing actions for each reduction measure in the Plan (e.g., initiated, ongoing, completed), assess the effectiveness of each measure, and recommend adjustments to programs or tactics as needed. The annual report will also assess whether the City's actual growth and development is consistent with the forecasts made in the RRG-CAP. The annual report will also be periodically (i.e., annually) presented to City Council, Planning Commission, Green Action Plan (GAP) Committee, WRCOG's Executive Committee and other stakeholders as needed.

### GHG Inventory Updates

An update of the City's GHG inventory will be completed biennially (every other year) at minimum; If appropriate, the City shall modify the geographic scope of the inventory, along with emissions baseline and targets as necessary. Inventory updates will encompass all inventory sectors (utility energy, direct access energy, on-road transportation, solid waste, wastewater, and water), and include a comparison to baseline GHG emissions (2007) and analysis of trends over time.

### RRG-CAP Revisions

A comprehensive revision of the RRG-CAP should occur at least every five years to monitor progress of GHG reductions against the 2020 and 2035 targets, to account for the impact of new legislation and state programs on GHG targets and emissions reductions, and to adjust programs as needed to reach the targets. With the California Governor's recent Executive Order B-30-15 to cut state-wide GHG emissions to 40% below 1990 levels by 2030, it is widely expected that the state will soon codify post-2020 GHG reduction targets and enact new laws and programs to ensure those targets are met. Targeted investment and state supported infrastructure will be needed to establish commercial markets for low-carbon solutions to grow to the scale required. These developments will greatly enhance the ability of the City of Riverside to meet its long-term GHG reduction goals.

### Tracking Implementation and GHG Emissions Reductions from Local Measures

City staff will report RRG-CAP implementation progress using benchmarks and metrics that serve to gauge reduction implementation and associated GHG reductions. A monitoring tool has been developed to track implementation of the most impactful RRG-CAP measures and to annually estimate the GHG reductions associated with implementation. The tool simplifies the monitoring task by using progress indicators to estimate the annual GHG reductions associated with the twelve most significant RRG-CAP measures, which collectively account for approximately 92% of the total emissions reductions expected from all locally controlled measures in the RRG-CAP.<sup>1</sup> **Table B.5-4** lists the implementation metrics that the monitoring tool uses to estimate the GHG

<sup>1</sup> Note: As summarized in Table 5-2, the RRG-CAP contains 7 measures that are controlled or implemented at the state or sub-regional level and 25 locally implemented measures.

reduction impacts of each measure. [Note to Reviewer: this image is a placeholder; we will insert screenshot of RRG-CAP tool once developed.]

Figure B.5-1: Tracking and Implementation Tool



**Table B.5-4: Monitoring Metrics for Top 12 Locally Implemented GHG Reduction Measures**

ID	Strategy Name	Annual Target Reductions (MT CO <sub>2</sub> e)		Progress Indicators and targets	Indicator Data Source
		by 2020	by 2035		
SR-1	Renewables Portfolio Standard	363,096	372,020	Percent of retail sales from qualifying renewables	RPU
T-5	Traffic Signal Coordination	51,693	68,754	Percentage of arterial roads with signal coordination from 2010 baseline. <ul style="list-style-type: none"> <li>• By 2020: Achieve a 75% increase.</li> <li>• By 2035: Achieve a 90% increase</li> </ul>	Public Works Department
SR-3	WRCOG HERO Program - Residential	38,681	64,964	<ul style="list-style-type: none"> <li>• \$ invested</li> <li>• cumulative kWh savings</li> <li>• jobs created</li> </ul>	HERO program administrator
E-3	Local Utility Programs	32,197	43,491	Assumes that RPU continues to reduce community energy use by 1% per year through 2035: <ul style="list-style-type: none"> <li>• By 2020: RPU saves 87.2 million kWh/yr</li> <li>• By 2035: RPU saves 131.5 million kWh/yr</li> </ul>	RPU
SR-12	E-Vehicle Plan + Infrastructure	31,811	39,705	<ul style="list-style-type: none"> <li>• Number of publically available EV stations</li> <li>• Number of registered EVs in the City</li> </ul>	Public Works, RPU
E-5	UC Riverside Carbon Neutral Program	25,000	32,959	Track UCR's % toward goal; from their annual inventory	UC Riverside
T-9	Limiting Parking Requirements for New Development	17,482	24,757	<ul style="list-style-type: none"> <li>• By 2020: Amend zoning to reduce parking requirements by 25% for non-residential development.</li> <li>• By 2035: Amend zoning to reduce parking requirements by 33% for non-residential development.</li> </ul>	Community Development Department, Planning Division
T-1	Bike Infrastructure (bike lanes)	15,905	20,889	<ul style="list-style-type: none"> <li>• Percent increase in bicycle lane mileage from 2010 baseline</li> <li>• By 2020: Achieve a 50% increase</li> <li>• By 2035: Achieve a 75% increase</li> </ul>	Public Works Department in conjunction with Planning
SR-10	Telecommuting	15,905	19,853	• Percent increase in regional TDM strategies implemented on a regional level	RCTC, WRCOG, Economic Development Department
W-1	SB-7X-7 (Water conservation)	10,748	10,748	Reduce per capita water use by 20% (from 2010 baseline)	RPU
SR-7	Metrolink Expansion	9,045	11,289	• Opening of Perris Valley Line with service beginning in 2015	RCTC
SR-4	WRCOG HERO Program - Commercial	6,618	86,276	\$ invested, cumulative kWh savings, jobs created	HERO program administrator
<b>Total of Top 12 Measures</b>		<b>258,582</b>	<b>Represents 92% of GHG reductions from all locally controlled measures by 2020</b>		

## Tracking Progress of State and Subregional Measures

The RRG-CAP relies heavily on GHG reductions from Subregional and state level measures. Close monitoring of the real gains being achieved by state programs will inform the City whether adjustments to locally implemented measures are needed in order to achieve GHG reduction targets. The City will work with WRCOG to track the success of the other six RRG-CAP measures (not included in the top 12 above) being led by the state and/or WRCOG:

- SR-2: Title 24 Energy Efficiency Standards
- SR-6: Pavley vehicle standards and the Low Carbon Fuel Standard (LCFS);
- SR-8: Freeway express lanes
- SR-9: Congestion Pricing
- SR-11: Good Movement
- SR-13: Construction and Demolition Waste Requirements

## Economic and Health Indicators

Through the WRCOG Subregional CAP implementation process, the City is currently developing economic and health indicators and trends that are relevant to RRG-CAP implementation, such as home prices, energy prices cost per kWh on solar installations, unemployment rates, and real wage increases. Linking such indicators to the implementation of RRG-CAP measures can improve the potential for public support and funding. The City will continue work with WRCOG, the County of Riverside and other regional agencies to identify and develop measurable health outcome indicators for each subregional RRG-CAP measure. Indicators will be used to identify co-benefits of the RRG-CAP, establish priorities, develop target resources, create benchmarks, and track progress towards community objectives.

Specifically, health indicators will be used in the assessment of the Subregional CAP and RRG-CAP using baseline data to measure progress towards subregional health targets. Indicators will provide information regarding the welfare of residents and help guide decision making to improve quality of life in the subregion and City. The indicators can be used to track health outcomes and guide policy and programmatic initiatives. Additional use of health indicators can provide supporting information for grant applications and other opportunities that fund health initiatives at a range of scales.

Fifteen health indicators have been selected by the WRCOG Health Subcommittee with the primary factor being the connection to greenhouse gas (GHG) reductions in order to demonstrate the health co-benefits of implementing RRG-CAP and other sustainability measures. The health indicators selected, such as physical activity and collision data, are indicators that may be impacted by GHG mitigation measures. For example, RRG-CAP measures to improve pedestrian and bicycle infrastructure may increase physical activity, improve weight status, and reduce rates of mortality for certain diseases. Health indicators fall into six major categories: health status, mortality, asthma, weight and physical activity, environmental quality, and the built environment.

Figure B.5-1: Subregional CAP Health Indicators



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# APPENDIX A: EXISTING CONDITIONS REPORT





This memorandum assesses existing activities within the City of Riverside that affect greenhouse gas (GHG) emissions and summarizes similar activities occurring at the state, regional, and subregional level.

## INTRODUCTION

The consultant team performed a desktop review of existing plans, policies, and programs across the energy, waste, water, transportation, land use, and green infrastructure sectors. Assessing existing policies in this way allows for a cross-check of strategies already employed within the City, and will assist in determining those programs or policies most needed, to be implemented in the Riverside Restorative Growthprint: Climate Action Plan (CAP).

## STATE LAWS AND POLICIES

### EXECUTIVE ORDER S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which established the following GHG emission reduction targets:

- by 2010, California shall reduce GHG emissions to 2000 levels;
- by 2020, California shall reduce GHG emissions to 1990 levels; and
- by 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

EO-S-3-05 created the California Climate Action Team (CAT), which is tasked with the preparation of biennial science assessment reports on climate changes and adaptation options for California. The first CAT Report to the Governor and Legislature was published in 2006, and contains recommendations and strategies to help meet the targets in EO-S-3-05. These were expanded upon in the 2009 CAT Biennial Report to the Governor and Legislature. The new information includes revised climate and sea-level projections, and an evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts. The action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by EO-S-13-08.

### ASSEMBLY BILL 32 – CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

ASSEMBLY BILL (AB) 32 WAS approved by the legislature and signed by Governor Schwarzenegger in 2006. The landmark legislation requires CARB to develop mechanisms that will reduce GHG emissions to 1990 levels by 2020. Mandatory actions under the legislation to be completed by CARB include:

- Identification of early action items that can be quickly implemented to achieve GHG reductions. These early action items were adopted by CARB in 2007 and include regulations affecting landfill operations, motor vehicle fuels, car refrigerants, and port operations, among other regulations.
- Development of a scoping plan to identify the most technologically feasible and cost-effective measures to achieve the necessary emissions reductions to reach 1990 levels by 2020. The Scoping Plan identifies a variety of GHG reduction measures that include direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and market-based cap-and-trade program. The Plan identifies local governments as strategic partners to achieving the state goal and translates the reduction goal to a 15% reduction of current emissions by 2020.
- Creation and adoption of regulations to require the state's largest industrial emitters of GHGs to report and verify their emissions on an annual basis.

## SENATE BILL 97 – CALIFORNIA ENVIRONMENTAL QUALITY ACT GUIDELINE AMENDMENTS OF 2007

Senate Bill (SB) 97 was adopted in 2007 and directed the Governor’s Office of Planning and Research (OPR) to amend the CEQA Guidelines to address GHG emissions. The CEQA Guidelines prepared by OPR were adopted in December 2009 and went into effect March 18, 2010. Local governments may use adopted plans consistent with the CEQA Guidelines to assess the cumulative impacts of projects on climate change, if the plan for the reduction of GHG emissions accomplishes the following:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a mechanism to monitor the plan’s progress toward achieving the level and to require an amendment if the plan is not achieving specified levels.
- Be adopted in a public process following environmental review.

## REGIONAL PLANS, PROGRAMS AND POLICIES

### SUSTAINABILITY FRAMEWORK FOR WESTERN RIVERSIDE COUNTY

The Western Riverside Council of Governments (WRCOG) Sustainability Framework (Framework) is a subregional planning effort that establishes, implements, and continuously refines an overarching sustainability plan for the communities in Western Riverside County. The Framework aims to: initiate a dialogue about the importance of sustainability in the region; provide a vision and goals to guide local action and regional collaboration; define more immediate short-term goals that can contribute to the longer-term vision of the Framework; and define indicators, benchmarks, and targets that provide a measure of the effectiveness of Framework programs and policies. The Framework acts as a “living” document and contains goals and actions applying to economic development, education, public health, transportation, water and wastewater, energy, and the environment. The City of Riverside actively participated in the WRCOG Economic Development and Environment and Energy Subcommittees, responsible for developing and carrying out the action items.



### WESTERN RIVERSIDE COUNTY CLEAN CITIES COALITION

The Western Riverside County Clean Cities Coalition (Coalition) is a voluntary local government and industry partnership that aims to reduce the consumption of petroleum fuels and improve air quality in the WRCOG subregion. The Coalition works to mobilize local stakeholders toward expanding the use of alternative fuel vehicles (AFV) and advanced technology vehicles, promoting local idle reduction measures, and strengthening local AFV fueling infrastructure. The governments of Western Riverside County have taken leadership roles in the Coalition, coordinating efforts between government and industry to recognize the value of partnership in achieving air quality, energy efficiency, economic development, and transportation goals, while advancing the clean air and energy efficiency goals of the national Clean Cities program administered by the U.S. Department of Energy.

### RIVERSIDE COUNTY HEALTH COALITION

WRCOG and its member jurisdictions are engaged in numerous efforts and initiatives to promote healthy communities, including participating in the Riverside County Health Coalition (RCHC). The RCHC is a collaboration of public and private sectors, school districts, community businesses, local and regional organizations and

community members committed to policy development and advocacy, environmental change and community empowerment for healthy lifestyles in Riverside County. This initiative includes a focused partnership effort with local governments to integrate healthy communities planning principles into the local planning and policy-making process. Healthy communities principles promote vibrant, safe, healthy communities through connecting key elements of health, economics, social welfare, and the environment.



### WRCOG SUBREGIONAL CLIMATE ACTION PLAN

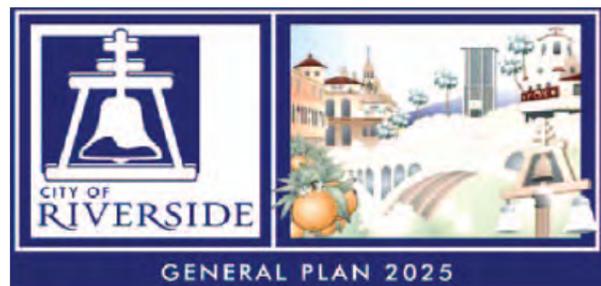
The Western Riverside Council of Governments (WRCOG) developed a Subregional Climate Action Plan (CAP) with the objectives of creating more livable, equitable, and economically vibrant communities. Twelve cities in the subregion, including Riverside, participated in the development of a Subregional CAP, which sets forth subregional emissions reduction targets, emissions reduction measures, and action steps to assist each community in demonstrating consistency with California’s Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32). The CAP includes feasible strategies that will help

the WRCOG subregion advance toward GHG emissions reduction goals, while affording each community additional economic, public health and environmental benefits. The Plan builds upon existing successes and encompasses a range of strategies from expanding the successful HERO program, to increasing residential and business recycling, to reducing vehicle miles traveled, and increasing energy efficiency. It offers cost-effective strategies that support the local economy; reduce risks for energy and fuel price increases and volatility; and offer a wide range of other environmental, social, and economic benefits. Actions that reduce GHG emissions will also support other local community goals and contribute to sustaining the WRCOG subregion as a vibrant community. GHG reduction measures in the CAP fall under four main sectors: energy, transportation and land use, solid waste, and water. The WRCOG CAP describes how Riverside and the other participating jurisdictions collectively meet a subregional 2020 GHG reduction target of 15% below baseline emissions, consistent with AB 32. Serving as the driving force behind the GHG reductions in the subregional CAP, Riverside has committed to implementing the WRCOG measures locally as described in the following sector discussions on Energy, Transportation and Land Use, Water and Solid Waste. Riverside is expected to achieve the largest share of GHG reductions of all cities participating in the CAP.

### LOCAL PLANS AND POLICIES

#### GENERAL PLAN 2025

The adoption of the City’s General Plan 2025 Program in November of 2007 included the seven State mandated Elements, Land Use and Urban Design; Circulation and Community Mobility; Housing; Public Safety; Noise; Open Space, Conservation Parks and Recreation Elements as well as several optional Elements. The Air Quality Element, which recognizes Riverside as a leader in clean air and a healthy environment, provides the scientific and regulatory context describing the importance of improving air quality and reducing greenhouse gas emissions. The Air Quality Element describes city programs and regional initiatives that had been implemented at the time the plan was adopted, and outlines programs and partnerships that the City would pursue in the future. Policies in the Air Quality Element help to set the framework for the air quality and climate change initiatives the City is pursuing today. As required by State law, as part of the General Plan 2025, the Implementation Plan includes tools, or action items, that address the Objectives and Policies of the Elements. In addition, there are Overarching Tools in the Implementation Plan that addressed the more significant Objectives and Policies of the General Plan 2025.



## PROPOSITION R AND MEASURE C

In addition to the City's General Plan, the City has two major voter approved initiatives to preserve the City's natural resources. With the passage of Proposition R in 1979 and Measure C in 1987, voters expressed serious community resolve to protect the Arlington Heights Greenbelt and Rancho La Sierra areas agricultural heritage and prevent urban sprawl thereby preserving them as community treasures. These measures serve to protect natural hillsides, arroyos and other important topographical features and Riverside's greenbelt as a buffer between urban and rural land uses.

## GREEN ACTION PLAN

The 2012 Green Action Plan is a product of the City's Clean City's Clean & Green Task Force, which was created to build upon the policies of the city's General Plan, ensure that the new green guidelines would be followed, provide a framework for sustainability pilot projects, and initiate partnerships among regional agencies and nearby cities. The Task Force first created the Sustainability Policy Statement (SPS), a document featuring eight main categories: Save Water, Keep it Clean, Make it Solar, Make it Shady, Clean the Air, Save Fuel, Make it Smart and Build Green. Once the SPS was adopted, the Green Action Plan was created to serve as a guidebook that would tie specific tasks to the policies of the SPS. The Green Action Plan focuses on seven key areas of city life: Energy, Greenhouse Gas Emissions, Waste, Urban Design, Urban Nature, Transportation and Water.

The city formed a Green Accountability Performance (GAP) Committee to carry out the tasks and within just two years nearly each of the plan's 38 tasks had been accomplished. Through collaboration with the California Department of Conservation (CDC) on solid waste task implementation, the GAP Committee was reimagined to focus on healthy communities, and Riverside was awarded its designation by the CDC as an Emerald City, an honor that has gained the City national acclaim. Healthy Communities was the eighth focus area with 19 goals and over 50 additional tasks, strengthening the Green Action Plan as setting a clear path to sustainability and serving as a living document that reflects the growth of the green movement, the progression of renewable energy, and the fresh ideas of the GAP Committee. The Green Action Plan includes two Goals with associated action items, as shown below, that address GHG's across all sectors.

**Goal 4:** *Establish the GHG emissions baseline for the City of Riverside.*

- A. Establish the 1990 GHG emission baseline on a per capita basis, utilizing the City of Riverside, as a geographical locale, by the end of 2010 and every 5 years after.
- B. Develop and incorporate mitigation measures in the Green Action Plan that provide verifiable GHG savings by 2010.
- C. Begin an audit of the existing inventories to determine their adequacy for implementing a Climate Action Plan.
- D. Work with Western Riverside Council of Government's (WRCOG) Climate Action Plan (CAP) Team to begin updating the inventories in compliance with the audit leveraging off the WRCOG Regional CAP Grant.

**Goal 5:** *Create a climate action plan to reduce GHG emissions to 7% below the 1990 City baseline by 2020 utilizing the City boundaries as defined in 2008.*

- A. Establish programs that comply with South Coast Air Quality Management District (AQMD) and the City's General Plan 2025 to improve the quality of air in Riverside.
- B. Aggressively support programs at the AQMD that reduce GHG and particulate matter generation in the Los Angeles and Orange County regions to improve air quality and reduce pollution in Riverside.
- C. Monitor relevant organizations and the Governor's Office of Planning and Research as they begin to explore setting thresholds for GHG reduction over the next six months.
- D. Identify mitigation measures completed in GAP and GAP2.
- E. Assess mitigation impacts of completed GAP goals.
- F. Create a list of CAP mitigation to meet GHG reduction goal.

- G. Integrate CAP mitigation measures with California Environmental Quality Act (CEQA) for compliance with SB-375.
- H. Create a tier structure of most cost effective mitigation measures and implementation timeline.
- I. Identify staff committee dedicated to CAP implementation from Planning, Public Utilities, Parks and Recreation, and Public Works.



#### RIVERSIDE PUBLIC UTILITIES

The City of Riverside Public Utilities (RPU) Department provides water and electric services to the residents and businesses of Riverside. Through **Green Riverside**, the City supports and implements the various tasks of the Green Action Plan and other sustainability initiatives, offering multiple energy efficiency programs that reduce consumption while promoting the City’s sustainability goals. **Blue Riverside** includes multiple water conservation programs that reduce water consumption.

## ENERGY

Electricity and natural gas used for appliances, lighting, heating and cooling, cooking, and other activities within residential, commercial, and industrial uses typically account for between 40% and 70% of a California jurisdiction’s GHG emissions. Energy accounts for approximately 52% of Riverside’s GHG emissions. Energy emissions are considered demand-side emissions, meaning that they are attributable to the jurisdiction where consumption takes place, rather than to the jurisdiction where production takes place. The following discussions identify existing local energy efficiency, renewable energy generation, street and area lighting, and water and wastewater treatment efficiency policies and programs in the city and subregion.

### STATE LAWS AND POLICIES

#### EXECUTIVE ORDER S-21-09 – RENEWABLE PORTFOLIO STANDARD

At the state level, Executive Order S-21-09 established a statewide renewable energy portfolio target of 33% by year 2020. In addition, the AB 32 Climate Change Scoping Plan has established several statewide measures to reduce electricity and natural gas consumption in residential, commercial, and industrial land uses throughout the state.

#### TITLE 24 - CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN)

At the state level, Title 24 building standards and the California Green Building Standards Code (CalGreen) provide basic energy efficiency code requirements for new construction, as well as advanced tier (e.g., Tier 1, Tier 2) code options that local governments can choose to implement across-the-board, or for certain project types. The California Energy Commission estimates that the 2013 standards will result in residential construction that is 25% more efficient and non-residential construction that is 30% more efficient than the 2008 standards. The new standards go into effect on July 1, 2014.

#### ASSEMBLY BILL 1109 - LIGHTING EFFICIENCY AND TOXICS REDUCTION ACT OF 2008

The Lighting Efficiency and Toxics Reduction Act of 2008 (AB 1109) requires reductions in lighting energy use, encourages use of new lighting technologies to save energy, reduces hazardous waste, and increases recycling.

#### SENATE BILL 1078 - RENEWABLE PORTFOLIO STANDARD

Established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107 and expanded in 2011 under Senate Bill 2, California’s Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33% of total procurement by 2020.

## SENATE BILL 1368 - PERATA, CHAPTER 598, STATUTES OF 2006

Senate Bill (SB) 1368 (Perata, Chapter 598, Statutes of 2006) limits long-term investments in baseload generation by the state's utilities to power plants that meet an emissions performance standard (EPS) jointly established by the California Energy Commission and the California Public Utilities Commission. SB 1368 requires posting of notices of public deliberations by publicly owned utilities on long-term investments on the Energy Commission website and the establishment of a public process for determining the compliance of proposed investments with the EPS.

## ASSEMBLY BILL 811 (2008) – CONTRACTUAL ASSESSMENTS: ENERGY EFFICIENCY IMPROVEMENTS

Contractual Assessments: energy efficiency improvements, Assembly Bill 811[1] (AB 811) was signed into law by Governor of California Arnold Schwarzenegger on July 21, 2008. AB 811 authorizes all California cities and counties to designate areas within which willing property owners can enter into contractual assessments to finance the installation of distributed renewable energy generation or energy efficiency improvements that are permanently fixed to the property owner's residential, commercial, industrial, or other real property. This allows property owners to finance renewable generation and energy efficiency improvements through low-interest loans that are repaid as an item on the property owner's property tax bill.

## ASSEMBLY BILL 1103 – COMMERCIAL BUILDING ENERGY DISCLOSURE PROGRAM

Commercial Building Energy Disclosure Program Assembly Bill (AB) 1103 of 2007, which went into effect on January 1, 2014, requires energy benchmarking and energy disclosure for non-residential buildings, which must be released to any prospective buyer, lessee, or lender. Non-residential business owners must use the Environmental Protection Agency's ENERGY STAR Portfolio Manager system, which generates an energy efficiency rating for the building. Ratings are from 1 to 100, with 100 being the most energy efficient, and must have their data certified by a licensed professional engineer.

## OTHER FEDERAL AND STATE ENERGY PROGRAMS

Several local energy efficiency programs exist based in part on Federal and State energy efficiency programs, including the:

- Federal Housing Association Section 203B energy efficient mortgage program;
- U.S. Department of Energy and Environmental Protection Agency's technical assistance programs for renewable energy and energy efficiency, which includes parking lot upgrade assistance for local governments;
- U.S. Department of Health and Social Services low-income energy assistance programs;
- California Solar Initiative cash rebates for installing solar panels;
- Power purchase agreements (PPA's), authorized by the California Public Utilities Commission, allowing utilities to purchase power from distributed renewable energy facilities interconnected with its grid;
- Low-Income Home Energy Assistance Program (LIHEAP), which is federally funded and administered through the Community Action Partnership of Riverside County (CAP Riverside), which provides utility payment assistance and weatherization services to low income customers in Riverside County;
- Weatherization Assistance Programs (WAP) for Multi-family and Low-income households;
- Energy Efficiency Rating System for New Residential Units, which is provided through CalGreen compliance; and
- WRCOG HERO Program, which provides Property Assessed Clean Energy (PACE) financing for energy and water efficiency and renewable energy projects for residential and commercial properties throughout the subregion.



## CITY OF RIVERSIDE ENERGY POLICIES

In addition to State and regional programs, the City of Riverside has several programs that are focused on improving energy efficiency for local home and business owners.

- High Efficiency Major Appliance (e.g. Refrigerator) Requirements for New Construction
- Shade Tree Requirements for New Construction
- Subsidized Light Bulb (CFL, LED) Distribution Campaign
- Building Owner/Tenant Smart-Grid Outreach Campaign

Renewable energy programs in the City of Riverside include both incentives and barrier reduction policies for small-scale renewables, as well large scale municipal renewable energy facilities.

- Reduced Permitting Fees for Building Scale Renewable Energy
- Streamlined Priority Permitting for Building-scale Renewable Energy
- Minimum Renewable Electricity Requirements for New Buildings
- Municipal Photovoltaic or Solar Thermal Facilities
- Other Municipal Renewable Energy Facilities
- Food-Waste Biogas Energy Facility
- Wastewater Treatment Biogas-to Energy

Public realm lighting policies and programs address improvements and upgrades to public lighting and lighting in semi-public areas (e.g., commercial parking lots), as well as financing structures to incentivize these improvements.

- Streetlight Upgrade Program
- Traffic Light Conversion Program, includes both conversion and synchronization of traffic signals
- Non-Residential Outdoor Lighting Retrofit Outreach Campaign and Rebates

## GREEN ACTION PLAN

The Green Action Plan contains goals and implementing actions to reduce energy-related GHGs through the use of renewable energy and increasing the efficiency of new and existing buildings, as follows.

**Goal 1:** *Increase the use of non-greenhouse gas (GHG) emitting energy by 2020 to 50% with at least 33% coming from renewable sources.*

- A. Provide an annual update of the entire energy portfolio to RPU Board.
- B. Provide 20 MW of regional non-emitting sources by 2020.
- C. Create a Renewable Energy Credit (REC) rate or database for organizations looking to contribute to renewable energy.

**Goal 2:** *Save 1% of communities load annually based on a 2004 baseline, and reduce the City's peak electrical load demand by 10% overall.*

- A. Increase commercial direct install programs.
- B. Add a program to improve low-income energy efficiency.
- C. Increase the energy efficiency of local residential and commercial structures.
- D. Develop a Demand Response Integration Plan.
- E. Develop an electric vehicle rate for residential and business customers.
- F. Assess City facility usage through a more thorough monitoring mechanism in the new billing system.
- G. Create a rate for demand response customers.
- H. Shift 10% of peak load to alternative periods by 2020 through cost-effective programming.

**Goal 3:** *Install at least 20 MW of photovoltaic (PV) systems by 2020.*

- A. Continue to offer \$2.5 million towards residential and commercial PV installations annually.
- B. Provide financing mechanisms for residential/ commercial customers to install PV by 2010 and thereafter.
- C. Issue a Request for Proposal for a 5 MW Tequesquite landfill solar project.
- D. Develop solar incentives to encourage multiple housing PV systems for developers.
- E. Review existing programs designed to make solar available to low and moderate incomes.
- F. Expedite all solar PV projects through the plan review and permitting process.
- G. Keep plan check and permit fees for solar PV systems affordable and reasonable by assessing fees based on actual and/or estimated cost of service rather than the typical valuation based fee.
- H. Develop solar photovoltaic system installation guidelines according to the National Electrical Code and provide to contractors and designers in order to assist in streamlining and simplifying the design and installation process.

**Goal 8:** *Increase green development throughout Riverside.*

- A. Adopt voluntary standards and programs for residential and commercial projects with incentives for excellence in sustainable design and development that encourage green building by 2011 and thereafter.
- B. Encourage programs to establish green operations and maintenance for public and private sector businesses by 2012.
- C. Develop annual programming that provides incentives for residential and commercial green building efforts with an emphasis on the retrofit of existing facilities by 2012.
- D. Adopt and enforce the provisions of the 2010 California Green Building Code.
- E. Develop easy to understand forms and handout literature that will enable designers and contractors to implement green building standards on projects in Riverside, and streamline the plan review and inspection related functions of the Green Building Code.

## RIVERSIDE PUBLIC UTILITIES PROGRAMS

Riverside Public Utilities (RPU) offers several energy efficiency rebate and incentives programs through Green Riverside, that help both home and business owners improve their energy efficiency and increase renewable energy use.

**Table 1 - RPU Energy Programs**

Domestic Time-of-Use Tiered Rate Plan	Offers special rates for customers who manage their energy use by switching some uses to off-peak hours.
Whole House Rebate Program	Rebates increase for customers participating in two or more energy and/or water efficiency programs; up to 250% of listed rebate for maximum participation.
Energy Star Appliances and Devices	Rebates for purchasing Energy Star refrigerators, AC units, dishwashers, clothes washer, ceiling fans, and televisions.
Residential Photovoltaic Rebate Program	Provides financial incentives to RPU electric customers who purchase and install photovoltaic systems.
Tree Power	Rebates credited towards utility bill for planting up to five trees per year.
Weatherization	Rebates are available for attic and exterior wall insulation, whole house fans, attic fans (solar and electric), duct insulation and sealing, window film, and Cool Roof coatings or products.
Pool & Spa Pump Rebate	Installing qualifying multi-flow or variable-speed pool pumps with appropriate controllers (two speed pumps do not qualify) on in-ground pools or spas.
Pool Pump Billing Credit	Five dollar (\$5) credit towards bill for using pool pump during off-peak hours.
Air Conditioning Incentives	Rebates to residential customers for installation of new high energy-efficient air conditioning systems or heat pumps, or replace old units.
Energy Audit Tool	Online audit tool for residential or commercial RPU customers.
Lighting Retrofit Outreach	Promotes installation of high efficiency light bulbs.
Green Power Premium	Helps RPU purchase renewable energy.

**Table 1 - RPU Energy Programs**

Direct Install	Helps small business customers lower their utility bills by installing energy and water efficiency upgrades at low or no cost.
Lighting Rebate	Incentives for commercial customers who replace older, inefficient lighting with the most energy-efficient fixtures; includes daylighting and occupancy sensors, along with solar tubes and sky lighting

## EXISTING WRCOG SUBREGIONAL CAP MEASURES

The WRCOG CAP includes both sub-regional measures, which reflect Statewide legislation, and local measures that will be implemented by each city using varying degrees of community participation and performance metrics, including the highest level, Platinum, followed by Gold and Silver. WRCOG Energy measures aim to increase community-wide building and equipment efficiency and renewable energy use, and promote energy efficiency and renewable energy generation use supporting municipal operations in our communities.

**Table 2 – WRCOG CAP Measures**

Measure	Participation Level	Actions
SR-1 Renewables Portfolio Standard	Sub-Regional	RPU must secure 33% of their power from renewable sources by 2020.
SR-2: 2013 California Building Energy Efficiency Standards (Title 24, Part 6)	Sub-Regional	The California Energy Commission estimates that the 2013 standards will result in residential construction that is 25% more efficient and nonresidential construction that is 30% more efficient than the 2008 standards. The new standards go into effect on July 1, 2014.
SR-3: HERO Residential Program	Sub-Regional	HERO Program is a public-private partnership administered by WRCOG, offering property assessed clean energy (PACE) financing to homeowners for the installation of energy efficient, renewable energy, and water conservation improvements.
SR-4: HERO Commercial Program	Sub-Regional	HERO Program is a public-private partnership administered by WRCOG, offering property assessed clean energy (PACE) financing to business owners for the installation of energy efficient, renewable energy, and water conservation improvements.
SR-5: Utility Programs	Sub-Regional	Accounts for rebates offered by RPU and other utilities in the WRCOG subregion.
E-2: Traffic and Street Lights	Platinum	Requires 100% of traffic and street lights to be converted to high-efficiency bulbs by 2020. For Riverside, this equates to 1.26 million kWh/year of energy savings from the Streetlights and Traffic Signals/Controllers subsector of Local Government GHG Inventory.
E-3: Shade Trees	Gold	Provide a subsidized program to support planting jurisdiction-identified shade tree species, which would result in the planting of approximately 62,900 new shade trees by 2020.

## WATER

Water-related GHG emissions are mainly caused by energy used to pump, transport, heat, cool, and treat potable water. Emissions associated with this energy use typically account for one to five percent (1-5%) of a California jurisdiction’s communitywide GHG inventory. With water supplies expected to continue declining into the future and uncertainty regarding reliability of continued Delta water supplies, water conservation strategies have the added benefits of aligning demand with future water availability, improving public health, and cost savings.

## STATE LAWS AND POLICIES

### ASSEMBLY BILL 1881 – MODEL LOCAL WATER-EFFICIENT LANDSCAPE ORDINANCE OF 2006

Requirements under Assembly Bill (AB) 1881 (2006) led the Department of Water Resources to develop a model local water-efficient landscape ordinance for local agencies. The model ordinance requires a landscape and irrigation design plan, irrigation audit, irrigation survey, and irrigation water use analysis. It also requires recycled water, storm water management, public education, environmental review, waste water prevention, and effective precipitation programs. Most WRCOG jurisdictions have adopted the model ordinance or a locally-tailored variation of the model. The efficiency requirements limit landscape watering and measure the performance of irrigation systems by the amount of water that is required, compared to the amount of water that is used. This ensures that landscapes are not being overwatered or watered incorrectly.

### ASSEMBLY BILL 1420 – URBAN WATER MANAGEMENT PLANNING ACT AMENDMENTS OF 2007

Assembly Bill (AB) 1420 (Stats. 2007, ch. 628) amended the Urban Water Management Planning Act, Water Code Section 10610 et seq., to require, effective January 1, 2009, that the terms of, and eligibility for, any water management grant or loan made to an urban water supplier and awarded or administered by the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), or California Bay-Delta Authority (CBDA) or its successor agency be conditioned on the implementation of the water Demand Management Measures (DMMs) described in Water Code Section 10631(f).

### SENATE BILL 7X-7 – WATER CONSERVATION ACT OF 2009

The scarcity of water in California has led the State to establish a 20% per-capita water use reduction requirement by 2020 through Senate Bill (SB) 7, the Water Conservation Act (2009). Water rates and pricing are among the methods to support conservation and reuse identified in California's 20x2020 Water Conservation Plan. California's 20x2020 Water Conservation Plan also outlines water efficiency practices to conserve household water. Under the Water Conservation Act of 2009, starting on January 1, 2017, any California home built before January 1, 1994 will require water-conserving plumbing fixtures as a point of sale requirement. These and additional state water conservation requirements have led to the creation of local ordinances.

### SENATE BILL 407 – WATER EFFICIENT FIXTURES 2009

Senate Bill (SB) 407 goes into effect on January 1, 2014, and requires all renovations of single-family, multifamily and commercial properties to install water efficient fixtures to receive issuance of a certificate of final completion and occupancy or final permit approval by the local building department. On and after January 1, 2017, a seller or transferor of single-family residential real property must disclose to a purchaser or transferee, in writing, specified requirements for replacing plumbing fixtures, and whether the real property includes noncompliant plumbing. On and after January 1, 2019, a seller or transferor of multifamily residential real property (more than one unit), or commercial real property must disclose to a purchaser or transferee, in writing, specified requirements for replacing plumbing fixtures, and whether the real property includes noncompliant plumbing. By January 1, 2019, all noncompliant plumbing fixtures in multifamily residential real property and commercial real property, as defined, must be replaced with water conserving plumbing fixtures.

### ASSEMBLY BILL 2572 – KEHOE, WATER METERS

Assembly Bill (AB) 2572 requires all urban water suppliers to install water meters on municipal and industrial water service connections that are located in its service area by January 1, 2025.

## CITY OF RIVERSIDE WATER POLICIES

In addition to State and regional programs, the City of Riverside has several policies and programs that are focused on improving water conservation through utility billing programs and water fixture efficiency for home and business owners.

- Tiered rate pricing, which charges different rates for water use based on the amount of consumption over a period of time.
- Consumer education billing programs in conjunction with tiered rates to ensure that residents within the service area understand where their water is coming from, why it costs what it does, and what the benefits of conservation are.
- Outreach and education programs, including classes, workshops, and online games for kids describing the importance of water efficiency and water conservation.
- Recycled water produced at the City of Riverside Water Quality Control Plant.
- Water efficient landscape Ordinance.
- Landscape watering limits (time of day, days per week).
- Mandatory irrigation system efficiency requirements for large retrofits.
- Recycled water infrastructure requirements for new construction.
- Recycled water use Ordinance.

## GREEN ACTION PLAN

The Green Action Plan contains the following goals and implementing actions to reduce water use.

**Goal 16:** *Reduce per capita water usage 20% citywide by 2020.*

- A. Implement water efficiency, conservation, and education programs to reduce the City's per capita potable water usage by 20% by 2020.
- B. Implement a city-wide water conservation ordinance by 2010.
- C. Create Commercial/Industrial water use efficiency program incentivizing performance.
- D. Implement indoor fixture based replacement programs targeting high density housing.
- E. Enact "Stage 1 - Normal Water Supply" provision of water conservation ordinance enforcing irrigation time restrictions.
- F. Revise design guidelines and qualification for landscaping in new development or major retrofits.
- G. Adopt and enforce the provisions of the 2010 California Green Building Code for water efficiency standards.
- H. Develop easy to understand forms and handout literature that will enable designers and contractors to implement the water efficiency standards of the Green Building Code on their projects in Riverside and streamline the design and plan review process.
- I. Maintain high water quality through appropriate recharge, conservation, and management of sources.
- J. Maintain a high level of water quality through source water protection and contaminated source remediation.

**Goal 17:** *Increase the use of recycled water by 30% by 2020, based on the 2008 baseline.*

- A. Develop recycling methods and expand existing uses for recycled wastewater by 2015.
- B. Increase the use of recycled water from the Wastewater Treatment Plant (WWTP) to recover 15,000 acre feet or 30% of plant effluent by 2020.
- C. Obtain recycled water permit.
- D. Construct Phase I Recycled Water Project.
- E. Adapt one large water customer to recycled water.
- F. Double the production capacity of recycled water from the WWTP.
- G. Increase the use of recycled water from the WWTP to recover 9,000 acre feet of plant effluent by 2020.

- H. Break ground on Pellisier Ranch Groundwater Recharge Project.
- I. Permit increase production capacity of recycled water at the WWTP.

## RIVERSIDE PUBLIC UTILITIES PROGRAMS

Riverside Public Utilities (RPU) offers various programs through [Blue Riverside](#) to residents and businesses for both indoor and outdoor water efficiency and water conserving improvements.

**Table 3 – Blue Riverside Water Conservation Programs**

High Efficiency Clothes Washer	Rebates for purchasing Energy Star-rated High-Efficiency Clothes Washer (HECW) with a water factor of 4.0 or less.
High Efficiency Toilets	Rebates for installing High-Efficiency Toilets (HET) or Dual Flush HET.
Artificial Turf	Rebates for installing artificial turf.
Sprinkler Nozzles	Rebates for installation of pop-up sprinkler spray heads with qualifying water efficient sprinkler nozzles.
Waterwise Landscaping	Rebates per square foot of existing lawn for replacing with water efficient, California native, and drought tolerant plants.
Weather Based Irrigation Controllers	Rebate offered for installing a Weather Based Irrigation Control (WBIC) that automatically adjusts irrigation schedules in response to changing weather or environmental conditions.

## EXISTING WRCOG SUBREGIONAL CAP MEASURES

Water conservation programs in the City and Subregion are generally implemented in order to help each jurisdiction achieve their SB 7X-7 water reduction target by 2020. For this reason, the WRCOG CAP relies on a single measure to quantify GHG emission reductions from water conservation programs, as shown below.

**Measure SR-14: Water Conservation, SB 7X-7** is part of a California legislative package passed in 2009 that requires urban retail water suppliers to reduce per-capita water use by 10% from a baseline level by 2015, and to reduce per capita water use by 20% by 2020. While this is considered a state measure, it will be up to the local water retailers, jurisdictions, and water users to meet these targets.

## TRANSPORTATION AND LAND USE

Transportation typically generates more than 50% of an individual California jurisdiction’s communitywide emissions (46% for the City of Riverside). These emissions are created largely by the number of vehicle miles traveled (VMT) by residents and employees. Long vehicle trips and high numbers of trips create high emissions. Successfully reducing vehicle emissions relies on reducing or shortening vehicle trips, either by making alternative modes of transportation (e.g., transit, bicycling, walking) more viable, or by increasing proximity of diverse land uses. Technological advancements in vehicle fuel efficiency will also reduce vehicular GHG emissions.

### STATE LAWS AND POLICIES

#### ASSEMBLY BILL 1493 - CLEAN CAR STANDARDS OF 2010

At the statewide level, Clean Car Standards of 2010 (AB 1493 (Pavley)) require an increase in the fuel efficiency of vehicles starting with model year 2012 and ending with model year 2025.

#### EXECUTIVE ORDER -S-1-07 – LOW CARBON FUEL STANDARD OF 2007

Low Carbon Fuel Standard was enacted to reduce carbon intensity in transportation fuels as compared to conventional petroleum fuels, such as gasoline and diesel, and is anticipated to decrease the carbon intensity of transportation fuels by 10% by 2020.

#### **ASSEMBLY BILL 1358 – COMPLETE STREETS ACT OF 2008**

The Complete Streets Act of 2008 (AB 1358) requires cities and counties revising the circulation element of their general plan to identify how the jurisdiction will provide for the routine accommodations of all roadway users, including motorists, pedestrians, bicyclists, individual with disabilities, seniors, and public transportation users.

#### **SENATE BILL 375 – SUSTAINABLE COMMUNITIES AND CLIMATE PROTECTION ACT OF 2008**

Senate Bill (SB) 375, also known as the Sustainable Communities and Climate Protection Act of 2008, compliments AB 32 by aiming to reduce GHG emissions through integrated transportation and land use planning. It requires the state's metropolitan planning organizations (MPO) to create a sustainable communities strategy (SCS) in their regional transportation plans (RTP) for the purpose of reducing urban sprawl. Under SB 375, CARB established regional targets for GHG emissions reductions from passenger vehicle use for each MPO. The regional reduction targets for the Southern California Association of Governments (SCAG) region, which is the MPO with jurisdiction over the WRCOG subregion, are 8% per capita by 2020, and a conditional target of 13% per capita by 2035 from 2005 levels. In April 2012, SCAG adopted its first SCS, which demonstrates how the region will achieve the GHG emissions reduction targets set by CARB.

### **REGIONAL PLANS, PROGRAMS AND POLICIES**

#### **RIVERSIDE COUNTY INTEGRATED PROJECT AND COMMUNITY AND ENVIRONMENTAL TRANSPORTATION ACCEPTABILITY PROCESS**

In 2003, the County of Riverside completed a comprehensive planning program, called the Riverside County Integrated Project, or RCIP, that included a coordinated regional transportation planning effort: the Community and Environmental Transportation Acceptability Process (CETAP). CETAP led to the identification of potential transportation corridor routes in western Riverside County that will benefit commuters and serve the County's growing economy. The Cajalco Road Corridor that traverses the southern portion of the City's planning area is being studied for potential widening and improvement in an effort to relieve congestion and offer an alternative to the SR-91 freeway and SR-60/ I-215/SR- 91 interchange for regional commuters.

#### **COUNTY OF RIVERSIDE CONGESTION MANAGEMENT PLAN**

Urbanized areas such as Riverside County are required by State law to adopt a Congestion Management Plan (CMP). The goals of the CMP are to reduce traffic congestion and to provide a mechanism for coordinating land use development and transportation improvement decisions. Local agencies are required to establish minimum level of service (LOS) thresholds in their general plans and conduct traffic impact assessments on individual development projects. Deficiency plans must be prepared when a development project would cause LOS "F" on non-exempt CMP roadway segments. The deficiency plans outline specific mitigation measures and a schedule for mitigating the deficiency.

#### **RIVERSIDE TRANSIT AGENCY (RTA)**

The Riverside Transit Agency (RTA) was established as a Joint Powers Agency on August 15, 1975 and began operating bus service on March 16, 1977. RTA is the Consolidated Transportation Service Agency for western Riverside County and is responsible for coordinating transit services throughout the approximate 2,500 square mile service area, providing driver training, assistance with grant applications and development of Short Range Transit Plans (STRPs). The member jurisdictions include the cities of Banning, Beaumont, Calimesa, Canyon Lake, Corona,

Hemet, Lake Elsinore, Moreno Valley, Murrieta, Norco, Perris, Riverside, San Jacinto, Temecula and the unincorporated areas of Riverside County Supervisorial Districts I, II, III and V. RTA provides both local and regional services throughout the region with 38 fixed-routes, five Commuter Link routes, and Dial-A-Ride services using 231 vehicles. In the cities of Corona, Beaumont and Banning, RTA coordinates regional services with municipal transit systems. In Riverside, RTA coordinates with the City's Riverside Special Services, which provides ADA complementary service to RTA's fixed-route services.

#### SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS REGIONAL TRANSPORTATION PLAN AND SUSTAINABLE COMMUNITIES STRATEGY

Southern California Association of Governments (SCAG) is the regional planning agency for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated Metropolitan Planning Organization (MPO) for the Southern California region and is the largest MPO in the U.S. With respect to air quality planning, SCAG has prepared the 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (2012 RTP/SCS): Towards a Sustainable Future, to fulfill federal planning requirements contained in the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which calls for regions to consider urban form and natural resources as part of the transportation planning process. Under SB 375, all of California's MPOs must prepare an SCS as a component of their RTP. The RTP serves as a long-range transportation plan that is developed and updated by SCAG every four years. The RTP provides a vision for the development of transportation facilities throughout the region based on growth forecasts and economic trends that project over a 20-year period. The SCS expands upon transportation strategies in the RTP to analyze growth patterns and establish future land use strategies that aid the region in meeting its GHG reduction targets. The SCS does not mandate future land use policies for local jurisdictions, but rather provides a foundation of regional policy upon which local governments can build. WRCOG and its member jurisdictions partner with SCAG and are active members in the development and implementation of the RTP/SCS.

#### TRANSPORTATION UNIFORM MITIGATION FEE

WRCOG's Transportation Uniform Mitigation Fee (TUMF) was implemented in 2003 as one of the largest multi-jurisdictional fee programs in the nation. TUMF makes improvements to the regional transportation system and provides transportation demand management through funds from new development, ensuring that development mitigates for increases in traffic volumes. TUMF is a 32-year program that provides subregional transportation and infrastructure benefits to local agencies in Western Riverside County. The program is expected to raise \$4.2 billion, and 1.64% is allocated to the Riverside Transit Agency (RTA) for transit improvements. To mitigate the impacts of transportation construction projects, WRCOG allocates 1.59% of TUMF funds collected to the Riverside Conservation Authority (RCA) to purchase habitat for the Multi Species Habitat Conservation Program (MSHCP).

#### WRCOG NON-MOTORIZED TRANSPORTATION PLAN

The Non-motorized Transportation Plan (NMTP) provides a planned network of bicycle and pedestrian facilities to enhance mobility in the subregion. The NMTP identifies 28 bicycle and pedestrian routes and multi-jurisdiction connections. Planned routes connect neighborhoods, schools, parks, shopping centers, employment centers, and transit centers. WRCOG coordinated with local jurisdictions to prepare the NMTP, working collaboratively with bicycle organizations, transportation agencies, large employers, and activity centers. The NMTP addresses state complete streets requirements by promoting "typical" design standards for route classifications, bike parking standards, sidewalk design standards, maintenance of on and off road facilities, optional street crossing standards, and pedestrian and bicycle safety standards.

#### FOUR-CITY ELECTRIC VEHICLE PLAN

Alternative fuel vehicles operated by RTA use compressed natural gas (CNG) technology to fuel buses. RTA operates CNG fueling stations in Riverside and Hemet. The CNG stations also serve other agencies, including Omnitrans and the City of Riverside. WRCOG prepared a Four-City Electric Vehicle Plan to create near-term and

long-range transportation networks and scalable implementation strategies for Neighborhood Electric Vehicles (NEVs) in the cities of Corona, Norco, Riverside, and Moreno Valley. The WRCOG Clean Cities coalition supports local actions to reduce petroleum consumption for transportation. Clean Cities mobilizes other local stakeholders to expand the use of alternative fuels and implement idle reduction measures, accelerate deployment of alternative fuel vehicles, and improve and expand local refueling infrastructure. Through grants from the U.S. Department of Energy and the California Energy Commission, WRCOG's Clean Cities Coalition is participating in a regional Plug-In Electric Vehicle Study with SCAG and the South Bay Clean Cities Coalition.

#### SUBREGIONAL TRANSIT-ORIENTED DEVELOPMENT

Transit-oriented development incorporates transit into future and existing development. WRCOG prepared the Transit Oriented Development (TOD) Study Guiding Principles and Policies; TOD best practices Study; and Transit-Oriented Development Survey Report. The WRCOG Bus Rapid Transit route plan outlines six development-oriented transit stations; multimodal stations in Corona, Riverside, and Perris; a major bus transfer station in Menifee; an end of the line station at Riverside County Medical Center; a village center park-and-ride station in Dos Lagos; and a walk-up station at Abbott Labs.

### CITY OF RIVERSIDE TRANSPORTATION AND LAND USE POLICIES

#### GENERAL PLAN 2025

The City of Riverside General Plan includes objectives and supporting policies that support vehicle trip reduction and enhance pedestrian and bicycle infrastructure and amenities, including:

- Build and maintain a transportation system that combines a mix of transportation mode and transportation system management techniques, and that is designed to meet the needs of Riverside's residents and businesses, while minimizing the transportation system's impacts on air quality, the environment and adjacent development.
- Design the Magnolia Avenue/Market Street Corridor as a transit- and pedestrian-oriented Mixed Use boulevard.
- Cooperate in the implementation of regional and inter-jurisdictional transportation plans and improvements to the regional transportation system to reduce vehicles trips.
- Promote and support an efficient public multi-modal transportation network that connects activity centers in Riverside to each other and to the region.
- Provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system.
- Also includes new policies related to greenbelts.

#### BICYCLE MASTER PLAN

The City of Riverside's Bicycle Master Plan was updated March 2012 as an addendum to the City of Riverside 2007 Bicycle Master Plan. It provides an updated inventory of all bicycle infrastructure and non-infrastructure improvements implemented over the past five years within the City of Riverside. It also presents current and future bicycle and walking impact analysis, which includes estimated bicycle and walking trips, reduced vehicle miles traveled, and emission reductions for current and future conditions. The addendum also provides an updated list of recommended bicycle improvements, including a new network of proposed bicycle facilities and programs that will help the City of Riverside upgrade their current designation as a bronze level bicycle friendly community.

#### DRAFT CITY-WIDE BIKE DESIGN GUIDELINES

Draft City-Wide Bike Design Guidelines are expected to be adopted end of 2014. They will target private development and will include bicycle infrastructure and parking requirements.

#### RIVERSIDE SMARTCODE SPECIFIC PLAN

The proposed Riverside SmartCode Specific Plan work program was approved in concept by the City Council on January 8, 2013 as part of the Business Ready Riverside Strategy, as it is intended to encourage economic development and streamline the entitlement process for new development projects. The Smart Code Specific Plan will encompass approximately 90% of the City's office, commercial and industrial zoned properties and cover approximately 20% of the City, replacing, in full or in part, nine existing specific plans spread across the City. The Smart Code Specific Plan would result in one cohesive illustrated vision, present clear and consistent development standards, set forth an infrastructure plan to support future investment, establish a built-in mitigation program for historic resources, foster economic development and streamline the entitlement process for projects consistent with the vision and accompanying Program Environmental Impact Report.

#### OTHER CITY PROGRAMS

Other programs in the City of Riverside support transit and city vehicle fleet efficiency, and include the following:

- Transit Signal Priority,
- Bus Fleet Fuel Conversion, Riverside Transit Agency uses CNG vehicles for all large 40-ft buses (Directly Operated) and larger contracted buses,
- Traffic Signal Coordination,
- Intelligent transportation systems,
- Fleet Management Upgrade

#### GREEN ACTION PLAN

The Green Action Plan contains goals and implementing actions to reduce GHGs through the use of alternative transportation and land use changes.

**Goal 9:** *Use specific plans along the Bus Rapid Transit (BRT) corridors and on the transportation hubs to address infrastructure systems, revitalization of urban and community centers, and promote infill and compact development.*

- A. Amend the Downtown Specific Plan to create incentives for high density and mixeduse opportunities along the BRT corridor that include greater densities for greener design.

**Goal 10:** *Meet the environmentally sensitive goals of the General Plan 2025 specified in the Mitigation Monitoring Program of the Environmental Impact Report, and the Implementation Plan following the timelines set forth in each.*

- A. Apply urban planning principles that encourage high density, mixed-use, walkable/bikeable neighborhoods, and coordinate land-use and transportation with open space systems.
- B. Review older specific plans for consistency with the General Plan 2025 and add sustainable policies as funding permits.

**Goal 14:** *Decrease vehicle miles traveled 15% by 2015 based on the 2009 baseline.*

- A. Encourage the use of bicycles as an alternative form of transportation, not just recreation, by increasing the number of bike trails by 15 miles and bike lanes by 111 miles throughout the City before 2025.
- B. Implement a regional transit program between educational facilities.
- C. Promote and encourage the use of alternative methods of transportation throughout the community by providing programs to city employees that can be duplicated by local businesses.
- D. Coordinate a plan with local agencies to expand affordable convenient public transit within the City limits.
- E. Keep permit costs for installing Electric Vehicle Chargers at a minimum and streamline the permitting process by developing easy to understand literature to enable designers, contractors, and home owners to secure permits and correctly install them in compliance with the National Electric Code.

**Goal 15: Reduce mobile sources of pollution 5% by 2020.**

- A. Encourage the purchase of alternative fuel vehicles or lower emission hybrids and plug-ins for the residential and business community by offering incentives.
- B. Synchronize traffic signals along primary City arterials by the end of 2012.
- C. Implement a program to design, construct or close at least one of the 26 railroad grade separations each year.
- D. Reconstruct at least two freeway/street interchanges by 2012.
- E. Implement an electric vehicle outreach plan.
- F. Install 11 public electric vehicle charging stations at 7 city facilities.
- G. Install a second public CNG fueling station at the Water Quality Control Plant.
- H. Increase the number of clean vehicles in the non-emergency City fleet to at least 60%.

**WRCOG SUBREGIONAL CAP MEASURES**

Transportation and land use measures in the WRCOG CAP include the most extensive list of subregional and local measures, which aim to reduce single-occupancy vehicle travel, increase active transportation, improve public transit access, increase motor vehicle efficiency, and promote sustainable growth patterns.

**Table 4 – WRCOG CAP Transportation Measures**

Measure	Participation Level	Actions
SR-6: Pavley and Low Carbon Fuel Standard	Sub-Regional	Building from Pavley 1, Executive Order S-1-07, known as the Low Carbon Fuel Standard (LCFS), requires the carbon-intensity of California’s transportation fuel to be reduced by at least 10% by 2020.
SR-7: Metrolink Expansion	Sub-Regional	Identified in SCAG’s 2012 RTP/SCS, the Metrolink Perris Valley Line will be extended from Riverside to Perris with service beginning in 2015.
SR-8: Express Lanes	Sub-Regional	Extension of express lanes along State Route-91 (SR-91) and Interstate-15 (I-15) would be operational by 2017 and 2020 respectively, and would lead to reduced congestion according to regional transportation modeling.
SR-9: Congestion Pricing	Sub-Regional	Congestion pricing is a TDM tool examined by SCAG through its Express Travel Choices Study. Pricing mechanisms may include toll lanes/roads or mileage-based user fees, which discourage automobile traveling by increasing travel costs. Currently an expansion of the toll lanes on SR-91 is planned to continue these toll lanes through Corona and into Riverside.
SR-10: Telecommuting	Sub-Regional	Telecommuting is a soft TDM mechanism that has increased considerably over the past decade; According to SCAG, telecommuting could increase even more by 2020 (to 5% of workers in the region) and 2035 (to 10% of workers), from the current 2.6% that currently telecommute. Reflects the regional share of TDM strategies that may be implemented on a regional level given the high degree of out-commuting that occurs in Western Riverside County
SR-11: Goods Movement	Sub-Regional	Accounts for the region’s “share” of SCAG and AQMD’s anticipated cargo-efficiency investments, including policies as well as physical improvements such as “truck climbing” lanes on State Route-60 (SR-60), funded by RCTC.
SR-12: Electric Vehicle Plan and Infrastructure	Sub-Regional	SCAG has developed a regional plug-in electric vehicle (PEV) readiness plan, and WRCOG has a similar subregional plan for PEV readiness. Through these plans and outreach efforts, alternative-fuel vehicles will be promoted as one strategy to

**Table 4 – WRCOG CAP Transportation Measures**

Measure	Participation Level	Actions
		reduce GHG emissions associated with passenger vehicles.
T-1: Bicycle Infrastructure Improvements	Platinum	Implement a 50% increase in bicycle lane mileage from baseline levels, by 2020.
T-2: Bicycle Parking	Platinum	Amend zoning to require provision of bike parking for all multi-family or mixed-use projects consisting of a mix of residential, retail, and office space.
T-3: End of Trip Facilities	Platinum	Amend zoning to require installation of end-of-trip facilities for new commercial buildings greater than 50,000 square feet, which further incentivize alternative transportation modes, such as walking and biking and include showers, changing rooms, lockers, and bike racks.
T-4: Promotional Transportation Demand Management	Silver	Train an existing staff person to promote TDM strategies to existing business, which reduce demand for roadway travel, particularly in single-occupancy vehicles.
T-7: Traffic Signal Coordination	Platinum	Coordinate traffic signals on an additional 50% of arterial roads which were not coordinated in the base year. Traffic signal coordination describes a method of timing groups of traffic signals along an arterial to provide smooth movement of traffic with minimal stops.
T-8: Density	Gold	Achieve a 10% increase in community-wide household and employment density over baseline conditions by 2020.
T-9: Mixed-Use Development	Silver	Achieve a 5% jobs/housing ratio improvement over baseline conditions
T-11: Pedestrian-Only Areas	Platinum	Designate one additional major activity center in the community as a permanent pedestrian-only area over baseline conditions.
T-12: Limit Parking Requirements for New Development	Platinum	Amend zoning to reduce parking requirements for new non-residential development by 25% over baseline conditions.
T-13: Bus Rapid Transit Service	Gold	Work with RTA to offer BRT service within two (2) corridors
T-14: Voluntary Transportation Demand Management	Gold	25% of employees within the jurisdiction participate in voluntary TDM programs
T-15: Accelerated Bike Plan Implementation	Platinum	Install 75% of all bicycle facility miles identified in jurisdiction's Bike Plan by 2020
T-16: Fixed Guideway Transit	Platinum	Implement a fixed-guideway transit system to support a Streetcar system.
T-17: Neighborhood Electric Vehicle Programs	Gold	Adopt a comprehensive NEV program including signage for NEVs and an educational program related to the use of NEVs.
T-18: Subsidized Transit	Platinum	Provide subsidized or discounted transit passes to 3% of residents, students, and employees living, working, or going to school in the community.

## SOLID WASTE

Waste disposal creates emissions when organic waste (e.g., food scraps, yard clippings, paper and wood products) is buried in landfills and anaerobic digestion takes place, emitting methane. Additionally, extracting and processing raw materials for consumer products, distributing them to consumers, and disposing of them creates GHG emissions. In most California communities, between 1% and 3% of communitywide GHG emissions are typically associated with solid waste generation and disposal in landfills (2% for the City of Riverside). The following

discussion identifies existing local waste collection pricing, organic waste diversion, non-organic waste diversion/reduction, waste hauling operations, and waste-to-energy policies and programs within the City of Riverside.

## STATE LAW AND POLICIES

### ASSEMBLY BILL 939 – INTEGRATED WASTE MANAGEMENT PLAN (1989)

Every jurisdiction is required to create an integrated waste management plan to increase diversion rates set by the Integrated Waste Management Act of 1989 (AB 939) to achieve 20% waste reduction by 1995, and 50% waste reduction by 2000.

### ASSEMBLY BILL 32 - COMMERCIAL AND MULTI-FAMILY RESIDENTIAL RECYCLING ORDINANCES

Commercial and multi-family residential recycling ordinances are required as part of the Mandatory Commercial Recycling measure in AB 32, as of July 1, 2012.

### SENATE BILL 1016 - PER CAPITA DISPOSAL MEASUREMENT SYSTEM (2008)

SB 1016 (Chapter 343, Statutes of 2008 [Wiggins, SB 1016]) establishes a per capita disposal measurement system to make the process of goal measurement, as established by the Integrated Waste Management Act of 1989 (AB 939), simpler, more timely, and more accurate. SB 1016 builds on AB 939 compliance requirements by implementing a simplified measure of jurisdictions' performance, changing the measure to a disposal-based indicator, the per capita disposal rate, which is calculated using a jurisdiction's population (or in some cases employment) and its disposal as reported by disposal facilities.

## CITY OF RIVERSIDE SOLID WASTE POLICIES

The City of Riverside operates its own waste disposal and waste management divisions to provide services for business and residential customers, and relies on contracted private waste hauling services from Athens Services, Burrtec Waste Industries Inc., and CR&R Services. The landfills serving Riverside and the WRCOG subregion are located in unincorporated areas of Riverside County, and the facilities are owned and operated by the County. The City of Riverside's waste disposal division includes the following programs:

- Separate Waste Bills
- Consumer Education Billing Program
- Tiered-Rate Waste Collection Fee Program
- Waste Disposal Outreach

Organic waste (e.g., food waste, yard waste) accounts for 14% of the statewide municipal waste stream; however, less than 3% of organic waste was diverted and recycled in 2010. Reducing, recovering, and recycling food waste and yard waste diverts organic materials from landfills and incinerators, reducing GHG emissions from landfill operations.

- Outreach Campaign to Encourage Home/ Business On Site Composting
- Yard Waste Collection Program
- Yard Waste Outreach Campaign
- Lumber Scrap Diversion Outreach Campaign to Building Industry

Riverside's Recycling programs include the following:

- Recycling Campaign
- Curbside Recycling Collection
- Local Recycling Collection Centers
- Comingled Waste Collection Program (One Bin)

- Voluntary Waste Reduction Audits for Large Waste Generations

All waste hauling service providers offer curbside waste hauling of trash, green waste, and recycling by robotic trucks. All contracted waste haulers for the City of Riverside have the following programs:

- Low-Emission Waste and Recycling Trucks
- Waste Hauling Route Optimization

Waste feed stocks that can produce energy include municipal solid waste, construction and demolition debris, agricultural waste (e.g., manure), industrial waste from mining, lumber mills, and the gases naturally emitted from landfills. Existing waste-to-energy programs in the City of Riverside are:

- Methane capture systems which capture the gaseous byproducts of waste, consisting mainly of carbon dioxide and methane, and
- Biogas facilities which place food-processing waste or agricultural waste into a digester, which produces pure methane that can be burned in boilers or cleaned for use in engines or to generate electricity.

## GREEN ACTION PLAN

The Green Action Plan contains the following goals and implementing actions to reduce GHGs from solid waste landfills.

**Goal 6:** *Implement programs to reduce waste, based on the 2007 per capita baseline, by 75% by 2020.*

- Develop measures to encourage that a minimum of 90% of recoverable waste from all construction sites be recycled throughout Riverside by 2015, beginning with 40% in 2010 and increasing by 10% each year thereafter.
- Encourage the reduction of any disposable, toxic, or nonrenewable products by 5%.
- Expand the City's Green Waste program to capture 75% of the green waste generated by City facilities annually.
- Expand the City's existing recycling program to recycle at least 15% from all municipal facilities annually.
- Explore a 'Zero Waste Ordinance' by 2012.
- Implement the City's Environmentally Preferable Purchasing Policy.
- Enforce the 2010 California Green Code provisions concerning construction and demolition waste reduction, disposal and recycling.
- Implement the AB 341 program to all commercial businesses and multi-family units of 5 or more to increase recycling in the City to a measurable goal of 75%. AB 341 has been developed to encourage recycling at commercial businesses.
- Update website to make it more informative to residents and commercial and multifamily businesses.
- Increase use of free mulch on city properties.
- Increase recycling awareness and opportunities to recycle at city facilities. All facilities are practicing recycling. The next step is to increase recycling at the corporation yard and city parks.
- Increase collection of hazardous waste materials in the City by 5% by 2014.

**Goal 7:** *Implement educational programs throughout the community to encourage green practices.*

- Encourage the reduction of any disposable, toxic, or nonrenewable products by 5% through program creation by 2010 and thereafter.
- Develop and implement State Standards based curriculum for K-12 educational facilities by 2010 and thereafter.
- Evaluate and implement online resources by 2010 and thereafter.

## WRCOG SUBREGIONAL CAP MEASURES

Measures in the WRCOG CAP primarily aim to reduce community and municipal solid waste sent to landfills.

**Table 5 – WRCOG CAP Solid Waste Reduction**

Measure	Participation Level	Actions
SR-13: Construction & Demolition Waste Diversion	Sub-Regional	Effective July 1, 2012, CALGreen, the state’s Green Building Standards Code, requires jurisdictions to divert a minimum of 50% of their nonhazardous C&D waste from landfills.
SW-1: Yard Waste Collection	Gold	Provide residential green waste bins for collection and transport to an organic waste processing facility.
SW-2: Food Scrap and Compostable Paper Diversion	Gold	Accept food scraps and compostable paper within residential green waste bins or provide separate food scrap collection bins.

## GREEN INFRASTRUCTURE

Street trees and trees on private property are valuable community assets. Trees beautify neighborhoods, increase property values, reduce noise and air pollution, keep buildings cool in the summer, create privacy, and establish habitat for bird species. The urban forest also captures and stores carbon as the trees grow. Building integrated vegetation (e.g., green roofs) cool buildings and control stormwater runoff while reducing GHG emissions.

## REGIONAL PLANS, PROGRAMS AND POLICIES

### MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional plan to conserve sensitive species and their associated habitats in the subregion. Created in 2004 by the Western Riverside County Regional Conservation Authority (RCA), the MSHCP provides subregional transportation and green infrastructure benefits to local agencies and allows WRCOG jurisdictions to make land use decisions and maintain a strong economy in a context that comprehensively addresses federal and state Endangered Species Acts (ESA and CESA) requirements.

### CITY POLICIES

**Urban forestry** programs in Riverside result from a partnership between the City Council; Parks, Recreation and Community Services Commission Urban and Community Forest Subcommittees; and Public Works. Funding for urban forestry projects in Riverside comes from the City’s Perpetual Tree Care Fund, the Adopt-a-park program, and community grants. Tree planting campaigns and requirements are part of the urban forest plan, which also includes guidelines recommending where and what species of tree should be planted at given locations. Riverside has established a goal to plant trees on all vacant City properties. Riverside’s Green Infrastructure initiatives include the following:

- Urban Forest Master Plan
- Urban Forestry Program
- Tree Planting Campaign
- Mandatory Tree Planting Requirements for New Development
- Habitat Restoration
- Green Roof Promotion
- Building Shade Tree Programs (also listed under the Energy section)
  - Shade Tree Campaign
  - Shade Tree Incentives

- Mandatory Shade Tree Requirements

## GREEN ACTION PLAN

The Green Action Plan contains the following goals and policies to expand open space and the City's urban forest.

**Goal 11:** *Ensure that 90% of City residents have access to a park, recreational or public open space within half a mile of home.*

- A. Strengthen the City's existing trail inventory while providing a 75% increase of passive recreation and multi-use trails by 2015.
- B. Coordinate trail connections with the County of Riverside as opportunities arise.
- C. Ensure that there is an accessible park, recreational or public open space within a ½ mile of 90% of City residents by 2015.
- D. Create a City park/recreation/open space map.

**Goal 12:** *Increase the City's urban forest.*

- A. Plant at least 1,000 trees in City parks and right-of-ways annually.
- B. Encourage the planting of at least 3,000 shade trees on private property annually.

**Goal 13:** *Provide non-accessible open space areas for the protection of natural habitat that also provides green space buffers that add to the City's viewshed for the enjoyment of all residents.*

- A. Inventory and map areas currently preserved as open space easements under recorded maps and add to community map.
- B. Acquire 200 acres of open space lands for use as passive parks by 2015.
- C. Continue to partner with the Riverside Conservation Agency to implement the Multiple Species Habitat Conservation Plan (MSHCP).

# APPENDIX B: RRG OUTREACH AND ENGAGEMENT RESULTS



# APPENDIX B: RRG OUTREACH AND ENGAGEMENT RESULTS

## STARTER ACTION PLANS

In order to facilitate the process of developing action plans around the Smart Growth strategy areas, the RRG project team has summarized the information received during the outreach and engagement activities into the Entrepreneurial Opportunity Areas to offer a starting off point for developing action plans. The areas below are also tied to the Smart Growth Focus Areas.

### Smart Growth Focus Areas



Placemaking



RRG Policy Lens



Smart Growth Infrastructure



Community Connections



Future Leaders



## BICYCLE INFRASTRUCTURE

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- Create a bike friendly district, which would have extensive bicycle facilities, bike shops, and other businesses to support cycling with discounts and bicycle parking options.
- Develop a bike path along the Gage Canal, Santa Ana Trail, Central Avenue (Canyon Crest to the Riverside Plaza), and Riverside City College to University of California, Riverside.
- Create additional bike lanes and enhance safety systems (reduced speeds near lanes, physical separation along arterial streets, improved lane visibility).
- Link bicycle routes to local transit corridors (trains and buses).
- Create bike-able areas with higher land use density, diversity, and proximity.
- Create shared auto & bicycle lanes in downtown areas.
- Provide bike lockers, racks, showering facilities, service stations and bike share programs.
- Establish and promote local bike events (e.g. CicLAvia).



## ECO BUSINESS ZONE

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- Provide incentives for clean-tech incubator participants and businesses within the zone such as reduced permitting and fees and loan/grant programs.
- Create eco business zones in conjunction with Restore Riverside (one zone could be between Jurupa Ave. and the Santa Ana River from Martha McLean-Anza Narrows Park to Van Buren Blvd.).
- Develop green job training and internships for high school and college students.
- Support or establish employee-owned cooperatives and job training centers.



## CLEAN-TECH INCUBATOR

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- Develop a pilot project to engage the community around the idea of a clean-tech incubator (i.e. create innovation think-tank opportunities to engage thought leaders).
- Create clean-tech Incubator office space that includes conference and meeting rooms, all furniture, utilities, and parking.
- Offer local clean-tech companies R&D lab space in the Clean-Tech Incubator.
- Partner with the Chamber of Commerce to provide local clean-tech companies with funding resources.
- Facilitate high-level executive coaching and mentorship between executives of local clean-tech startups and established businesses
- Attract investment and business capital to support new clean-tech companies locally
- Create programs to retain and recruit graduates from local universities.
- Develop partnerships with regional incubators and academic institutions to share lessons learned and co-promote events.



## ENERGY AND WATER UPGRADES

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- Develop outreach campaign and marketing materials to promote the value of energy and water upgrades to residents and businesses.
- Provide funding for grey water and wind project installations.
- Develop programs to support solar installations for businesses and homes.
- Create and promote weatherproof/insulation enhancement programs.
- Develop partnerships with solar providers to bring their businesses to Riverside.
- Adopt and promote new water-saving technologies.



## GREEN BUILDING

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- Increase energy efficiency standards for residential, commercial, and municipal buildings.
- Support construction of Net Zero homes.
- Require solar installations for all new construction.
- Provide green building training programs and information to the public
- Provide rate incentives for lowered utility usage.
- Establish a “Green Academy” that educates residents about incentive programs, green technology suppliers, and highlight city sustainability programs.



## RPU CLEAN TECHNOLOGY FUNDING

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- Enhance existing renewable portfolio standards.
- Provide monetary awards for technology competitions at local universities.
- Seek funding for technology research and partnerships with technology companies through University of California, Riverside (UCR).
- Seek funding through the U.S. Department of Energy Research Grants and other third party financing options.
- Enhance outreach efforts to promote existing RPU technology grants.
- Create marketing plan and raise visibility of existing RPU grant programs via workshops in the community.



## CLEAN VEHICLES AND CHARGING/FUELING STATIONS

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- Provide additional charging stations in central locations such as grocery stores, parks, libraries, etc. that have a variety of fuel types.
- Develop awareness campaigns on the benefits of electric vehicles (EVs) and existing infrastructure.
- Promote employer incentive programs for using clean vehicles.
- Incentivize private property owners to install public charging stations.
- Develop a vehicle to grid (V2G) system.



## TRANSIT INFRASTRUCTURE

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- Expand public transit infrastructure, including bus rapid transit services and fixed guideway transit.
- Subsidize public transit passes and expanding the accessibility of transit to all users.
- Increase public transit service hours where feasible.



## WASTE REDUCTION AND DIVERSION

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- Enhance recycling and compost collection systems with mandated recycling and compost collection throughout the City.
- Undertake local waste audits.
- Develop an e-waste recycling system that collects, recycles, and recovers rare earth metals.
- Create sustainable purchasing programs and training for city/public/private.
- Create and promote a green business program.
- Develop public education programs about waste reduction and diversion.
- Create centralized “Food Education Hubs” that demonstrates composting techniques and emerging technologies within this industry.
- Design community projects that develop green space and educate residents on sustainable living.
- Utilize empty lots throughout the City to establish additional community gardens that benefit from city-wide compost collection.



## BUY LOCAL INITIATIVE

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- Provide financial incentives for local purchasing.
- Increase promotion of the Shop Riverside Community Card incentive program.
- Improve access to local markets through public transportation, walkable shopping areas, and increased parking.
- Highlight local businesses within news publications and social media outlets to provide a “personal story” linked to each business.
- Establish local co-operatives and permanent farmers markets.
- Develop a farm-to-table and farm-to-school program and educational resource guides and online platforms (website and social media).
- Develop a public awareness campaign and nutritional education programs
- Enhance the community garden program.



## CLEAN-TECH APPRENTICESHIP/INTERNSHIP PROGRAM

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- Develop green job training and skill-building programs.
- Create an internships program to connect clean-tech businesses with high school and college students.
- Facilitate mentorship programs that take advantage of local business and university representatives to guide students through apprenticeship and job training programs.

# INFLUENCER WORKSHOPS

## NOVEMBER 19TH WORKSHOP

### PARTICIPANTS

Doug	Darnell	City of Riverside, Community Development Dept.
Jay	Eastman	City of Riverside, Community Development Dept.
Steve	Hayes	City of Riverside, Office of Economic Development
Moises	Lopez	City of Riverside, City Manager's Office
Jeff	Caton	ESA
Erik	Steeb	LACI
Jeff	Wright	Madison Street Church
Leonard	Doup	Mayors Commission on Aging
Janice	Penner	Riverside Downtown Partnership
Gail	Egenes	Riverside Land Conservancy
Ryan	Bullard	City of Riverside, Public Utilities Department
Diana	Ruiz	Riverside-Corona Resource Conservation District
Jessica	Hampton	Three Squares Inc.
Jaime	Nack	Three Squares Inc.
John	Cook	UC Riverside
Linda	Garcia	Western Municipal Water District

### ACTIVITY FEEDBACK

Listed below are the resources and ideas proposed by workshop participants during the brainstorming activity for each EOA presented:

#### 1. Energy and Water Upgrades for Home and Business

##### Resources:

RPU and Sempra programs and funding that provide incentives for water capture, and retrofits at homes and businesses, and PACE and HERO programs.

##### Ideas:

- Incentives for using tank-less water heaters.
- Guidelines based on age of home and required upgrades.

- Program marketing materials.
- Encourage water efficient landscaping systems.
- Promoting value and benefits for businesses and homeowners.
- Develop green business guidelines.
- Increased use of recycled water.
- Purple pipe infrastructure (reclaimed/recycled water).
- Electric vehicle (EV) chargers for residential and commercial properties.
- Develop and promote green business programs.
- Promotion of smaller home design and construction.
- “White” sidewalks to reduce instances of heat islands.
- Solar installations for businesses and homes.
- Promote grey water systems.
- Promote wind energy.
- Provide City residents with barrels to capture rainwater.
- Expansive infrastructure upgrades.
- Compost/dehydration toilets.
- Develop incentive programs for apartment dwellers.
- Funding for grey water and wind projects.

## 2. Green Building Standards

### Resources:

Strong network of local contractors, developers, planners and designers, USGBC Inland Empire chapter, educational programs for developers, real estate agents and general public.

### Ideas:

- Water conservation (landscaping and irrigation).
- Larger rebates for solar.
- Resources and information on sustainable materials.
- Grey water systems for private property developments.
- Riverside green infrastructure (waterways) to stop encroachment.
- Incentivize cycling/walking.
- No ‘leap frog’ development.
- Design land use based on natural resources, preserve prime agriculture soils, and create wildlife corridors.
- Eliminate conflicting building standards.
- Promote passive solar design.
- Promote low impact development that works to preserve existing natural landscapes.

- Storm water filtration systems installed on all new developments and when upgrades made.
- Higher mixed-use development to create walkable communities.
- Promote the design of zero net energy (ZNE) buildings, construction and demolition (C&D) waste diversion, Biophilic buildings, apartment complex standards, increased density, and establish a living building challenge.

### 3. Clean Vehicles and Charging/Fueling Stations

#### Resources:

Cleantech incubator, grant and loan programs from the AQMD, EPA, CARB, Southern California Gas Company, and RPU, and local biofuel generation.

#### Ideas:

- EV charging at metro stations.
- Incentives for offices to host charging stations.
- Electric overhead lines for grid based electric trucks.
- Vehicle to Grid system.
- Small EV lane sharing with bikes.
- Increase number of fueling stations.
- Incentives for zero emissions vehicle (full electric and hydrogen).
- Private access to public fleet fueling facilities.
- Car2go and Zipcar programs.
- Income sensitive EV car sharing programs.
- Enhanced public transportation systems.
- Preferential parking and access to charging stations for alternative fuel vehicles.
- Preferred parking for alternative vehicles.
- Charging stations in public centers such as grocery stores, parks, libraries, etc.
- Clean fuel rebates.
- Access to infrastructure.
- Green tech grants.
- City provided EV chargers.
- Induction charging.
- Rebates for charging stations.

### 4. RPU Clean Technology Funding

#### Resources:

Funding from AQMD, EPA, CARB, research lab partnerships, university grants, cleantech incubator, and cap and trade funding.

**Ideas:**

- HERO/WRCOG funding.
- Lower carbon intensity of RPU electricity.
- Promote electric vehicles.
- Align city goals with UCR & local businesses.
- Bring in biofuel companies to generate energy from forested (chipped) trees.
- Licensing researched technology.
- Funding for tech research and partnerships with tech companies and UCR.
- Carbon calculations cost for CO<sub>2</sub>.
- Eco district integration.
- Support clean neighborhood design and development.
- Enhance existing renewables portfolio standards.
- Preference for cradle-to-cradle technologies and products.
- Monetary awards for technology competitions at local universities.
- Fund environmentally friendly businesses.
- Non-RPU funding.
- Green revolving funds.
- Enhance existing RPU technology grants.

**5. Waste Reduction**

**Resources:**

Education platforms and practices for waste and recycling and educational programs for city purchasing agents.

**Ideas:**

- Create and promote green hotels certification program.
- Enhance recycling systems.
- Environmentally preferable purchasing programs and training for city/public/private entities.
- Public service ads for waste reduction efforts and tips.
- Compost collection systems.
- Perform a local waste audit.
- City purchasing of biodegradable consumables such as cups, not plastic giveaways.

- Waste to ash advanced particle filtering.
- Establish recycling systems at construction sites.
- Introduce and support Bio-digesters for sewage treatment.
- Create and promote green restaurant certification program.
- Adaptive re-use of existing buildings vs. new construction.
- Encourage the use of paper products vs. disposables at events and with vendors.
- Encourage reduced or biodegradable packaging.
- Create and promote a green business program.
- Composting at accessible locations.
- Cardboard compactors in accessible locations.
- Education efforts in schools.
- Collection systems for restaurants (food waste).
- Community and school gardens.

## 6. Expand Bicycle Infrastructure

### Resources:

Riverside Police Department enforcement, training, local bike shops and clubs, youth and schools, and local bike manufacturers.

### Ideas:

- Provide safe bike storage.
- Prioritize integration of bikes in master plan.
- Enforce bike laws.
- Link public transit to bike systems.
- Provide electric bikes and facilities.
- Market available bike trails.
- Develop and promote employer incentive programs.
- Establish local bike events (e.g. CicLAvia).
- Promote folding/convertible bikes.
- Establish and enforce a helmet law.
- Establish a bike advisory committee.
- Provide shower facilities.
- Establish and promote a bike share program.
- Provide bike rental in urban areas.
- Create tree-lined medians between bike lanes and traffic lanes.
- Link transit/bikes to airports, trains, busses.
- Increase the number of bicycle service stations.
- Develop and promote a "Green Map" of bike friendly streets and trails.

## 7. Eco Business Zone

### Resources:

Joint power authorities and multi-agency partnerships, strong local real estate industry, fiber optic infrastructure, adjacent housing for employees, and the incubator.

### Ideas:

- Assessment of local businesses to determine greening opportunities.
- Assess and develop infill locations.
- Provide skill-building workshops on sustainability for local employees.
- Green job training and internships for high school and college students.
- Relaxed development standards.
- Smart growth development initiatives that incorporate live and work design.
- Emphasize cradle-to-cradle structure design and development.
- Expedited permitting.
- Waive development fees.
- Incentives for companies in this zone such as reduced permitting and fees, and loan/grant programs.
- Establish a sharing economy to reduce resource consumption.

## 8. Cleantech Incubator

### Resources:

Crowdsourcing platforms, Kickstarter campaigns, popular social media platforms, global market for cleantech, sister cities, stable lease space, access to business community network, and local higher education institutions: UCR, CBU, LSU, RCC.

### Ideas:

- Attract investment and business capital.
- Keep UCR and other college graduates in Riverside.
- "Idea" booth at public events.
- Innovation think-tank opportunities.
- Keep businesses in Riverside.
- Networking opportunities.
- Marketing crowdsourcing.
- Training for startups.
- Business support services.

## 9. Buy and Produce Local Initiative

### Resources:

University of California Global Food Initiative, Neighbor Fest Event, Riverside Corona Resource Conservation District, Grow Riverside, NGO partnerships, Riverside Community Garden Project, Habitat for Humanity, CSA program, and University of California Cooperative Extension Program.

### Ideas:

- Provide financial incentives for local purchasing.
- Develop cooperatives.
- Creation of local manufacturing/production hubs.
- Legislation to ensure safer food with fewer obstacles.
- Enhance existing farm to school programs.
- Farm to table program.
- Develop a farm to table resource guide and online platform (website and social media).
- Create and promote radio and TV PSAs.
- Establish a poster contest at schools.
- Develop and promote urban garden spaces.
- Reduce water rates for owners growing produce for consumption.
- Hire city staff to promote agriculture programs.

## 10. "Wild Card"

### Resources:

Popular local social media platforms including YouTube, Pinterest, and and local higher education institutions: UCR, CBU, LSU, RCC.

### Ideas:

- Develop an enhanced rideshare program.
- Enhanced mass transit systems.
- Outreach to "fringe" groups.
- Preserve/restore native grasslands for carbon sequestration.
- Promote green roofs and walls.
- Promote virtual conferences/meetings.
- Develop and promote alternative work schedule program.
- Establish wind farms.
- Streamline "green" projects.
- Include resilience and adaptation focus in city planning.
- Promote sharing economy.

- Create Biophilic building code.
- Develop urban forestry plan.
- Develop “Third Workplace” centers.
- Develop mixed-use/transit-oriented development.
- Educate the public about sustainable practices with social media.

## DISCUSSION

After the *brainstorming* activity concluded, the workshop participants engaged in a discussion to summarize the ideas generated. Many participants acknowledged the importance of the variety of backgrounds and perspectives represented and found the activity to be helpful and worthwhile in identifying potential opportunities for the City.

Participants also expressed their hope for the RRG program to instigate renewed collaboration in the community, incentivize partnerships, and drive innovation across multiple sectors of Riverside’s economy.

## NOVEMBER 20TH WORKSHOP

### PARTICIPANTS

Brenda	Flores	California Baptist University
Rick	Thomas	California Resource Connections, Inc.
		City of Riverside, Community Development Dept.
Doug	Darnell	City of Riverside, Public Utilities Dept.
Roy	Xu	Habitat for Humanity Riverside
Kathy	Michalak	LACI
Erik	Steeb	National Community Renaissance
Alexa	Washburn	City of Riverside, Office of the Mayor
Maureen	Kane	Riverside County Black Chamber of Commerce
		BCC
Pepi	Jackson	Riverside County Economic Development Agency
Rob	Moran	City of Riverside, Public Utilities Dept.
Michael	Bacich	Riverside Public Utilities
Ryan	Bullard	Three Squares Inc.
Jessica	Hampton	Three Squares Inc.
Jaime	Nack	UC Riverside
Umashankar	Ramasubramanian	WRCOG
Jennifer	Ward	

### ACTIVITY FEEDBACK

Listed below are the resources and ideas proposed by workshop participants during the *brainstorming* activity for each EOA presented:

#### 1. Energy and Water Upgrades for Home and Business

##### Resources:

Funding from local organizations and federal agencies, RPU, local building codes, and the solar tax credit and rebate program.

##### Ideas:

- Adopt new water-saving technologies.
- Low-flow showerhead giveaway.
- Energy audits for older buildings.
- Weatherproof/insulation enhancement programs.

- Programs to support low-income families.
- Establish tree-planting program.
- Develop solar programs for new homes.
- Support higher density building on smaller lots (while maintaining natural open space).
- Develop energy storage systems.
- Educate the public about available programs.
- Promote green architectural design requirements.
- Support construction of responsive homes.
- Provide rebates and incentives.
- Promote HERO, PACE, and other programs.
- Ensure regular maintenance of homes and businesses.

## 2. Green Building Standards

### Resources:

Lowered utility rates for green building, training programs for local contractors, strong City of Riverside Planning Department, RPU, and the HERO program.

### Ideas:

- Create and promote single and multi-family housing programs.
- Support construction of Net Zero homes.
- Enforce green building codes.
- Create rate incentive programs for lowered utility usage.
- Encourage the use of lighting sensors.
- EV chargers in all homes and buildings.
- Provide green building information online.
- Require solar installations on all new homes.
- Encourage green building design.
- Require high efficiency standards for commercial building.
- LEED standard equivalents.
- Low-impact developments with watershed friendly design.
- Storm-water capture systems.
- Required minimum standards for green building.
- Incentives for maximum use of green building measures.
- Incentives for adaptive re-use of buildings.
- Provide green building training programs.
- Enforce Title 24 standards.

## 3. Clean Vehicles and Charging/Fueling Stations

### Resources:

EV Rebates, AB 2766 funds, grant funds, city fleet, county fleet, strong public transit system, funding and support from local organizations such as

CARB, AQMD, WRCOG, SCAG, Clean Cities Coalition,  
[www.greenriverside.com](http://www.greenriverside.com), and TUMF or other fee credits/discounts.

**Ideas:**

- Provide more charging locations with a variety of fuel types.
- Develop awareness campaigns.
- Promote employer incentives for using clean vehicles.
- Establish EV charging rates (pricing and structure).
- Work to incorporate hospitals, universities, and employers in EV infrastructure development.
- Provide homeowner resources for at-home charging.
- Transit expansion and incentive programs.
- Install chargers at City facilities, parks, centers, etc.
- Make EVs mandatory for certain jobs (Mayor and Utility Director).
- Incentivize private property owners to install public charging stations.
- Connect EV routes with regional trails and bike routes.
- Require residential infrastructure and commercial priority parking.
- Promote ridesharing and carpooling systems.
- Create and promote a grease collection program with local restaurants for bio-diesel generation.
- Free credit or rate reductions for EV insurance programs.

**4. RPU Clean Technology Funding**

**Resource:**

Tiered rate system, foundation matching funds (up to \$300,000 of local funding available annually), and the Green Economic Development Rate.

**Ideas:**

- Promote local technology focused contests among students.
- Locate big polluters and improve practices.
- Provide additional funding from RPU for R&D and connect program to UCR.
- Develop special utility rate programs.
- Expand renewable energy offered.
- Promote success of other incubator programs and technologies to demonstrate local potential.
- Establish a power purchasing agreement.

**5. Waste Reduction**

**Resources:**

Regional recycling program, WRCOG, Recycling Market Development Zone (RMDZ) funds, waste haulers, CalRecycle, and the Agua-Mansa Station.

**Ideas:**

- Develop public education programs.
- Establish tiered waste collection rates.
- Create and promote food waste and compost collection programs.
- Provide free compost barrels to homeowners.
- Enhance recycling programs.
- Create and promote a green business program.
- Establish a waste to energy program.
- Reduce frequency of waste pickup to regulate waste generation.
- Plastic bag ban ordinance.
- Create a biofuel generation program.
- Promote recycling programs among businesses.
- Competition for waste reduction design.
- Establish solar farm on landfill sites.
- Heat capture from waste.
- More e-waste recycling events.

## **6. Expand Bicycle Infrastructure**

**Resources:**

Active transportation grant, investments from bike manufacturers for infrastructure, local corporate sponsors, and the City of Riverside master bike plan.

**Ideas:**

- Create a solar-powered Segway program.
- Develop additional bike lanes and enhanced safety systems.
- Create "bike only" corridors.
- Provide bike pods and bike share programs.
- Develop clear signage and bike maps available for public use.
- Enhance student bicycle programs.
- Create a bike path along the Gage Canal.
- Host major bike events (road or mountain bike races in Sycamore Canyon Park, e.g. 24 Hours of Adrenaline type events).
- Develop bike lanes on and off streets.
- Provide bike lockers, racks, and bike share programs.
- Create off street corridors (Gage Canal-Riverside Canal).
- Create trails that connect with larger regional trails.
- Establish and promote "Bike/Walk to Work" days.
- Provide preferential parking for bikers.

- Promote employer incentive programs.
- Business discounts to restaurants, local (up front parking).
- Develop public safety campaign.
- Bike district near downtown.
- Provide bike lessons.
- Create fully functional bike trails to connect activity nodes.

## 7. Eco Business Zone

### Resources:

Available land and space, capital, existing buildings, strong local business expertise, Recycling Market Development Zone (RMDZ), strong City of Riverside Planning Department, and local partners and mentors including UCR and Small Business Development Centers (SBDC).

### Ideas:

- Create subsidy programs.
- Provide incentives for incubator participants and businesses within the zone.
- Develop high performance standards.
- Property owner buy-in.
- Provide tax incentives.
- Create mixed-use buildings that include housing and shopping.
- Create eco-zone in conjunction with Restore Riverside (one zone could be between Jurupa Ave. and the Santa Ana River from Martha McLean-Anza Narrows Park to Van Buren Blvd.)
- Develop community garden program to supply produce to restaurants and restaurants supply compost for gardens.

## 8. Cleantech Incubator

### Resources:

Available space within the City of Riverside, strong corporate sponsorship and capital potential, local government support, entrepreneur/business expertise, WRCOG, and the strong City of Riverside Planning Department.

### Ideas:

- Develop partnerships with academic institutions.
- Enhance existing business partnerships.
- Develop a pilot project.
- Provide a green building model for other developments.
- Promote low impact development model (watershed/water protection).
- Develop partnership with regional incubator.

- Provide a potential venue for community events.
- Provide workforce development and low-income training programs.
- Attract university graduates.
- Create flex space for the community and local businesses.
- Develop internship program.
- Private finance and investment in Riverside.
- Partner with Chamber of Commerce.

## 9. Buy and Produce Local Initiative

### Resource:

Strong local incentive and discount programs, available physical space, GROW Riverside Conference, Shop Riverside Campaign, and the Business Improvement District (marketing and events support).

### Ideas:

- Develop public awareness campaign.
- Create a community garden program.
- Create a permanent market center.
- Promote home gardening.
- Programs to support farmers markets and community driven agriculture.
- Tax incentive programs for purchasing locally.
- Provide local catering options for large companies and corporations.
- Local Co-Opportunity market.
- Establish a 'Makers' day.
- Open more farm-to-table restaurants.
- Nutritional education programs for the public.
- Encourage faith-based involvement, partner with higher education students to help promote program.
- Enhance community participation.
- Promote pop-up shops.
- Food truck Fridays.
- Indoor market place stalls.

## 10. Wild Card

### Resources:

Strong local communication channels, local department of transportation, TUMF, and RPU.

### Ideas:

- Waste to energy programs.
- Pricing programs based on resource demand.

- Initiative to reach 40% renewable energy.
- Development enhanced solar energy storage systems.
- Improved public transit.
- Electric bikes, Segways, and additional methods of transportation.
- Wind energy capture along Freeways.
- 100% solar on new buildings.
- Solar installation program.
- Bicycle safety training program.
- Renewable energy storage systems.
- Candle night.
- Micro-grid adoption.
- Density mandates or incentives.
- Life cycle approach to everything.
- Improved public transit systems.
- Reduce distance to public transportation/transit stops and stations.
- Reduced idling.
- "Walk to school" safety initiatives.
- Waste water filtration and reclamation systems.
- Climate adaptation and mitigation programs.

## DISCUSSION

At the conclusion of the *brainstorming* activity, workshop participants engaged in a discussion to summarize the findings and ideas generated. Several attendees expressed excitement in bringing both a cleantech incubator and corridor to Riverside. A UCR representative noted the opportunity in coupling the climate goals set by the University with strategies set out by the City of Riverside.

The group agreed that these initiatives and goals should be communicated to the larger community and there was interest in hearing feedback from a broader (global) audience. One participant noted a potential for partnership with UCR's environmental engineering school to utilize the resources of the program in atmospheric research and other R&D projects.

## CROWDSOURCING CAMPAIGN

### ENERGY AND WATER UPGRADES FOR HOME OR BUSINESS

***Have you made energy or water upgrades to your property? What products and services contributed to your retrofit?***

"It would be good if programs like this can "go viral." We'd love to see more Green Building Startups in the Clean Tech Open. The USGBC and CTO are partnering in the West. We're the world's largest accelerator for clean technology Startups. I'm happy to be able to share your articles with our community."

- Joy Montgomery, I help American Companies get and keep Customers, San Francisco, CA

"Home Solar PV Investment Out-Performs Stock Market. For customers in 46 of America's 50 largest cities, 100% financed solar is a better investment than the stock market...why aren't more Americans investing in solar? There is a clear information gap, and with this report, we intend to open the eyes of average homeowners by showing that solar can generate both significant monthly savings and long-term investment value ....a real opportunity for anyone looking to take greater control over their monthly utility bills and make a long-term, relatively low-risk investment. From new DoE Study 1-13-15: Going Solar in America - Ranking Solar's Value to Consumers in America's Largest Cities. [http://nccleantech.ncsu.edu/wp-content/uploads/Going-Solar-in-America-Ranking-Solars-Value-to-Customers\\_FINAL.pdf](http://nccleantech.ncsu.edu/wp-content/uploads/Going-Solar-in-America-Ranking-Solars-Value-to-Customers_FINAL.pdf) The City could get this message out to solar PV companies and residents to help boost home solar PV installations."

- Jeff C., San Francisco, CA

"SIP High Efficiency Building Envelope. If the structure has building envelope that prevents thermal bridging the energy consumption of that building will be minimized. Using the Fortisteel Building System offers a one step installation of three building components, the structural, insulation R-30 and vapor/air barrier. Saving time and cost per sq. ft. of airconditioned space, as well as reducing maintenance and offering a 100% recyclable product with substantial maintenance reduction over the lifetime of the structure. This type of structure suffers no performance degradation over time of any of the components mentioned. Looking forward to hearing from others. Carlos Ablanado [cmafortisteel@yahoo.com](mailto:cmafortisteel@yahoo.com)"

- Carlos A. EPAP, Winter Springs, FL

***How have businesses in your area adopted energy efficiency and water conservation into their operations?***

"On-bill financing: Many electric utilities and private lenders across the US have

developed or are financing "on-bill" energy efficiency and renewable energy financing programs. Properly structured, on-bill programs offer debt-free financing for residential, commercial and industrial customers, and can be used to finance both energy efficiency and renewable energy systems. Ideally, the financing would be tied to the meter--thereby allowing for transferability from tenant to tenant and owner to owner (which opens up the financing for renters and multi-family housing), repaid on the utility bill, and allow bill payment history to be used for determining eligibility in lieu of credit checks. This opens the program up for more credit constrained customers, thereby maximizing the impact of the program."

- Rory M., Deep Gap, NC

"Anaerobic Digestion. There are home use AD units available. Consider generating electricity from one that you can buy off the internet."

- Aeron J., British Columbia, Canada

"Instant Water Recycler. The challenge is to make the hot water available in the shortest possible time without wasting any water and energy.

How does it work? Water separator (in hot water pipe) : at hot water faucet opening, the cold water in the pipes is quickly directed to an expansion tank at a flow as high as 0.5 Gal/second. Once the hot water reach the separator, it closes its cold water outlet and opens its hot water outlet, thus making hot water available in seconds without wasting the cold water present in the pipes.

Priority valve (in cold water pipe) : the presence of water in the expansion tank causes closure of the normal cold water supply. On opening the cold water faucet, it is first the water in the expansion tank that flow. When the expansion tank is empty, the normal cold water supply is automatically restored.

Smart bi-thermostatic shower faucet : push the lever down until it locks. When the hot water reach the faucet, a 100°F output water is directed to the shower head through the downs"

- Claude W., Virton, Belgium

"You should take a look at our Coalition for Infrastructure. We have a group of 250+ cyclists in Fort Collins, CO who engage daily on transportation infrastructure issues on Facebook. Have a look: <https://www.facebook.com/groups/fococfi/> - We have found this to be a really valuable discussion group."

- Rick P.

***What are the barriers to upgrading your home or business with energy efficiency***

*or water conservation products?*

"Just bought a 'horse', AD 0025, [www.impactbioenergy.com](http://www.impactbioenergy.com). It costs \$200.- plus monthly to provide heat and light to most homes. Now, you can buy a horse that is portable, and can be parked in a garage. This machine is like a horse, you have to feed it. It eats 135 lbs. per day of food waste, turning it into 6 HP output 4 - 6 hours per day! That's enough energy to power a small house. 120 lbs. of digestate that comes out at the same time, is first boiled. 70% liquid is then separated from the solid and used for irrigation in garden, the 30 % solid can be added as a soil amendment for garden or can be disposed of... about 45 minute of maintenance a day."

- Aeron J., British Columbia, Canada

*What types of products or services have helped you save energy?*

"Advertise and notify the residents other than the Press. The public awareness needs to be increased. I for one have never known about any of these conservation improvements nor do any of my friends or coworkers."

- Nannette B.

"Notre Dame recently upgrade air conditioning and insulation, installed new energy efficient metal roofing, and upgrading lighting in classrooms and the gymnasium to make for better learning environments for students and lower utility bills for the school, resulting in a \$30,000 rebate from Riverside Public Utilities. Cheaper bills and a big check. Doesn't get better than that."

- Robert B.

"Using more energy efficient light bulbs. I have save some energy while using energy efficient light bulbs Also by turning off lights and tv's when leaving a room. I have also taken advantage of some of the great rebate programs the city offers for new HE washers."

- Vanessa A.

"Include Solar Water Heaters on Rebate Program. The appliances with the greatest energy usage in the household are water heaters (<http://energy.gov/energysaver/articles/tips-appliances>). Why then are solar water heaters not included on the Green Riverside Rebate program? Surely best usage for energy saving would be to address the items that use the greatest amount of energy. Instead, the rebate program supports the purchase of energy efficient appliances that use a fraction of the energy consumption (dishwashers,

clothes washers, refrigerators, etc.). A little logic might go a long way in saving energy..."

- David M.

"Riverside Public Utilities has had several good programs. Our family has replaced all of our toilets with low flow units, and the rebates paid for much of the cost. We have also replaced our washer, dryer, and refrigerator using similar rebates. They have also distributed CFL light bulbs and low flow sprinkler nozzles. But the biggest savings came from installing low e double paned windows in our house."

- Barry J.

"Whole house fan, more insulation and double glazed windows. We did all of this about five years ago and it makes a huge difference in our air conditioner use. We often don't need the AC until 2-3 PM in summer."

- Sue S.

#### GREEN BUILDING STANDARDS

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***What is the most innovative green building/product that you have seen transform a city?***

"The city of Roanoke, Va. has begun a program to install LED lights in many of there buildings and traffic signals as well. They also have a green roof on the municipal building which houses the city offices. They also have a fire station that stores and recycles water. The list goes on with an ongoing green academy that promotes residential involvement in reducing water run-off from rooftops and driveways. This green academy also educates individuals about reducing utility costs in areas of electricity and insulation. I am proud to be in a city that has regular recycling pick-up for their residents."

- Arthur Hill Design, Installation and Maintenance, Roanoke, VA

"Green Building Standards are very important because you can get more efficiency and less damage to the community I would like to be part of this, because I have experience in this type of projects enfasis in photovoltaics"

- Jorge Enrique Diaz Macias, Constructor e instructor de obras civiles en el SENA, Colombia

***How have businesses or property owners in your area provided for building retrofits?***

“Develop 3rd party and other financing options. Property Assessed Clean Energy programs (financed through property taxes), Qualified Clean Energy Bonds, utility on-bill financing (debt-free), Energy Efficient Mortgages and 3rd party financing of solar and energy efficiency will all help expand the number of building and energy improvements throughout the city.”

- Rory M., Deep Gap, NC

“Not sure if I mentioned this before, however, the city of Roanoke, Va. has several projects going from improving storm water run-off to LED lighting, to a green roof on city hall! They also have regular city-wide recycling days for paper (One week) and plastic (the next week). Of course, participation is voluntary and I am hoping to get the word out that more of us need to be doing this!! Our Civic Center is also installing LED lights. Perhaps this will continue!! Time will tell.”

- Arthur Hill, Design, Installation and Maintenance, Roanoke, VA

“Hello to everyone.... about ideas is many of those many are really expensive but exist options for regular people with out advanced knowledge and I think that this persons are the target for teach how save energy , money and help to the enviroment,

1.- Change all the incandecent bulbs at home maybe not all at the same time one or two by month here if someone use for sample 10 bulbs of 60 watts everyday you use 600 watts everyday so if you change for LED Lighting of 10 Watts they are more brighter and use only 10 for each by 10 pcs. you use 100 watts so you save 500 !! watts exist in the market units of 6 and 3 ( this is equal in bright to one of 60 watts so if you put 10 pcs. of 3 watts you only use 30 Watts!!! you can save in money and in energy 570 Watts !! think about it

2.- for save water in the market exist now shower heads that save 50, 70% of the water than a regular shower head the system use air bubbles, another kind that is possible is for homes out of the city (places that don `t have high pressure in the city water pipes is use of a water deposit inside or outside of the homes available to use gravity for water supply inside and you save a lot of water and energy because you can change the shower head and fixtures for wc, sink and other equipment for low pressure

3.-solar panels for hibrid system is expensive at the start but after 25 years in the future with huge savings in electricity

4.- air generators this kind of devices are available from long time a go farmers use aerogenerators for extract water from the dirt now they can provide electricity too

5.- change the faucets in old homes for save water too”

- Francisco Xavier Villarrue, Propietario en Sunny Arquitectura, Mexico City, Mexico

“Occupants education. In some climatic areas it is possible to reduce energy consumption for as much as 50% just with appropriate occupancy behaviours.

In winter, for instance, in a Mediterranean Context (which, according to the Koppen-Geiger climatic classification map, is similar the Californian one) it is possible to decrease energy demand for heating (heating loads) by 30% just reducing thermostat setting from 21°C to 19°C (the minimum internal comfort temperature in winter according to EN15251), with no material interventions on building envelope or systems.

A correct use of windows (shutters etc) for night ventilation and solar control in Summer and passive solar heating in Winter, could keep reducing energy demand.

Water consumption is not so sensitive to occupants behaviour but there are nowadays on the market shower heads, taps etc that can reduce water usage and are really cost-effective.”

- Francesco Emanuele Contaldo, Architetto, MArch (hon), MSc Sustainable Design, LEED GA, London, United Kingdom

“Take a look at [www.GreenPlanetArchitects.com](http://www.GreenPlanetArchitects.com) Any idea or suggestion how we could cooperate eventually?”

- Roy Den Hoed, President- Fodateur chez GREEN PLANET Architects, Nice Area, France

“Encourage garbage collectors to recycle your food waste. If composting your food waste is too difficult, encourage your garbage collector to take it separated and take it to a compost facility or acquire the machinery. CITYPOD is a good tool for midscale composting. [Vertal.ca](http://Vertal.ca)”

-Aeron J., British Columbia, Canada

***If you were in charge of designing a new green building, what types of features or technologies would you include?***

“Building Controls and Building Automation Just having devices plugged into power sockets without being used takes up energy. Obvious electronics may be the microwave, t.v., or a fax machine. If you had a building controls system you'd be able to “unplug” all these devices by cutting the power in unoccupied spaces

either by a switch, on a schedule, or even an iPhone. Less obvious devices would be: HVAC units like air conditioners, air handling equipment. With building controls you're able to control how these operate without too much work. Building engineers without these building controllers have a choice of leaving everything on or getting in their carts or climbing ladders to manually turn off unused HVAC equipment. Do you keep your AC running when you're not home in the summer time?"

- Carlo P., Las Vegas, NV

"How many tin ore mines in North America? Many ways to conserve. Recycling is the easiest way to conserve oxygen-water-use of all sorts of tools to extract resource from local Planet-processing raw materials and with technology to make items to satisfy one or more needs. The packages are refined pure resources. Paper, plastic, metal packages required consuming single use resources, like oxygen, oil or ore. Where did all these resources, which we buy and drive home from the market, come from?"

These are reasons I wrote Tale of Tin. How many tin ore mines in North America? Answer in Tale of Tin, here cut by 1000character limit: TALE OF TIN One of the very few metals known to early man was tin. Tin had an important social influence on man in early times and is an essential part of our modern way of life. Man's development has been shaped by the availability of different materials used in making tools and our ability for invent-ion. Ask4fullTale 503 6412798"

- Zephyr M., Beaverton, OR

"Check out [www.justbiofiber.ca](http://www.justbiofiber.ca) Build a home in a week. When I learned about this incredible breathing brick I wanted to order almost immediately - they're sold out until 2016! Go on their website to learn more."

- Aeron J., British Columbia, Canada

"I will be quite interested to hear about cities that have been truly transformed by green products or building standards. Are there any? Even one? I believe the small but vocal minority will have very few citations, but I am willing to be proven wrong."

- Kevin Zeman, Doorways of Wyoming, Cheyenne, WY

"I personally...as a traditional Timberwright, natural building facilitator, and someone that is really...sick and tired...of the "green movement hype" B.S. that marketing agents, industries and their sycophants are slinging constantly waving this banner of ...."green movement." Show me any green product and 9 times out of 10 I will most likely show you a product that has been "repackaged" or a

product that is over industrialized and in the same boat as the rest. It will not be a "product" (be it singular or an entire structure) that was form by the minds and hands of artisan from raw material...that are both natural, often traditional...and more "green" than the greenest products being pedaled out there to the often 'unwise' consumer... When I start seeing architecture (we do not have a single city yet...nor will we at this rate) that has the tiny carbon footprint and sustainability aspects of what was built just 200 years ago...then I will start taking notice...Until then, I have no interest in marketing hype or the transient less durable and often very 'plastic' architecture of this alleged "green modernity."

- Jay C. White Cloud, Artisan-Timberwright-Wilderness-I.L.S. Educator-Team Building-Self Defense Facilitator, Burlington, Vermont

"Self-serving, yes, but I'm going to through my company's hat into the ring! As I'm sure we can agree, wood is by far the best easy-to-obtain building material we have: Renewable (the only one), flexible, durable and cost effective. But what about fire? What about mould, rot and those nasty insect issues? NexGen ECoatings manufactures & distributes eco-friendly coatings specifically engineered to protect the entire wood package of a new structure from fire, mould, rot, and insects - and that protection is backed by a global, third-party warranty, the only one of its kind in the industry. We are a Canadian company. Our unique, single-spray coatings, when applied to wood, provides the ultimate protection from fire (UL Rated), mould, rot, and insect infestation, including all termites - and it costs a fraction of current wood treatments. Sound impossible? No, it's NexGen. And it's NOT an intumescent coating! FACT: Our fire protection is so strong that we are the first & only company in the world to obtain a global third party fire insurance policy for wood products. That is because our coatings are UL Rated, the only non-intumescent coating in the world to achieve that status. Product Details: UL Rated (Class A) fire protection with warranty (our unique global, third party fire warranty protects home owners PLUS manufacturers, distributors & builders); Warranty for mould, rot, & wood-boring insects, including all termites; Single coating application is simple to do (spray, flood or dip process); VERY inexpensive - as little as 2 cents / square foot of coated area; Eco-friendly, non-toxic & non-corrosive (no special fasteners required); Works on all wood products & species of wood; Can be any colour or perfectly clear; Works great as a prime coat; NexGen is also a water barrier which can result in up to 25% less waste per bundle (minimizes cupping, twisting, warping, etc as well as shrinkage after construction); Interior or exterior use; NOT an intumescent - no handle-with-care issues for coated material; Completed audited testing at the world's leading independent testing agencies (BM TRADA, Intertek, LSU, Bombardier & more - ask us for the reports!). Again, this is NOT an intumescent coating, this is NEW technology. You can wet-stack and hard-pack the finished material immediately after coating, and you don't need to "handle with care" as surface abrasions or even large drill holes are NOT an issue. NexGen is quickly becoming the leading provider of protective wood coatings for Asia (for

example, we provided R&F Properties all of the coatings they used in their beautiful wood frame development at Mangrove Bay, Hainan – visit <http://canadawood.org/blog/?p=5340>), and we have a strong and growing presence in Europe (providing the protective coatings for Europe’s tallest wood building), Australia / New Zealand, and Central & South America. As the building codes in North America continue to change to reflect the need for fire retardants in wood construction, we are now beginning a rapid development strategy for the NA market as our products alone are perfectly designed to meet these new code requirements and the market opportunities they have created. What is most important is that you don’t simply take my word for it (not that you would). Ask us – ask ANY company – to show you the data! Contact NexGen at [info@nexgenecoatings.com](mailto:info@nexgenecoatings.com) or at 604-636-8485. NexGen ECOatings Inc [www.nexgenprotection.com](http://www.nexgenprotection.com) YouTube: [www.youtube.com/channel/UC2kvvIKFwhSONE2WH5EjBig](http://www.youtube.com/channel/UC2kvvIKFwhSONE2WH5EjBig)”

- Robert Seaman, President & CEO at NexGen ECOatings, Vancouver, Canada

“Magnetite.com --Innovation Built to Last. Over the past 35+ years, Magnetite has installed over 5-million insulating window panels across the globe. After being picked up by the Sears Home Improvement Division, Magnetite began growing at such a blistering rate that it was recognized by Inc. 500 as one of the nation’s fastest growing privately held companies in 1993. That same year, Magnetite was also one of the Top 100 Private Companies according to Business Report’s rankings. This Top 100 recognition was again awarded to Magnetite in 1994 and 1996. Magnetite continued this trend in 2008 by winning Business Report’s Company of the Year Award, and in 2011 Magnetite was extremely proud to add the very prestigious Honor Award from the National Trust for Historic Preservation to the list of accolades. Today, Magnetite continues to strive to make every window more efficient. From the 1880’s Victorian era “Green House” at the 1982 World’s Fair to the new Hotel Derek in Houston, TX, Magnetite continues to fix the issues that all windows have: being noisy, leaky, and inefficient.”

- Ray Wolfe, Global Director of Sales and Marketing at Magnetite.com, Phoenix, AZ

“It’s no wonder that Roanoke is in the top 10 places to vacation and live year round! You can follow up on this story by following the link at the end of this comment. 1. Roanoke, Virginia City/Metro Area Population: 97,000/312,000 Unemployment Rate: 5.6% Change from Year Earlier: -1.0% Average Home Price: \$129,000 Median Household Income: \$36,500 Average Commute Time: 21 minutes Cost of Living Index: 82 Though it’s the biggest city in southwestern Virginia, Roanoke retains a small-town vibe. Located in the foothills of the Blue Ridge Mountains, it’s a popular base for tourists from Washington, D.C. and Baltimore. The Blue Ridge Parkway, one of the country’s oldest and

most scenic byways, dips into the valley before ascending back into the highlands, as does the Appalachian Trail.

<http://www.moneycrashers.com/best-american-vacation-towns-live-year-round/#mFs240iyXC7oCxyL.01>

- Arthur Hill Design, Installation and Maintenance, Roanoke, VA

"Solarispools.com is a system to heat pools by utilizing the Sun's energy. Thousands of linear feet of tubing incorporated into the masonry decking surface effectively acts as a solar collector, cooling the masonry and simultaneously heating the pool. The system can be installed on commercial as well as residential pools. The system actually pays for itself in only a couple of seasons of use! If you have any questions please look at my site or just give me a call 631-942-6302, all the best, Mark"

- Mark Turrisi, Owner, Tsunami Pools Inc., Greater NYC

*If you were in charge of designing a new green building, what types of features or technologies would you include?*

"Solar, Solar, Solar. I have solar panels on my home and am a net producer of electricity. I hope to have solar panels on my school (Notre Dame High School) within a year and am also exploring LED lighting to further reduce electricity usage."

- Robert B.

"OK, I'll bend to that...but at least consider drought-resistant plants so watering isn't required as often. By the way, late spring, summer and early fall months are hot! And we're only a matter of miles from the desert."

- Janet H.

Comment: "Cactus is for the Hot Hot desert areas only...not Riverside!!!"

- Nannette B.

"Grey water Re-using bath and dishwasher for garden use should be allowed, and plumbed into homes as built in this dry climate."

- Sue S.

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## CLEAN VEHICLES AND CHARGING/FUELING STATIONS

***How has your city supported electric vehicle drivers?***

"We have a state wide group AZEV that gets all concerned groups together to educate and improve the area for plugin vehicles. There are city and town members, automakers, Power companies and EVSE charging network groups all working together.

The greater Phoenix area has over 500 public charging sites and at least 4 charging networks. Our weather is pretty mild most of the year so it's great for plugins and public charging. Up North is can get harder in the winter since we have 5 climate zones in our state.

In our area we also have a Tesla store , Nissan plugin dealers, FOR, BMW, MB and all the others. I'm in the EAA Electric Auto Association and we have 2 members and myself who all let them know what works and what doesn't."

- Jim Stack, President PHX Elec Auto Association, Phoenix, AZ

"Education is the best tool we have. Many people don't understand how efficient an EV is compared to a hybrid or ICE car. Here is a link to how the group started and a summary of the progress from last year. A link and overview is below. [http://evaz.org/media/EVAZ2013AnnualReport\\_Stakeholders.pdf](http://evaz.org/media/EVAZ2013AnnualReport_Stakeholders.pdf) Electric Vehicle Stakeholder Outreach - Overview The Arizona Electric Vehicle Stakeholder group (EVAZ) was created in 2011 to assist the local Electric Vehicle (EV) industry monitor and report on the status of the Arizona EV market. In cooperation with Arizona Public Services (APS), Salt River Project (SRP), and Tucson Electric Power (TEP), a stake holder process was created to advance an understanding of the opportunities and barriers that EVs face in our local market.

Early Stakeholder Engagement in Arizona Arizona SmartPower, a non-profit organization based in Washington, DC, facilitated a series of stake holder outreach meetings in 2011-12 with a diverse group that represented a wide array of organizations already engaged in the EV market. This included representatives from the local government agencies, consumer advocacy and environmental groups, and manufacturing associations in Arizona."

- Jim Stack, President PHX Elec Auto Association, Phoenix, AZ

"Hi, check out this british green initiative, recently brought to Paris ! An eco-friendly pick-up service @greentomatocars @gtc\_paris @eco\_act :<http://www.greentomatocars.com/fr/en/>"

- Lara Lestrade, Assistante Communication et Marketing chez EcoAct, Paris Area, France

"My city doesn't support EV drivers, but I added some ways I wish it did:

1. Free or at-cost charging stations at mass transit parking like BART, trains, etc.

2. Incentives for apartment owners to provide charging stations for tenants. (Tenants would be billed only for the energy used.)

3. Encourage companies like Volta to place free charging stations (supported by advertising) at local businesses.”

- Brian Fikes, Senior Quality Engineer at Thomson Reuters, San Francisco Bay Area

“Flagship EV Infrastructure Communities: Arizona. Are there similar developing programs in other cities around the country? Share new insights and energy groups supporting infrastructure advances. We have a state wide group AZEV that gets all concerned groups together to educate and improve the area for plugin vehicles. There are city and town members, automakers, Power companies and EVSE charging network groups all working together.

The greater Phoenix area has over 500 public charging sites and at least 4 charging networks. Our weather is pretty mild most of the year so it's great for plugins and public charging.

Education is the best tool we have. Many people don't understand how efficient an EV is compared to a hybrid or ICE car. Here is a link to how the group started and a summary of the progress from last year. A link and overview is below.

[http://evaz.org/media/EVAZ2013AnnualReport\\_Stakeholders.pdf](http://evaz.org/media/EVAZ2013AnnualReport_Stakeholders.pdf)”

- Jim S., Phoenix, AZ

***If you drove a plug-in electric vehicle, where would you charge your electric vehicle on a regular basis? Check all that apply.***

Survey Responses:

Apartment complex: 4

Public space: 7

Shopping center: 7

Workplace: 6

Pharmacy: 1

School: 2

Café or restaurant: 5

Coffee shop: 4

Grocery store: 4

Hospital: 1

Library: 2

Movie theatre: 3

Fast-food: 1

*Ideas for additional locations:*

- "Elec Veh with rubber hair on tire sidewall is propeling mass (Physics) of rubber every tire rotation. Hairs have surface area so disturb air as it rolls across Planet. Hairs are same weight as tire so wear pavement. Ask for page report on TireHairs from Zephyr Moore 503 641-2798 Pacific Time. Consider, every tire on Earth has 24 carat useless rubber hairs and razor thin walls on tire for its life."
- "Home: with my AD 005 horse - check out [www.impactbioenergy.com](http://www.impactbioenergy.com)"
- "Medical Clinic"
- "Parking areas for mass transit like BART, Caltrain, etc."
- "School or work, that's it."
- "If I owned an electric vehicle I'd like to be able to charge it most anywhere."
- "My family has two plug-in vehicles and we would charge at almost all of the locations listed. This is often a place that the majority of us patronize and we often spend a good amount of time in a grocery store or the equivalent of a grocery store (i.e. Walmart/Target/Khols). If you consider shopping centers, these options would have to be made more aware of. It is important to know where these stations are housed. We know where our gas stations are but are not as well versed on where our electric charge stations are. Heightened awareness/signs in an area would be very helpful."
- "Work would be the most convenient. Neighborhood stations may be popular, too."

**RPU CLEAN TECHNOLOGY FUNDING**

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***If you had the ability to fund a clean energy technology company, what types of technologies would you support?***

"We can provide full solar, wind hybrid systems. Electric storage in terms of battery and methane. I would be interested to know how we actually partner with your organization or its members to introduce the biowaste/sewage to methane, pure water and sterile fertilizer process for energy storage in combination with our unique solar and wind systems."

- John N., Martindale, TX

“Actually there is a way to network thousands of power users to a network, each with small battery storage, depending on their needs. With each connected to this “so called mini grid” they can manage to avoid brown outs and black outs even if dependent on solar power during the daytime. I imagine it is like Bill Gates was proposing a few years ago. So the answer is yes to battery storage for perhaps managed communities, resorts, King Ranch type mega spread out complexes and ideal for islands or gated communities with managed co-ops that install their own solar farm. Also, there are other options like compressed air for storing excess energy that will last forever as opposed to limited life of batteries, but best to use both together on larger scale projects. Hope this makes sense... Tom”

- Thomas Gleason, Managing Partner at Gleason Partners LLC, Las Vegas Area, Nevada

***What types of clean technology projects would flourish if they received financial support for a pilot demonstration?***

Survey Responses:

Fuel Cell: 2

Street Lighting: 2

Wind Power: 2

Green/White Roofs: 1

Solar: 1

*Do you have any other project suggestions?*

**“AD - Anaerobic Digestion**

AD 0025 designed by Impact Bioenergy - capable of processing 135 lbs. of food waste per day and generating 4.5 hours of generation time from a 2.5 horsepower Subaru generator in a 24 hour period.

<http://youtu.be/Ycj463OOzcE> and <http://youtu.be/kXV1Ql3Sz18> , I am generating electricity using Still Water Electrical generation. I am having working prototype with 440 v generation and very soon This is going for commercial generation

Much like what the CEC does for municipalities looking to add zero emission electric trucks into their fleets. Grants like these will help pay the extra cost of zero emission technologies which are very reliable today.”

## WASTE REDUCTION

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***Is a zero-waste community possible? Which cities and communities are leading the way? And how?***

"Great resources are Zero Waste International Alliance [www.zwia.org](http://www.zwia.org), Ecocycle and GrassRoots Recycling Network [www.grrn.org](http://www.grrn.org) -has a great listserve "greeneyes" that you should also post on to obtain feedback"

- Stephanie Barger, Founder & Executive Director at U.S. Zero Waste Business Council, Orange County, CA

"Have a look at the first Zero Waste Town in Scotland:  
<http://www.zerowastescotland.org.uk/content/dunbar-announced-scotland%E2%80%99s-first-zero-waste-town>"

- Andrew Dickson, Programme Area Manager, Zero Waste Scotland, Falkirk, United Kingdom

"I am very interested in the Net-zero sustainability concepts and believe that we can get sometime.....sooner than later. Please send me any other insightful links or information that you have knowledge of."

- Justin Wilson, P.E., Principal Engineer at Northwestern Territories, Inc. (NTI Engineering, Surveying, Geotechnical and Materials Testing), Seattle Area, WA

"In 2008, Masdar City broke ground and embarked on a daring journey to develop the world's most sustainable eco-city. It is successfully pioneering a "greenprint" for how cities can accommodate rapid urbanization and dramatically reduce energy, This maybe not what you are looking for exactly but surely quite interesting example. check out please this link; <http://masdar.ae/en/masdar-city/live-work-play>."- Adel Bu-Ali, Design and Planning Supervisor

"Waste reduction is one important component of sustainability, and, an important one, remember the 3 R's! There are other components related to land use, transportation and site development. My thoughts are available on a free pdf download at [readingsinurbanplanninganddesign.blogspot.com/](http://readingsinurbanplanninganddesign.blogspot.com/)"

- "Pete" Pointner FAICP, ALA, ITE, Independent Consultant on environmentally based planning, context sensitive urban design, and land use litigation, Chicago, IL

"Funny I was going to mention Masdar, When I was working with CH2M Hill in Atlanta, we worked on writing code for the City of Masdar, and were asked how to create a zero tolerance city. The link you provided is interesting, its always nice to see positive outcomes for projects you are involved in creating. The project appears to have been quite successful, not exactly zero tolerance, but much closer than any other City to which I am familiar.

Best of luck to the City of Riverside."

- Diana Kamenel Trettin, Capital Projects Manager at City of Louisville, Colorado, Louisville, CO

"I have some experience in this area, but rather than writing a lengthy treatise, a short phone call might be better. Writing here continues to draw tangential discussion. I am not selling anything. Just free experience.

You can reach me at 304-285-0948. This is in Morgantown, WV, which is EST. If I am not at my desk, just leave a call back message. There are many issues to consider and they all get back to \$\$\$."

- David Stopek, P.E., Director at LT-Global, Highland Park, IL

"The Internet of Things - solid waste problem or resource? The hidden environmental cost of the Internet of Things: <http://www.computerworld.com.au/article/561064/hidden-environmental-cost-internet-things/> Analyst firm Gartner is forecasting that the IoT will encompass some 30 billion connected devices by 2020. And while networking vendor Cisco has pegged the IoT's value at \$14.4 trillion between 2013 and 2022, questions are being asked over its potential environment cost.....What becomes of these millions of sensors and smart devices once they reach end of life? Potential business opportunities solving end of life challenges including cradle-to-cradle design, and device collection and recycling, including recovery of rare-earth metals."

- Jeff C., San Francisco, CA

"Pet waste diversion. According to a comprehensive San Francisco audit, pet waste constituted around 4% of residential waste. Each year US dogs alone produce 11 million tons of \*\*\*\* (109 football fields layered 10 ft. deep). Around 60% is streamed to landfills. The remaining 40% is left on the ground as a potential pollutant. To achieve zero waste, growing volumes of this material will need to be part of organics recycling. In Colorado, the cities of Boulder, Broomfield, Englewood, Superior and Westminster have identified the problem and are taking steps to recycle pet waste."

- Rose S., Aurora, CO

*What types of businesses can support restaurants in implementing compost collection systems?*

"Restaurants can dehydrate food waste for monthly pick- up. Food jerky is fuel for anaerobic digestion and vermi-composting which = 10 - 20% of the original weight of food waste. The value of it is suspended until it's taken to a compost facility - much lighter and less costly to haul."

- Aeron J., British Columbia, Canada

"In my opinion, onsite food processing is the first option worth evaluating. Dehydration or turning food waste into useable compost trumps hauling. Make sure dehydrated food waste goes to a suitable location - compost facility. Good food should not become garbage even if it is 90% lighter and won't cost as much to dispose. Never flush ground up food waste down the drain - garborater short cuts are a recipe for plumbing issues and passing problems to neighbours and municipal filtration."

- Aeron Jansen, Distributer for Justbiofiber, British Columbia, Canada

"First we need to differentiate between restaurants; in some countries in especially in special occasions, the amount of "good" food that goes to the garbage is a REAL waste, it should be channeled somewhere else, those who are in need for this food are so many. composting of restaurant food waste may not stand alone to support an onsite composting facility; I have tried a biogas digester based on a kitchen food waste, and results are amazing. In another program where USAID was supporting tourism industry, a condition was put on supported restaurant is to send their food waste into a local compost facility."

- Mohammad Al Hmaid, CEO, Water Sector Regulatory Council, Palestinian Territory

"Have you tried dehydrated food waste in digester or just fresh food?"

- Aeron Jansen, Distributer for Justbiofiber

"fresh food, now I am adding animal manure to the mix, of course results are very much improved"

- Mohammad Al Hmaid, CEO, Water Sector Regulatory Council, *Palestinian Territory*

"YES, waste reduction that's the strategy! I'm really glad that the focus is on reduction than management. I look at the company Waste Management versus companies that focus on actually reducing waste at all costs. Speaking of that..."

- Na'ilah Dawkins, Avant-Garde Modern Dance Choreographer | Environmentalist | Sociologist, Washington, D.C.

"Vehicles we use can be more economically propelled after removing rubber hairs and walls from tire tread and sidewalls before installing on wheel. 2. Use screwdriver to unscrew car dealer advertising rectangles that cover periphery of license plates. Look at side walls of any tire. See those rubber hairs? That is a residue of manufacturing. If they were removed as last step of manufacturing then the residue is collected and disposed of in environmentally friendly manner. Presently the residue's weight wears pavement and accelerating the hair's surface area and mass (Physics) oppose all motion.

2. Car dealer metal ad rectangles are a pound. If all the 150,000 cars on three-lane Freeway had a pound of advertising, that is the weight equivalent in advertising of 50 3,000 pound cars. If each car travelled 20 miles per gallon then every 20 miles 50 gallons of fuel are oxidized. Oxidizing a gallon fuel generates 20 pounds carbon dioxide. Every 20 miles 1,000 pounds of CO<sub>2</sub> are added to the local atmosphere. There are a few stories on internet about what I do every day in traffic. Google salmoneedshade.

3. Do you know someone who uses an automatic transmission car? Driver when stopped idling, transmission in Drive, engine laboring against the foot brake through the tranny. If slip tranny to Neutral the engine will instantly idle higher and free. Now turn off lights. Exhaust analysis at DEQ while idling, lights off cut oxygen-fuel consumption, the generation of hydrocarbon, 2% while transmission Drive to N cut hydrocarbon 11%.

This is the low hanging fruit of oxygen conservation. Using Amsoil Synthetic Oil is another easy way to cut oxygen-fuel waste. See [amsoil.com](http://amsoil.com) referral 2017327. Share these ideas. This is the easiest way to cut oxygen-fuel consumption and waste."

- Moore Zephyr, Owner, [amsoil.com](http://amsoil.com), Portland, OR

***How can municipalities simplify recycling and composting? Which causes you to recycle more frequently?***

Survey Responses:

Develop education program for schools and public: 3

Enhance the recycling and composting collection system: 3

Develop streamlined recycling and composting signage for public places: 2

“Develop a food hub for the community and demonstrate the cradle to cradle examples of how food moves through a community - Farm - Restaurant/Produce store to mealtime - to contained food waste/feedstock to compost to rich nutritious soil and back to Farm”

“Hours of operation that allow for people working any shift to use the facility. Curb service in rural areas.”

“I would also say that cities looking to be more sustainable should look into grey water reuse. It's a great way to help California save money and keep polluted water from running into the ocean. Here is a handy link.<http://www.aqua2use.com/>”

“Municipalities are finding that mandatory recycling programs work best for them, and some states are legislating such mandatory programs. Seattle, WA and Maryland are two in the news right now. There are a number of automated features you can add to optimize your waste diversion including GeoFencing with RFID tags, automatic bin weighing with on-board scales, location/customer/driver recognition, and others. Learning more about this: <http://bit.ly/1JmErO0> Questions: [ztrafny@forester.net](mailto:ztrafny@forester.net)”

“If you focus on foodwaste and the intention of Riverside (CA?) is to involve also households, you should go for vented kitchen caddies plus compostable bags (either paper or compostable bioplastics). According to our 20 years of experience in Italy and our recent results in Milan City (1,4M population 7000 inhab/km<sup>2</sup>) this basic tools enables households to participate regularly and it minimises: odours, molds and reduces the weight of the foodwaste up to 15-17% in 3 days.

If you need further details please contact me directly by mail.”

- Marco Ricci Jürgensen, Chairman of the Working Group on Biological Treatment of Waste at ISWA International Solid Waste Association, Verona, Italy

“Here in the Metro Vancouver area of Canada we are working through neighborhood housing societies to develop a greater awareness among the community about the new by-laws that have been put into place January 1st 2015 excluding food waste from garbage and how the community can contribute to developing a Food Hub. We have a Micro-compost facility scheduled to open April 15th on a 3 acre farm 6 kilometre from city centre which

utilizes 3 emerging technologies - AD Anaerobic Digestion, CITYPOD - Inline aerobic composting and Vermicompost. All 3 systems accept approximately 150 lbs. per day - capable of processing a total of 6,000 - 10,000 lbs. of food waste per month. With checks and balances over a 6 - 9 month period our next stage in development will be to open a MID-scale compost facility on a minimum 10 acre parcel, open to the public and connected to a FOOD HUB we are developing through the neighborhood house and CEED Centre Farm."

- Aeron Jensen, Distributer for Justbiofiber, British Columbia, Canada

"If you focus on foodwaste and the intention of Riverside is to involve also households, you should go for vented kitchen caddies plus compostable bags (either paper or compostable bioplastics).

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- Marco R., Murfreesboro, TN

"Utilize the Riverside Produce van to pick up and deliver. We have the Riverside sponsored van which provides inexpensive produce to the Eastside on Thursdays from 2:30 to 3:30... Enlarge this program to pick up produce from free donation sites, i.e. fruit trees or small farms... Alternatively, open this task up to entrepreneurs with city sponsored permit help and/or groups with job training or handicapped or volunteers to pick and clean excess produce around town and deliver where needed, ie. homeless shelters or senior homes. Everyone wins!"

- Jane B.

"Compostadores. The City of Minneapolis has an organization called the Compostadores which picks up food waste from restaurants and grocery stores, composts the waste, and distributes the compost to local community gardens. Cool idea! <https://thecompostadores.wordpress.com/>"

- Justin S.

"Utilize Empty Lots Around Riverside. The "City of Riverside as Successor Agency to the former Redevelopment Agency" has many empty residential lots around town.... an idea is to call for Non-profit or Neighborhood groups that would like to "adopt" these sites for informal Community Gardens. Many of these lots already have existing RPU water service. The tending groups would keep the sites well maintained while providing the benefit of local produce, food security and great neighborhood connections. Everyone wins!"

- Jane B.

"Reenergize C.U.R.E., 'Clean Up Riverside's Environment'. Promoted by R. P. U. , this program worked, but it needs an upgrade to connect the dots between who has waste and how it could be reused, recycled, repurposed, reclaimed and/or restored. <http://www.greenriverside.com/go-green/cure> Perhaps with a grant from CalRecycle, or the like, we could use a city government department, a local non-profit, or a group of excited entrepreneurs who have the passion to connect Riverside's 'need to trash with the need for resources'. (check UCR) <http://www.calrecycle.ca.gov/AboutUs/> There is already a local Freecycle network as an example, at the neighborhood level... <http://www.freelywheely.com/us/california/riverside/riverside-3/freecycle>. We just need the right person or group to connect the dots, breath new life into the need to reuse, and make it an increased part of Riversiders' daily activities. The timing could not be more perfect."

- Jane B.

"Adapt city code to make Eco-Everything Riverside's standard. Attract businesses and home buyers with green examples everywhere. More specifically... Change city code to address ANY barren land. Right now land owners are forced to spray toxic chemicals to reduce weeds. ANY low-growing ground cover is preferable to erosion prone barren soil! We can be the example of a city that builds it's soils by repurposing city green waste. It's time! <http://articles.mercola.com/sites/articles/archive/2015/02/03/carbon-sequestration-climate-change.aspx>"

- Jane B.

## EXPAND BICYCLE INFRASTRUCTURE

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*How have cities utilized improvements in bicycle infrastructure for economic gains?*

"Make better bike lanes. Bike lanes have to go from somewhere to somewhere, and then relevant businesses need to be placed along these bike routes. How about a beer station along the Santa Ana River Trail, one that offered bike repairs, beers on tap, and maybe some high energy tacos?"

- Thatcher C., Riverside, CA

"Better tie city street improvement to Santa Ana Bike Trail. For many years, bikers

all over the Inland Empire have been seeking to have the Santa Ana River bike trail able to allow off-street cycling from Redlands to Huntington Beach. We are told that dream may be becoming a reality in 2015. That will bring cyclers from all over California as well as around the world. If there are frequent, easy point of access in Riverside it can bring the possibility of substantial tourism increased spending. Of course, this means the Santa Ana trail will have to be well maintained..."

- William T., Indian Wells, CA

"More Bike Friendly Opportunities for Commuting and Recreation. I notice that people with whom I share Riverside - when they are considering moving here - often ask about bicycle possibilities for commuting and for fun. It is a plus to them to move to a community where this is possible. Please continue to further these options!!"

- Connie R.

"Bicycle Hub. It might be good to consider development of a bicycle hub. Some of suggested the old firestation. We might also consider, at least temporarily, the old car lot at the corner of Market and 5th across from the Hyatt. Business kiosks could help support a volunteer-run bicycle kitchen, would also be a good storage location for a bicycle rental network."

- Justin S., Riverside, CA

Comment: "Agreed! It will also provide a "go to" spot for cyclist of all levels to get together. It would be nice to know there is a designated spot in town that you can meet and ride out in any direction. Also, love the idea of a volunteer-run bicycle kitchen. This gives everyone the opportunity to get involved within the bicycle community."

- Ryan P.

"Bicycle lane on Central Avenue from Victoria Ave. to Brockton. Currently there is no way to safely get from Canyon Crest/Poly area to the Riverside Plaza and the Brockton Avenue bike lanes. A bicycle lane needs to be installed to ensure safe cycling along this route, especially since two people have already been hit and killed while cycling on this stretch of Central Avenue."

- Kandi D.

Comment: "This is a street in the city and to have a street where people are told they shouldn't travel on because it's dangerous is a clear sign that something was done wrong. The idea of us having a discussion on it is what's really wrong. There is a high school on this street and as such should have

appropriate measures to reduce speeds along with making those who choose a healthy form of transportation feel safe when biking or walking. So yeah, get some separated bike facility installed.”- Mark F.

“I commute daily on my bike on central Ave from Palm to the 91fwy. I have RPD officers to have told me I'm crazy to ride my bike on central, and should take alternative paths”- Richard B.

“The bicycle infrastructure that I have noticed is mostly on the west of the 91 running parallel to it and this is good for the people that want to ride in that direction. On the east side you have Victoria but it also runs parallel to the 91. What I think should be done is connecting both sides of the 91 at various levels (including Central) with (protected) bicycle lanes that will encourage more people to ride around or commute within Riverside rather than just riding up and down Magnolia and Victoria.”

- Marc S

“Replace a few parking places with "park out" patios. Allowing local eateries to expand to the outdoors will encourage a more bike/pedestrian friendly environment. When we visited Long Beach I was most impressed by the businesses that created spaces where car parking originally would have been. Instead of car parking everywhere we need to encourage more space for bike lanes, and parking for bicycles. Brockton Avenue is a great start, but we need to get better bike friendly pathways downtown. (Mission Inn & University between Lime & Market specifically)”

- Charlotte M.

“Riverside is on the right track! I feel that the city is on the right track with the idea of adding bicycle infrastructure. I feel that if we promote health, wholistically, we will indirectly increase biking rates and other improvements to the lifestyles of our community members. We should improve access to a better lifestyle.”

- Jessika S.

***In your opinion, what makes bike transportation safer and more convenient?***

“Colored bike lanes. Check out Portland, and then make our bike lanes go somewhere. How about a green lane from RCC to UCR?”

- Thatcher C., Riverside, CA

“20 mph speed limit around city centre. This idea is being put forward in my City - which is the city of Edinburgh in Scotland..it is one simple way to give car drivers

more time for manoeuvres and cyclist a bit more security around traffic. It is the difference in size weight and mass that is the main problem. A safe zone where traffic combines needs to be imagined. Happy days ahead!"

- Ben V., Oxton, Lauder, Scottish Borders

" I can help you with all that, even help you with the cyclist point of view. I have been in the cycling industry for 30 + years. And I grew up in Riverside Ca. Just let me know if you what my help?"

- Steve Kinney, Owner Of Steven K Sports & Design, Art, Cycling, Also Owner Of Steven K Sports Mtb Cycling Team, On And On, Greater Los Angeles, CA

"Here's some ideas:

- Provide shared bike/auto lanes in downtown
- Roadway 'diets' that reallocate some pavement to bike lanes instead of vehicle lanes or parking
- Put only Class I bike lanes along arterials..need physical separation for cyclists along these higher speed/more dangerous routes
- Reduce vehicle speed limits along major bike corridors
- Widen sidewalks, where feasible, to include bike lanes
- Link bike routes to transit centers and local destinations for entertainment, recreation, shopping, employment centers"

- Randy Nichols, Senior Project Manager at T&B Planning, Greater Los Angeles, CA

"Working on similar improvements for bicycle and pedestrian safety in southwest Florida, where bike riders as well as pedestrians are in major danger (lots of bad driving, lax laws, poor signage, etc.) I am interested to see what comments/ideas are generated here. Great topic!"

- Lindsay Rodriguez, Planning Technician at Waldrop Engineering, P.A., Fort Myers, FL

"Three things, just answering the question about increasing bike rates... 1. Recognizing that 28% of household trips are 1 mile or less, 23% are 1 to 3 miles, and 13% are 3-5 miles, what is an achievable stretch goal, depending on spatial conditions, density, etc. to capture a goodly number of these trips by bike. (The Vancouver Translink Plan is a good model too.) You can set reasonable goals, based on that. E.g., for DC, I argue that 20% of trips from bikes is reasonable overall, but it would be higher in the core of the city, and lower in the outer city, because of different topographical conditions. 1. In the Western Baltimore County Ped and Bike Plan that I did, I posited five scales (now I say six) for the

consideration of ped and bike infrastructure and the creation of an integrated sustainable mobility system. Although this framework was excised from the final document.

- a. one mile radii from transit stops and schools (mostly ped)
- b. three mile radii from town centers
- c. 3-9 miles along corridors, connecting town centers
- d. making connections between corridors
- e. creating a county wide bikeway network including cycletracks and shared use paths off road
- f. making connections between jurisdictions

1. The other point I make, although it is made as well in the previous German National Bike Plan, is that you have to create a complete system to support bicycling as a logical and efficient transportation mode. It took 60+ years to do that for automobility (cars, roads, dealerships, gasoline stations, service garages, maps, signage, restaurants, motels and hotels, parking facilities at multiple points on a trip, highways, etc.)

a post on my planning process, <http://urbanplacesandspaces.blogspot.com/2010/04/best-practice-bicycle-planning-for.html> a national strategy, <http://urbanplacesandspaces.blogspot.com/2014/03/what-should-us-national-bike-strategy.html> image from German bike plan, <http://www.flickr.com/photos/rllayman/5618490385/> FWIW, Smart Growth America considers the Balt. County bike and ped ordinance as one of the best in the country. It's based almost 100% on my plan, and was passed almost two years before the plan was formally enacted. P.S. my partner is from Orange County, I'd be happy to come out to Riverside..."

- Richard Layman, associate at BicyclePASS LLC, Washington D.C., Metro Area

"Hare core cyclists will ride no matter what but to get lots of people riding, especially moms, routes that are not on arterials and collectors "feel" safer. Bike Boulevards are terrific for that. I echo Richard's comment that a piecemeal approach won't work. There has to be a system. The pieces may be designed, built, and stitched together in sequence but a system view needs to be in place at the beginning and refined along the way."

- Daniel "DJ" Heffernan, Land Use Planner/Policy Analyst, Portland, OR

"If you believe the research by Roger Geller, which I do, he posits that 1% of the population is hard core cyclists, about 7% are pretty hard core but won't necessarily ride in any condition, 33% will never cycle for transportation, and the rest so about 62% would ride, but only if they feel safe from traffic and high speeds. That roughly gibes with Rogers' theory of innovation diffusion (innovator, early adopter, late adopter, early majority, late majority). Biking is still in the innovator/early adopter stages from the standpoint of Rogers' theory (somewhat bastardized by Malcolm Gladwell in *Tipping Point* although he had good insights in facilitating uptake). To move it into the mainstream, a systematic approach is necessary. The problem with the "anywhere/anyhow" group as Geller terms them is that they tend to be "vehicular cyclists" and advocate

against the kind of infrastructure necessary to attract larger numbers of cyclists. My understanding is that this is a big problem in CA, where the state committee on biking is dominated by vehicular cyclists. (E.g., they argue bikes should be treated as regular traffic. The problem is that this doesn't scale as bicyclists increase in numbers and it creates significant conflicts.) Another way to think of this is in terms of neighborhoods, districts, and cities, and the requisite infrastructure that is required. And promotional activities at those scales. (E.g., I am a big fan of parks and rec centers as staging points for community walks and rides.) Also, I make the point that bike and planning needs to integrate programming with infrastructure planning,, because people need assistance to make the transition. Another point regarding equity (see <http://urbanplacesandspaces.blogspot.com/2014/03/equity-as-sixth-e-in-bike-and.html> and <http://urbanplacesandspaces.blogspot.com/2014/07/urg-bad-studies-dont-push-discourse-or.html>), while I think it should be a priority and special programming developed a la programs in Boston and Portland among others, cycling shouldn't be apologetic about lack of uptake by certain demographics/minorities. Since biking is still in the earliest phases of widespread adoption, to expect equal numbers of often "economic laggards" to participate at the earliest stages is unrealistic from the standpoint of diffusion theory."

- Richard Layman, associate at BicyclePASS LLC, Washington D.C., Metro Area

"100% in agreement about the dominance of advocacy groups by "vehicular cyclists". I propose a bill in Oregon to let cyclists stop and go at a red light when in a bike lane at a t-intersection. The state's largest cycling lobby opposed it for the very reason you cite and the bill died AFTER passing out of committee because the bike lobby did not wanting to support special rules for bikes. Bikes are not cars! This is not an equal rights debate. It is a different mode with different infrastructure and operational needs."

- Daniel "DJ" Heffernan, Land Use Planner/Policy Analyst, Portland, OR

"TRAGIC. I am a big fan of the Idaho Stop, which is a version of what you were trying to get approved. Any "real cyclist" who doesn't support the Idaho Stop is a fool. The whole point of cycling as transportation isn't to cripple a bicycle's advantages vis-a-vis cars, but to accentuate them. The ability to go through stop signs and red lights WHEN THERE IS NO TRAFFIC OR SIGNIFICANT BREAKS IN TRAFFIC is what helps to make bicycling a more efficient and competitive choice when compared to city car trips.

(That being said, when I worked as a planner for a county government, I knew I couldn't say that given county policy and I didn't.)

Note in my previous response I mentioned "Everett" Rogers but didn't list his first name. I realize that referring to "Rogers" some people might think I meant Roger Geller, also referred to in the response."

- Richard Layman, associate at BicyclePASS LLC, Washington D.C., Metro Area

"If you want to encourage cycling in an area make places worth cycling to and through. That means higher land use density, diversity, and proximity, enabling people to bike where they are going.

The other half of that is to let bikers (and walkers) have safe paths to make those trips. While it is suitably embarrassing that the median traffic trip could be negotiated on a bike, a quick glance at most roads in America will tell you why we don't bike more.

Most roads are designed for traffic moving at a 50% killing speed or greater. Biking is not considered in their design. Bike lanes next to 20-35 MPH traffic are a great idea, but many arterials have design speeds of 50 MPH or more. Many of the bike lanes I've seen in Florida are on just such roads.

I don't see a lot of higher quality bikeways, cycle tracks, and intersections on high speed roads. More likely in low speed, high volume and high turning movement streets found in historic downtowns. These places have the proximity and diversity required to enable biking, and are host to more biking than most of the rest of America.

But the solution to encouraging bikes cannot just be "build your city out at least 150 years ago". The question challenges how to build new places that support biking, something we haven't done in a century.

A good bike path system for a new place requires more than just the existing road network, but a willingness to use easements, smaller streets, and connections to present a parallel network that lets bikers get places without having to be next to and crossing traffic all the time.

One of the best places for such a change to transportation policy would be within biking distance of high quality transit, such as short headway rail transit or BRT (if the US can build any). There's no reason a transit passenger needs to get in a car after their transit ride, if we allow walking and biking to enough things within reach of the transit stations.

A lot of things can fit within 3 miles of rail transit. Though it takes up less than 1% of the land, that area holds 22% of the jobs and housing in the 2010 census. Building that area out to minimally walkable intensity (jobs+housing/acre) could hold 50% of the jobs and housing in the US today, in addition to the 22% it currently holds.

Book in press."

- Alan Cunningham, LEED-AP, AICP ProjectPlanner at Lea+Elliott, Inc., Washington, D.C.

"Tangentially related: <http://www.peopleforbikes.org/blog/entry/city-planning-software-jumps-on-the-protected-bike-lane-trend>"

- David Wasserman, 3D Solutions Engineer Intern, Gainesville, FL

"On streets/roads with curb-side parking and bicycle lanes next to the car lane how about moving the parking away from the curb and placing the bicycle lane between the car parking and the curb. This fixes two problems (1) cyclists are no longer riding next to cars, and, (2) it mitigates the chance of a cyclist being "doored" by people exiting the parked car . My .02 worth."

- Dave Williams, CEO & Chief Chain Cleaner @ Velosurance, Fort Lauderdale, FL

"Our city (Edinburgh) is trialling 20mph speed limits in the very centre of town. This is a great way to reduce the size/mass/speed of vehicles to be more in sync..and if cycling is to become popular to the masses a perceived safe zone must be initiated.

As far as bike lanes go- here they are "advisory" only here in the UK..so unless it becomes a priority planning issue (See Holland for e.g.) then all else is a band aid on the problem. A city with properly planned cycling infrastructure is not only healthier, but wealthier. Have at it!"

- Ben Vogelsang, Edinburgh Road Club. Art, Design, Pedal., Galashiels, United Kingdom

"I've experienced 37 years of bicycle commuting. Fear is the most common reason given by others to not ride more. For some it is the fear of being different. For many the fear of injury is the showstopper. As human's we tend to downplay the risks of activities that we perceive to be highly beneficial (such as driving a car) and heighten the perceived risks for activities that we don't see as providing a short term benefit or taking a lot of effort (riding a bicycle). So part of the challenge is to go beyond telling the benefits and talking about minimizing risks and drive toward understanding. To gain understanding, you need to reach the receptive members of your audience and engage them at the level where they are and offer safe hands on opportunities to increase their understanding. With the right tools, tactics and training it is possible to ride safely under many circumstances. Driving a car provides fairly flexible mobility. Riding a bicycle provides healthy mobility and different set of flexibilities than provided by the car."

- Mark Bruce, Technical Director at TestAmerica, Canton, OH

***How has business encouraged bicycle commuting in your area? Please check all that apply and include recommendations.***

*Survey Response*

More bike parking: 1

More facilities near bike stations (showers, lockers): 1

More bike lanes: 1

Public bicycles available (bike-share program): 1

Increased community awareness:1

Bike-focused community events (CicLAVia): 1

Improved bike lane visibility: 0

## ECOBUSINESS ZONE

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***What types of businesses, public spaces, and housing projects would you incorporate into an Eco Business Zone?***

"If you are involved in Riverside with this effort, I would be interested in talking to you (scottranville@humanlifeproject.com). I am working on urban ag projects that are eco friendly for example using 90% less water for growing food. My big project right now is to find siting for aquaculture projects that will have 75 jobs and produce/grow ~8.8 million pounds of fish a year. I am also working on indoor ag such as aquaponics which has similar benefits as the aquaculture but offers more learning opportunities to integrate into the schools. To more directly answer your question, I think that candidates for an eco business zone should include topics such as local food production, jobs close to where people live, resource efficient buildings and resource efficient products that the businesses are working on. While not necessarily "eco" which to me mean environmental topics, I would encourage social sustainability as well, such as employee owned companies. Having a low impact transportation network within the eco business district could be good, such as good walkability, low cost bike sharing, and low cost LSV (low speed vehicles) sharing, as well as low cost low emission bus shuttles. On the housing side, I like pocket neighborhoods. I am not familiar with Riverside and if these would be appropriate or not."

- Scott Ranville, President/Consultant at Human Life Project(r), Greater Denver Area, CO

"Think as a whole system. I am working on urban ag projects that are eco friendly for example using 90% less water for growing food. My big project right now is to find siting for aquaculture projects that will have 75 jobs and produce/grow ~8.8 million pounds of fish a year. I am also working on indoor ag such as aquaponics which has similar benefits as the aquaculture but offers more learning opportunities to integrate into the schools. To more directly answer your

question, I think that candidates for an eco business zone should include topics such as local food production, jobs close to where people live, resource efficient buildings and resource efficient products that the businesses are working on. While not necessarily "eco" which to me mean environmental topics, I would encourage social sustainability as well, such as employee owned companies."

- Scott R., Greater Denver Area, CO

"Some suggestions:

1. Decades ago, the Los Angeles DWP built an "Optimum Energy House." Learn from its examples.
2. Require lots of tubular skylights.
3. Strongly encourage use of waterless toilets."

- Jean S., Chicago, IL

***How can we encourage businesses to adopt sustainability initiatives and locate within the Eco Business Zone?***

"An inclusive business eco-system, look at it holistically:

- car-free zone: prefer bike renting, common transportation
- community spaces where people can exchange ideas, meet others
- incentive all business with tax rebate based on the results on several kpis (women equal pay & chances, disabled people employment, carbon & water footprint / management plan objectives...
- valorize and reward with annual forum"

- Nathalie P., Allen, TX

"Encourage the installation of on-site composting. The CITYPOD is an effective tool that can be used indoors to process food waste from cafeterias and restaurants. A central location where several restaurants can utilize one installation capable of processing up to 500 lbs. per day would eliminate hauling and produce valuable compost for community gardens."- Aeron J., British Columbia, Canada

"Unfortunately some corporations still did not understand the link there is between the progression of digitization and brand accountability. I agree with what Uren says "Businesses will soon have no choice but to evolve accountable and responsible processes, and communicate a deeper purpose beyond profit to their customers" And this do NOT concern ONLY the so-called "green" brands... The wake up call might be dreadful for the laggards.

Maybe the answer lies in a mix of solutions :-). Show that it brings competitive advantage (+efficiency) to companies, reduce the risk for investors (+ROI), create shared value for countries (+employment, -pollution).. not forgetting the consumers that will trust more and make better consumption choices (+H&S, +happiness)... I think pushing for integrated reporting for traded companies is one way to achieve that."

- Nathalie Perroquin, Corporate Sustainability Vice President chez Coty, Paris Area, France

"We should have a city/county garden w/fresh herbs, veggies. Members of the community who would like to volunteer to plant and harvest the fresh herbs and vegetables would do so on their own time. The city/county would fund this project and all the people who live in the county and city limits would be able to buy produce here."

- Nanette B.

"What? Are you describing a model city within a dome? An Eco Business Zone should be re-titled as Riverside-the Eco Zone and directed city-wide. Period. Riverside is currently promoting many green programs both at residential and commercial levels, and expanding on those programs city-wide makes better sense. For instance with new construction anywhere within the city; the city can offer (not mandatory) green alternatives with possible incentives to offset construction overruns. Eventually, the green concept would become the norm, not the exception. As describe, I am not in favor of creating an exclusive "geographically defined area" for this purpose."

- Janet H.

## CLEANTECH INCUBATOR

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### *What are barriers to implementation for startup cleantech companies?*

"We will add that to your website to start discussion, if you like to know more.... please don't hesitate to send me a mail to: [nitsch@suninvention.net](mailto:nitsch@suninvention.net). There you will learn how to become an ENERGY ARTIST.... ;-)"

- Toralf Nitsch, Energy Artist bei Sun Invention Global Innovations BV, Amsterdam Area, Netherlands

### *Have you ever been impressed by a cleantech startup idea? Tell us where you heard about the startup by selecting one of the venues below.*

Survey Responses:

Investor pitch event: 2

Academic event: 1

Cleantech media source: 0

Community event: 1

Local media source: 1

Online crowdfunding platform: 0

Professional conference: 0

*Do you have any alternative venues?*

- You have to checkout an app that I became more familiar with after going to a UCLA sponsored tech discussion on ride sharing. The app is called Nextrip developed for use by LA Metro. It gives bus users a real time estimate of bus arrivals. It makes riding the bus more efficient and thus a little bit more comparable to using a car.  
<http://www.metro.net/riding/nextrip/>
- "none of the above. Add word of mouth... that is what will get locals to check something out. All of the above are marketing blah blah blah"

BUY LOCAL INITIATIVE

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*What types of incentives would drive you to buy more locally?*

Survey Responses:

More local businesses: 9

Local discount programs: 7

Increased awareness of local businesses: 7

Improved biking infrastructure: 6

Improved parking: 6

Improved shopping center design: 4

*Do you have any additional recommendations?*

- "A dedication of local businesses to doing business with other local businesses whenever possible. Cross promotion of businesses. I use our FB page to promote neighboring local businesses. People still count on word of mouth for their decisions."
- "Amsoil.com Synthetic Oil for engine and drive train of car help users save money and time maintaining and operating vehicles and tools. Buy from

Direct Dealer near your home or become Dealer yourself. Product shipped from 11 Distribution Centers in North America. We can start buying-fundraising account so profit and commission on purchases are donated monthly to nonprofit of buyer's choice. Please phone me to kindle a unique means fundraising for nonprofits. Use car, demand oil = profit"

- "Cost is a big thing!"
- "Food hub"
- "We need better local businesses!"
- "A full listing of which local businesses sell local products (e.g., food produced in Riverside)
- I feel that the improved shopping center design is the key to making the city more bike friendly. If you go to the Riverside Plaza or Galleria they are so focused on parking for cars with very little pedestrian or bike friendly infrastructure at all. We need to focus on better parking for bikes and nicer avenues for walking rather than just a sea of parked cars on blacktop.
- Improve traffic flow to downtown. By syncing the traffic signals on Magnolia and Lime, I would consider shopping downtown, but for me to get downtown from the Wood streets right now it takes over 15 minutes. Magnolia is grid locked and Lime is terrible because of the poorly timed traffic signals. If you want us to shops locally, you've got to improve traffic flow, otherwise using the freeway to go shopping is much quicker. Also, enough with the bicycle discussaion, just move the traffic.
- Local discount programs always encourage me to patronize certain businesses. If through the discount program I was made more aware of what was available, I think it would be a win-win situation.
- More shops on the Downtown Mall and the Downtown area as a whole. Moreparking to access lots more shops. Create competition and real variety in the Downtown area, not just in out lying areas. There are so many wonderful buildings that would offer so many exciting things. The biggest problem is the lack of reasonable parking nearby. There were several incredible shops in Downtown area that went out of business over the last several years because of the shortage of parking."
- "Partner with local Weight Watchers sites."
- "We used to drive to the downtown farmers market every Saturday morning, then the construction on the Convention Center in addition to the new hotel removed most of the available parking. We stopped shopping and instead bought produce at Trader Joe's in Redlands, because you cannot get across town to the Riverside Plaza with the mess that is the 91 freeway through Riverside. Need much better bus service!"
- "Word of mouth from local satisfied customers."

*What factors most affect your willingness to buy locally and utilize local businesses (dry cleaning, restaurants, etc.)?*

"Please consider going to [www.CollaborateUSA.com](http://www.CollaborateUSA.com) and expressing your thoughts to our Collaborative Community."

- Robert A. Needham, CoFounder at CollaborateUSA, LLC

"To buy goods and services locally will get increasingly important around the world. It is likely that the days that we could buy food from all over the world is likely to reduce over time. In addition to the cost of transport there is also an increasing trend with LED lighting and thermal energy to produce exotic food locally."

- Frank Pons, Appelman Pons Consulting, Canterbury, New Zealand

"I already buy locally as much as I possibly can. I think people need to hear more stories, about the young business owners who are the future of their communities, and about how the local small businesses contribute to the community via local spending as well as charitable donations. Numbers don't do the trick, stories that capture the imagination and elicit emotional responses are much more effective."

- Karen Barker, Co Owner at Minglewood Farm, Greater Boston Area

"I agree with Karen. It's usually easier -- e.g. one-stop shopping -- to buy from a non-local business. Consumers need to have some motivation that speaks to them to go out of their way to shop at a local business. (Even if the business is in the center of town, if a customer can get 80% of their needs met at another store that's located elsewhere, the local business is still "out of their way.") Getting information about the business owners and what they're doing for the community is one way to spark that motivation.

It's a challenge to find the motivation that speaks to the consumers in the area. For some of us shopping local is enough -- but that's generally not a large enough market share to sustain an independent business. I know some communities use a form of local business rewards program -- for every X you buy you get Y in local rewards to use (as cash) at another participating local business. I think that could be a very effective program, especially in a society that is often thinking in terms of rewards points.

The poll mentions parking and, in my community at least, that's a tricky one. There are many, many, \*many\* people here who will loudly proclaim that they wanted to go to one of our downtown, local businesses but they couldn't find parking. Everyone I know (including myself) who's objectively looked at the issue has concluded that -- with the exception of special events -- the problem is one of perception, not actuality. I've never heard someone complain that they had to park 35 yards from the store's entrance in a Walmart parking lot; nonetheless,

when they'd have to walk that same distance to a local, downtown establishment they complain that there's no parking (because the lot or street with available spaces was too far away). I'm not sure how one effectively addresses that problem, short of finding the money and land to build a behemoth of a parking deck that's rarely more than 25% full."

- Renee Lasko, Market Master/Manager at Putnam Saturday Farmers' Market, Greater Boston Area

"Kevin Halligan at Laconia Local Eatery, former owner of Laconia Village Bakery, is a good example of a young business owner who has done a lot for the community. He is married with 4 children, in his early thirties, coaches basketball, when he was owner of the bakery he donated regularly to various groups or gave them food at a discount. He does as much business with local farmers as he possibly can, as that is the basis of his business. He moved to Laconia as a youngster and graduated from Laconia High School. Went to school in VT, lived a few other places, and then moved back."

- Karen Barker, Co Owner at Minglewood Farm, Greater Boston Area

## WILD CARD

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"Join the Materials Innovation Exchange ([materialsinnovationexchange.com](http://materialsinnovationexchange.com)) to support buy-sell-trade of industrial materials and share innovative materials reuse success stories. I'm happy to talk with you about our regional partner program -- also our By-Product Synergy Regional outreach program. [NBIS.org](http://NBIS.org)"

- Mary R., Vashon, WA

"Submit your abstract at the World Engineers Summit on Climate Change 2015! Participate our Call for Papers for an opportunity to share your knowledge and experience on sustainability and global climate resilience here - <http://wes-ies.org/summit/wes-call-for-paper/>. Please spread the word and share this exciting event. If you require more information, please email me at [veron.poh@iesnet.org.sg](mailto:veron.poh@iesnet.org.sg)."

- Veron Poh, Project Manager, World Engineers Summit by IES, Singapore

"Suggest topics that may be useful for everyone. For example, the criterion can be directed to solve the main demands of the WHO because they are global issues that affect millions of people. Among them are • Alcohol and health • Child health • Cholera • Environmental health • Global influenza virological surveillance • Health systems financing • HIV/AIDS • Malaria • Maternal and reproductive health • Meningococcal meningitis • Mortality and Global

Burden of Disease (GBD) • Neglected tropical diseases • Noncommunicable diseases • Resources for the prevention and treatment of substance use disorders • Road safety • Sexually Transmitted Infections (STIs) • Tobacco control • Tuberculosis • Violence prevention • Violence against women  
Further information are available at [http://www.who.int/gho/map\\_gallery/en](http://www.who.int/gho/map_gallery/en)"

- Roberto Rocha, Professor na Universidade Estacio de Sá, Rio de Janeiro, Brasil

"<http://youtu.be/Ycj463OOzcE> and <http://youtu.be/kXV1Ql3Sz18>. This is the worlds cheapest technology for Multi Megawatt system , I am generating green electricity with 440v , 3 phase , 50 HZ, . In- Pipe Generator Turbine: There would be no more scarcity in generation of power with this particular system. The raw material is water. The concept is designed by forming a parabola construction for the waterway to run down by the law of gravity from the top to the bottom. A canal is formed on the parabola curve inside which the bulb turbines are placed in the path of flowing water. Series of pipes are placed in the canal. This leads to free flow of water from one pipe into the following pipe. Thereby, power is generated."

- Changanti B.

"Designers with their design mindset hold the ability to use specific creative skills, tools and methods that can improve the ways we try and work with complex problem solving. ...The way we see the issues and challenges and the way we work with them. The most interesting challenges today are partly hidden in innovating inside the public sector and with the sector. Including designers into different levels of decision making processes within the public sector could influence the way we see the problems. The perspectives can change dramatically by using system thinkers, concept developers and other creatives within the decision-making processes. Examples from Finland such as Design Lab Helsinki or Slovenia with Design Biotop use design mindset to create a dialogue throughout sectors and levels of society to work together for societal change (on different scales). What we are proposing is to include designers into complex problem solving processes that could mediate and guide workshops related to specific issues of your interest. In that way fresh perspectives could show potential new solutions on how to create a change. Sustainability is a huge topic and understanding individual sustainability and social sustainability by using creative methods to widen the views could help spread new ideas and potential new solutions."

- Sasa Kerkos, Slovenia

# FINANCIAL INCENTIVES & FUNDING SOURCES

## ENERGY AND WATER UPGRADES FOR HOME OR BUSINESS

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### *How has your city financed energy and water upgrades?*

"These should cover the vast majority of ways:  
Project-based financing obtained through the capital markets  
Municipal bonds  
Tax revenue/increases  
Federal grants and budget-related packages  
Joint ventures/privatization deals"  
-Albert Hong, NYU Stern '12, BlackRock, Blackstone

"I receive constant phone calls and door to door sales calls because of this program. The contractors do not follow the regulations for historic neighborhoods, they are aggressive and they use intimidation tactics to make a buck. I remain firmly opposed to government giving businesses a helping hand at the expense of the private citizen. Get rid of this program, it is waste of money and does actual harm when wood windows are replaced with cheap plastic windows made in China."

- Teresa W

"The HERO loans are a great way for homeowners to upgrade non efficient systems in their home such as new windows, new HVAC systems, or Solar options. However, homeowners are not being told everything up front. The HERO Loan (yes it is a loan), goes on your home's title as a lien on the property. In fact, it is a lien that is first in line to get paid off, so when you sell your home, this loan must be paid in full for the title to transfer. Unfortunately homeowners are being told by the contractors selling the products that they don't have to pay off the loan since it transfers with the property because it is paid through property taxes. This is not the case! People are being lied to & overcharged by the contractors. Unless you plan on staying in your home for at least 5-10 years after doing the upgrades, don't do it. This is NOT a program to use to fix up your home right before you sell it. We need to start regulating the contractors who are "approved" to sell these programs."

- Charlotte M

"The state tells us we must follow numerous guidelines for state funding. If tenants are required to water per the terms of their rental contracts and the wind blows some water onto the sidewalk or street before 10:00 a.m or after 6:00 p.m., all residents and owners could face fines and penalties. Statewide. Riverside County is not even relative to Northern California."

- Kathy L

"I am sure there is something out there for homeowners to keep grey water and use it for their lawn and plants in the yard. This should definitely be added to every new house that is built."

- William O

"It is more effective, quicker and cheaper to accomplish the same goal with performance contracts to improve the efficiency of both water and energy efficiency improvements."

- Geza K

## GREEN BUILDING STANDARDS

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### ***What are some funding sources for businesses or property owners to provide green building retrofits?***

"The local utility in the San Francisco Bay Area, PG&E, offers a Rebate & Incentives program. Some municipalities such as Redwood City, CA offer water conservation related rebates as discussed here Redwood City Public Works Water Services as part of a regional High-Efficiency Toilet (HET) Rebate Program. There may be similar programs in your own area."

- Steve Blumenkranz, Mechanical Engineer

"When the energy efficient standards become smart financial decisions, funding sources will be easy to find. Business and Property owners will fund it themselves due to the financial incentives. For those who don't have the money to fund it themselves, loan opportunities will arise within the economy because the lenders will also see the financial benefits. Until there is a clear financial advantage to "going green", adapters will still be few and far between."

- Dacy N

## CLEAN VEHICLES AND CHARGING/FUELING STATIONS

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### ***What are some funding sources for clean vehicle infrastructure?***

"Are you just looking for funding sources or do you want projects that could create jobs and provide an affordable EV for the masses? Funding today is very difficult to find. We've been at for way too long and it is just not there. Playing in the stock market with low interest rates seems to be where the money is going.

Check out the videos on my profile or website. Here's latest:  
<http://youtu.be/6BDKuuouqQ0>"

- Rich Marks, President at EnVironmental Transportation Solutions, LLC and Owner, EcoV Electric

### ***How has your city funded the installation of EV charging stations?***

"We are still in the research stage right now. Our local energy utility, City Public Service, received the original funding, but they have transferred some of the stations to the City of San Antonio. Also, users must pay an hourly fee of \$1/hour to use the stations. Funds for the charging stations came from the U.S. Department of Energy in the form of a research grant awarded to Coulomb Technologies. Coulomb selected CPS Energy to build the EV charging stations as part of a two-year research initiative. The Department of Energy has a Transportation Electrification Initiative that aims to put the infrastructure in place across the United States to adopt electric vehicles. This project allows EV drivers to be valuable participants in research that will be used to make San Antonio truly EV ready, the information we gather will be used in all aspects of future planning."

- Pamela Dennett Grennes, Blogger City and State Government Issues, Focusing on San Antonio and Texas

"Not a city but the whole country:



All that was funded with the CO2 emission quota sales. Estonia”

- Arnis Tarassu, Professional Leaf User, Mechanical Engineering Student

#### EXPAND BICYCLE INFRASTRUCTURE

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***What funding sources has your city used to enhance bicycle paths and other infrastructure?***

“Thank you so much for your interest in new traffic & solar Pedelec develop! You should know that these projects are not realized yet. They rather need to be implemented, but not by myself. I personally deliver the ideas "open source". I also use my contacts to spread the ideas and to arouse the interest. To develop and produce, it requires smart people in politics, finance and industry. Let's hope together that sustainable projects are on the fast track soon. Your child deserves better world! May I offer you some free open source concepts concerning pedelecs, solar traffic, eco-buildings & other future-proof innovations? Please have a look in my site and connect it to R&D and competent industries. Warm regards & All the best to you and your efforts. > [www.tubewaysolar.at](http://www.tubewaysolar.at)”

- Michael Thalhammer, Think Tank, Traffic Future, Pedelec / Eco Buildings

“Better bike infrastructure is the one single measure to boost cycling - but in case you're on a budget, here are some examples of low-cost interventions to increase cycling. <http://cycletraveller.com.au/australia/news/15-low-cost-innovations-that-boost-cycling>”

- Alessio Punzi, Advocacy & Mass Participation at Union Cycliste Internationale

***What funding sources has your city used to enhance bicycle paths and other infrastructure?***

“A lot of cities use the taxes from cars to finance greener alternatives and routes such as cycle ways.”

- Pedro Vieira

***Has your city successfully implemented a bike-sharing program and how was it funded?***

“When I lived in Miami they took the money out the townships CAFR funds and in NYC Citibank funded the program to get ads on all the bikes and dropoff points.”

- Vickens Moscova, Hello. Whats happening?

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WASTE REDUCTION

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***How has your city worked with local haulers and businesses to fund compost collection systems?***

“An apt example for this situation is the work of Ms Jolene Jamieson, well-described as a case-study by Sharon Parks in 'Leadership can be Taught'. Jolene, as head of the state's environmental agency, recounts how two years of public hearings to educate the public - on fee increases for industrial waste processing - were unsuccessful. They had to enroll the governor's senior staff and build consensus; but first the responsibilities of her agency had to be spelled out to the public, which she did with personal meetings 'on the road' with executives of small & medium businesses to large corporations. The costs of the project had to be independently verified by an auditor, and a task force was created on permit fees; a key ingredient was getting support in the Senate, mainly the environmental stakeholders.

Source: 'Leadership Can be Taught', by Sharon Daloz Parks, HBS Press, 2005.”

- Sandeep Chellapilla, Technology Innovation & Business Transformation Strategy

***How has your city worked with local haulers and businesses to fund compost collection systems?***

“In my hometown of Kirkland, WA and many others in the Seattle area, trash pickup includes mandatory charge for both recyclables and compostables. You get a huge bin for compostables, a medium sided one for recyclables and a teeny one for what won't go in either. If you want a larger trash can there's a

premium. The compostables, including pizza boxes, are turned into compost, which you can then buy back to grow more garden waste to put into the compost bin and so on and so forth, etc., etc. etc."

- Richard Careaga, Worked in Environmental Management for 13 years

***What are some funding resources to create a zero-waste community?***

"Look into your state's departments of public health, environment, or another department that relates directly to waste disposal. In several states, there is a tax levied on landfill tipping that goes back into the system for recycling, landfill diversion, awareness/public outreach campaign efforts and so on. In the case of Colorado, at least, this is dispersed in the form of an annual grants made to both for-profit and non-profit activities.

Also, don't discount how much recyclables can be worth! Establishing a zero waste system means selling the material back into the loop -- and that can turn quite a profit for high-demand materials like aluminum, shrink wrap, cardboard, and steel. The biggest challenges will be participation, sorting, and transportation/storage logistics.

Definitely make an effort to integrate a composting system that provides growing medium back to the community, as opposed to buying a "composting service." This will save a lot of money and also potentially lead to more revenue."

- Maureen Murtha

"Many residents have no space or space allowed for composting. Community gardens would be nice, and the food waste is great for fertilizing. Otherwise, local growers /farmers could collect it."

- Kathy L

"I am told that sets of grey water pipes are in place, waiting use, and that the water quality is good. Especially, during this drought, please bring them online for large area irrigation like parks, street trees and cemeteries. One of Riverside's greatest features is it's water supply so let's fully utilize it for GrowingRiverside."

- Jane B

"Well, in your average everyday trash bin, you find food, soiled paper and even fairly clean paper and plastic. Today, Burrtec and other waste removal companies have high tech machinery which is capable of sorting our mass variety of recycleable items. The PROBLEM: Our recycle bins are nearly empty. I believe educating citizens, young and old are as

to what items are ACTUALLY recyclable is the first in creating a zero-waste community :)"

- Christopher C

## RPU CLEAN TECHNOLOGY FUNDING

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***For cleantech start-ups, what type of assistance would be most helpful? Discounted operational services, mentorship and networking opportunities, others?***

"While there are many types of assistance a young, clean energy company needs, if we have to pick just one, the answer is clear: CUSTOMERS. Why? Because customers can solve almost every other problem a young company has.

Let's think about this problem by grouping the challenges into categories. Admittedly, these are overly simplified groupings and are not intended to be comprehensive. But they help us generalize. And they cover 90%+ of the challenges seen in young companies time and again...

Product/Market Fit: [@Product/market fit](#) is making something your customers want. Sounds simple. But to do it well, especially when you start with nothing but an idea, is really, really hard. How is this related to customers? *Your customers are the ultimate arbiters of product/market fit.* Are your customers buying, and raving about, your product? Are they providing "pull" to your sales teams' "push"? Is the sales cycle getting progressively shorter, and cheaper? Only customers decide when you've achieved product/market fit. Of course, the desired end-state is customers buying tons of your product for as high a price as possible. But in the early stages before PMF, customers are arguably even more important. Engaged early customers tell you what they like/don't about a product. Even more crucially, if a startup asks the right questions and listens well, they find out what problem the customer is trying to solve. A startup then iterates on their product until it has the bare minimum features necessary to solve such a problem. Put differently, it is impossible to achieve PMF without customers, and it is equally impossible to become a successful company without PMF.

Resources: All startups - and young energy companies even more so - are in dire need of resources. This is often oversimplified to just financial capital. And yes, capital or funding is often the key and most scarce resource. But necessary resources also include testing facilities (for hardware), locations to pilot (or beta test, out of the lab) a device, people, office space, etc. With enough capital, a competent startup can usually find and pay for the necessary resources. But there's two problems with capital or equity funding. First, is that it's increasingly hard to come by ([@Custom Query](#)). As a corollary, you might not be able to raise any of it. And second, even if you do, it is likely to be highly dilutive. Meaning that the founders and employees are - all things equal - rewarded less for their blood, sweat and tears than had they not raised such

financing (or at least not had to raise as much). Know what addresses these problems? CUSTOMER REVENUE. Why? Because it's non-dilutive, provides you the cash to spend on all the other things you need, and highly engaged customers may even offer you some of the facilities described above (testing, pilot locations, or even referrals/relationships to potential employees, funders, or acquirers of your business). Moreover, with customer referrals and revenue, you will most definitely get a better valuation on any equity or debt financing than you would without such customers.

Business Model: @Business model is really a corollary of the two problems above. It gets at how you organize yourself to find, or execute on, product/market fit. And in a way that maximizes the returns to your company. Here again, your customers are the key stakeholder. If you know something about the industry, and you listen closely to customer feedback on your product, you might decide you should @White-label product. Or you should find a @Channel partner. Or you should outsource your manufacturing. Whatever. The possibilities are endless, if you're listening. It is rare that your customers will spell out your business model explicitly. And any one of them - just taken alone - might be wrong. But with enough active listening, inference, and multiple data points, they can and should guide you to the appropriate business model. Granted, it is in #3 where industry expertise, team, network, and the other resources mentioned in the question are most helpful. But given that customers alone can address essentially 2.5/3 biggest hurdles faced by every clean energy startup I've seen, well that's why they're #1

This is why - if you're an incubator, or an investor, or a service provider - almost all assistance (e.g., networking, operational services, mentoring) is helpful. But customers are the true trump card. Early, engaged customers who help a startup get to #s 1-3 above is without a doubt the most important assistance available."

- Josh Gould, Career in Clean Energy Technologies

***Has your city successfully created a cleantech Incubator and how was it funded?***

"There are clean tech incubators in my area (Silicon Valley/SF): The Cleantech Open. The leaderships team profiles are here: Leadership - As you may suspect they were funded through the connections of the founders, The management team has a track record in business and financial management, sales and venture capital."

- Mike Mian, Founding Member of Densa

***What are some assistance programs or resources for cleantech start-ups?***

"You can go to you local small business association (SBA) for some help. There are various government small business research grants available, such as the SBIR

and STTR grant and award programs run by various government departments that could help you get kick started: SBIR | SBIR.gov”

- Mike Mian, Founding Member of Densa

## ECOBUSINESS ZONE

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***Do you think businesses should be provided with financial incentives to relocate to an Eco-Business Zone?***

“By whom? These schemes when operated by the government are rarely effective and funded by taxpayers' money. The natural version is that companies developing in these zones fund the incentive and I think that makes sense. Incentives are okay unless they are offered by someone with nothing to lose.”

- James Coakes

“Why must “funding” be in every topic of this ‘idea sharing site’? Rather, start with the idea, from the heart, because it is a good direction for the city and it's people... like “developing an Eco Business Zone”. If the idea catches fire, you will know it and the funding will present itself.”

- Jane B

## BUY LOCAL INITIATIVE

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***Does your city offered incentives for buying local?***

“There's a Shop Small initiative in Downtwn Daytona Beach, but there aren't any incentives. It's something to consider.”

- Jenna Kranz, Owner at Happy-Go-Lucky Foods

“Austin is well known for many things, to include its passionate support for buying local. There are several programs that promote the concept but I have no hard data as to its success. My gut tells me the discount card that businesses can buy that give you credible discounts, probably works the best. But there is no science behind my suspicion.”

- Bob Olmstead, Business Maestro & Lifestyle Strategist

***What are some of the ways your city has supported local businesses?***

“My city is Fort Worth, Texas and we have a publication called Ft. Worth Weekly that is free for readers and can be picked up at local stores and restaurants. FWW often does stories on local businesses and causes.”



- Matthew Perez



# APPENDIX C: GHG INVENTORY RESULTS





# City of Riverside Greenhouse Gas Emissions Inventory Analysis

Including Recommendations for Local Climate Action Plan Baseline Inventory

## Overview

The City of Riverside (City) greenhouse gas (GHG) inventory serves multiple purposes. It quantifies the GHG emissions resulting from activities taking place throughout the City of Riverside and caused by the City's residents, businesses, and local government (i.e., Community Inventory), as well as emissions attributed to local government operations only (i.e., Municipal Inventory). The inventory provides an understanding of where GHG emissions are originating, and creates an emissions baseline against which the City can set emissions reduction targets and measure future progress. The inventory further allows the City to develop effective policies, strategies, and programs to reduce emissions.

The City previously developed GHG inventories for the calendar years 2007 and 2010 that provide a breakdown of GHG emissions by sector to illustrate the contribution of various sources in the community and in municipal operations. The 2007 and 2010 inventories were developed using ICLEI's Clean Air and Climate Protection (CACP) Software and various emissions accounting protocols for assessing emissions from the community and from municipal operations.

The Community Inventory encompasses the GHG emissions resulting from activities taking place within the City's boundaries, where the local government has jurisdictional authority, in addition to some activities taking place outside the City boundaries that support activities in the jurisdiction (for example, solid waste sent to landfill areas outside the boundaries). The Community GHG Inventory includes emissions from the following sectors: residential energy, commercial/industrial energy, transportation, solid waste, and wastewater. The City's Municipal GHG Inventory includes emissions from municipal sources including buildings and facilities, fleet vehicles, streetlights, water conveyance, wastewater treatment, airport operations, solid waste disposal, employee commuting, and municipally-owned power generation.

Over the past 3 years, the City has been participating in the Subregional Climate Action Plan project led by the Western Riverside Council of Governments (WRCOG), whereby Riverside and 11 additional local jurisdictions prepared baseline inventories to quantify GHG emissions resulting from the community and government operations. 2010 was chosen as the inventory base year for 10 of the 12 participating jurisdictions within the WRCOG subregion, including the City of Riverside.

As of April 2014, the City is embarking on its own effort to develop a Climate Action Plan that, while consistent with the WRCOG Subregional Climate Action Plan, is customized to the specific needs of the City and designed to be integrated with the many planning projects that are currently underway in the City. This document provides an analysis of the existing 2007 and 2010 GHG inventories, and provides recommendations for their use in the locally-focused City of Riverside Climate Action Plan.

This document also forecasts future emissions using growth factors for population, households, motor vehicles, and job growth that are consistent with the current Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) being developed for the County. In addition, GHG reduction targets for future years (2020 and 2035) are established based on regulatory guidance and best practice established by other local jurisdictions across California, including those participating in the WRCOG Subregional Climate Action Plan.

## Community Inventory

The emission sources and activities chosen for inclusion in the City of Riverside Community Inventory are based on the reporting framework for local governments developed by ICLEI in their *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. As such, emissions in the Community Inventory include those that derive from sources located within the jurisdiction and from activities by community members for which the local government has significant influence to mitigate over time. This includes activities taking place within the City’s geopolitical boundary where the local government has jurisdictional authority, as well as community-related activities taking place outside of City limits that are attributable to community activities (e.g., landfill waste from City residents). Emissions from sources not subject to significant influence by the community were not included within the inventory, such as the upstream impacts of materials used by the community, since the local government has limited means to influence material uses and consumption in the community.

The Community Inventory includes emissions from residential, commercial, and industrial activities, as well as municipal operations, broken into 4 sectors: Residential, Commercial/Industrial, Transportation, and Solid Waste. Results are further broken down by energy source (e.g., electricity) and solid waste composition (e.g., paper products).

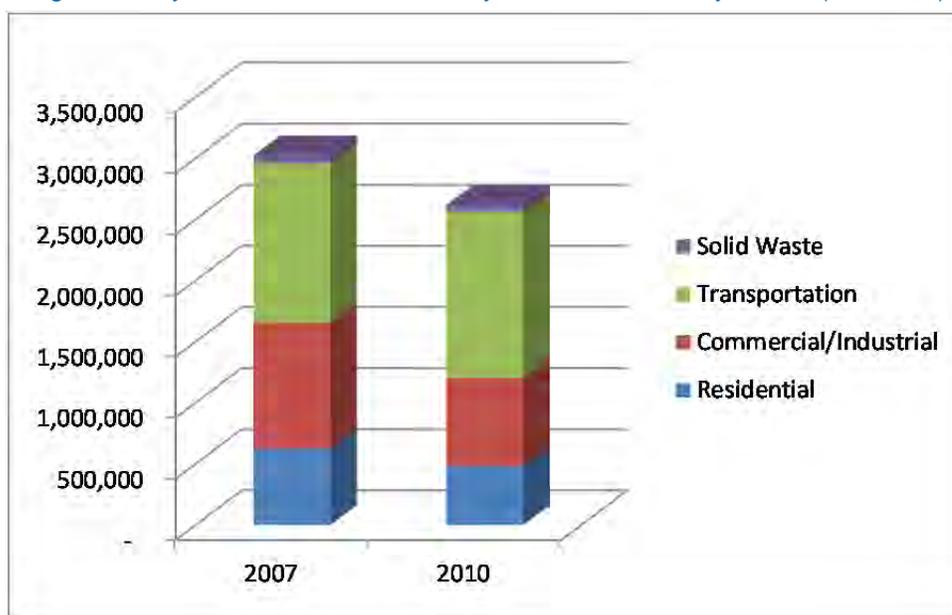
The results for the 2007 and 2010 GHG Inventories are summarized in [Table 1](#) and [Figure 1](#). Total community emissions in 2007 were 3,024,066 metric tons (MT) of carbon dioxide equivalent (CO<sub>2</sub>e<sup>1</sup>) and 2,617,540 MT CO<sub>2</sub>e in 2010. Transportation is the biggest contributor to community emissions, followed by Commercial/Industrial operations, Residential activities, and Solid Waste disposal to landfill.

**Table 1: City of Riverside – Community GHG Emissions by Sector (MT CO<sub>2</sub>e)**

Emission Sector	2007 Baseline	2010	% Change
Residential	626,136	481,903	-23.0%
Commercial/Industrial	1,028,804	722,321	-29.8%
Transportation	1,301,784	1,358,647	4.4%
Solid Waste Generation	67,342	54,669	-18.8%
<b>ALL</b>	<b>3,024,066</b>	<b>2,617,540</b>	<b>-13.4%</b>

<sup>1</sup> Carbon dioxide equivalent (CO<sub>2</sub>e) includes carbon dioxide, methane (CH<sub>4</sub> and/or nitrous oxide (N<sub>2</sub>O).

Figure 1: City of Riverside – Community GHG Emissions by Sector (MT CO<sub>2</sub>e)



Between 2007 and 2010, community emissions decreased by approximately 13.4 percent, with 3 of the 4 sectors experiencing a decrease. Only transportation emissions increased. The primary reason for the large drop in Residential and Commercial/Industrial emissions from 2007 to 2010 was a change in the carbon content of the City’s electricity portfolio, as supplied by municipally-owned Riverside Public Utilities. The underlying reason for this is described in more detail in the following section on the Municipal GHG Inventory. The City’s residential and commercial/industrial communities also used less energy over this period, likely the result of the economic downturn experienced over the period along with the City’s ongoing energy efficiency and renewable energy programs. Solid waste emissions decreased slightly due to a higher percentage of the City’s waste being diverted from the landfill (i.e., increased recycling).

## Municipal Inventory

Emissions from Riverside municipal operations are included in the Community Inventory, but a separate Municipal Inventory is provided so that the City has the detail needed to target reductions in emissions from municipal operations. The emission sources and activities included in the City of Riverside Municipal Inventory are based on the Local Government Operations Protocol (LGOP), which was developed by the California Air Resources Board (CARB), the California Climate Action Registry (CCAR), and Local Governments for Sustainability (ICLEI), in collaboration with The Climate Registry. The LGOP provides a standardized set of guidelines and methodologies to assist local governments with quantifying and reporting GHG emissions associated with their operations. ICLEI’s CACP Software was used to generate GHG emissions estimates based on conversion factors for electricity and natural gas consumption, as well as conversion factors for liquid fuel consumption and modeling of emissions from solid waste disposed in landfills.

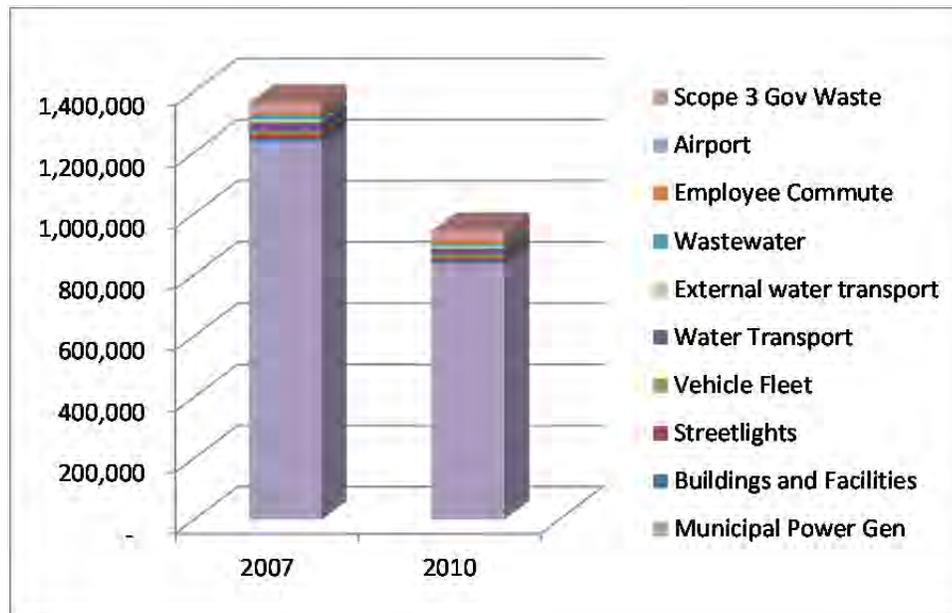
The Municipal Inventory includes emissions from all GHG sources under the direct control of the City, including buildings and facilities, streetlights, fleet vehicles, water conveyance (both within the City boundary and upstream of the City), wastewater treatment, the City-operated airport, government-generated solid waste, employee commuting, and most significantly, emissions from municipal power generation by Riverside Public Utilities (RPU), which is a city-owned local electric utility and water utility with more than 107,000 metered electric customers and 64,000 metered water customers.

As shown in Table 2, municipal operations were responsible for approximately 1,362,587 MT CO<sub>2</sub>e in 2007 and 943,466 MT CO<sub>2</sub>e in 2010, representing a drop of approximately 31% over that period. Indirect GHG emissions associated with RPU operations have an outsized impact on the Municipal Inventory, representing approximately 91% of the 2007 inventory and 89% of the 2010 inventory. Figure 2 shows graphically how much influence RPU has on municipal emissions.

Table 2: City of Riverside – Municipal GHG Emissions by Sector (MT CO<sub>2</sub>e)

Sector	2007	2010	% change
Buildings and Facilities	12,734	10,939	-14.1%
Streetlights	13,523	10,155	-24.9%
Vehicle Fleet	7,700	8,402	9.1%
Water Transport	29,167	19,471	-33.2%
External water transport	11,227	8,164	-27.3%
Wastewater	12,717	7,927	-37.7%
Employee Commute	7,413	10,045	35.5%
Airport	304	293	-3.6%
Gov't Solid Waste	32,465	30,900	-4.8%
Municipal Power Gen	1,235,337	837,170	-32.2%
	<b>1,362,587</b>	<b>943,466</b>	<b>-30.8%</b>

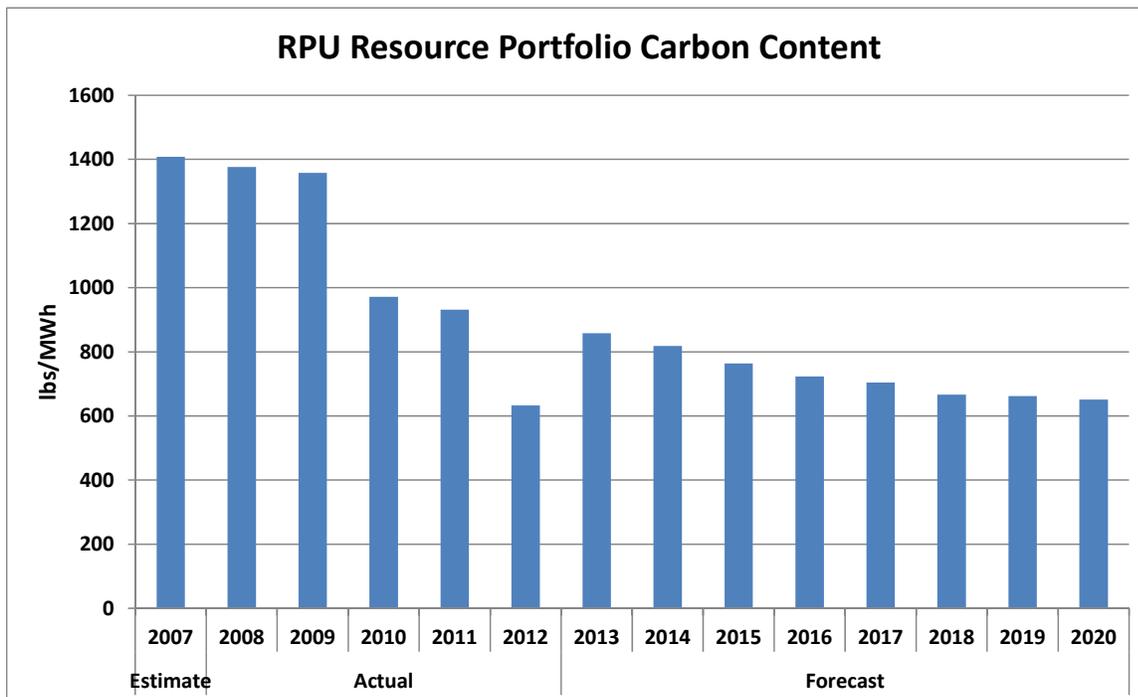
Figure 2: City of Riverside – Municipal GHG Emissions by Sector (MT CO<sub>2</sub>e)



Emissions associated with RPU fell by more than 32% from 2007 to 2010, primarily due to a shift from purchasing coal-produced electricity to more low-carbon electricity sources over that time period. Figure 2 shows how the carbon content of RPU's electricity changed between 2007 and 2010. Prior to 2007, RPU began positioning itself to achieve significant reductions in GHG emissions associated with its electricity portfolio by shifting its resource mix from carbon intensive sources to renewable sources. In 2003, RPU was one of the first electric utilities in California to voluntarily procure renewable resources (the Salton Sea

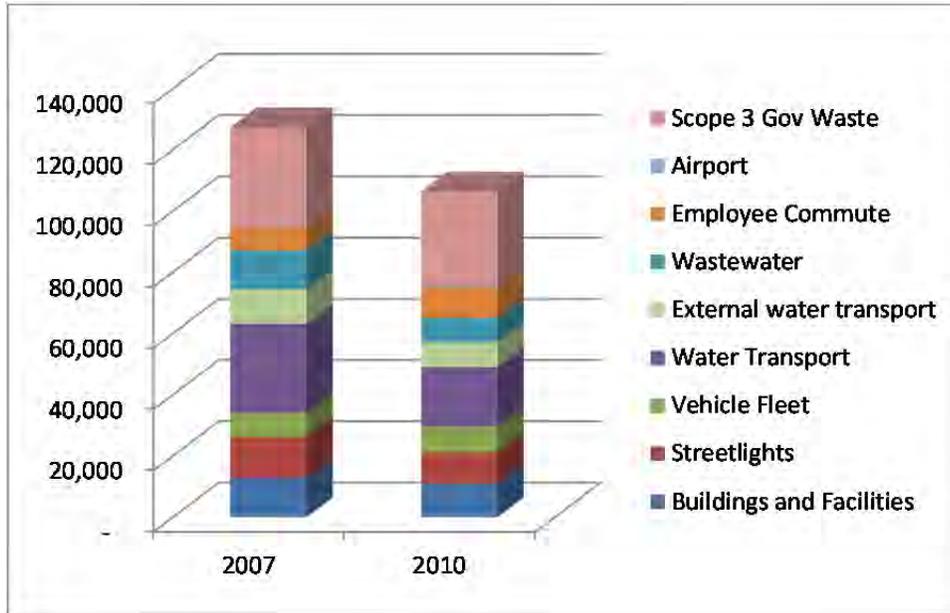
geothermal resource in Imperial Valley and the Wintec wind resource in Palm Springs) to meet a portion of Riverside’s electric power needs. This commitment accelerated in 2005 when RPU amended its contract with Salton Sea geothermal resource to more than double its procurement of renewable energy. To further its commitment to clean power, RPU terminated its power purchase agreement with Deseret Generation and Transmission Cooperative for Hunter and Bonanza coal generating plants in Utah at the end of 2009. The impact of these changes in the City’s electricity portfolio, which occurred primarily in the 2009-2010 timeframe, is clearly observed in [Table 2](#) and [Figure 2](#). These changes in Riverside’s electricity portfolio are also the primary reason that community-wide emissions fell by more than 13% from 2007 to 2010, as illustrated in [Table 1](#) and [Figure 1](#).

Figure 2: City of Riverside Public Utilities – Portfolio Carbon Content Over Time



Since emissions associated with the electricity provided by RPU represent such a large percentage of emissions from municipal operations, it is useful to consider the Municipal Inventory excluding the RPU-related emissions, to provide a clearer picture of the relative contributions from other municipal sectors. [Figure 3](#) shows the 2007 and 2010 Municipal Inventories without the RPU-related emissions. The primary remaining sources are government-generated Solid Waste and Water Transport, followed by roughly equal contributions from Buildings and Facilities, Streetlights, and Employee Commuting, Vehicle Fleet, and Wastewater Treatment. The Airport provides a relatively small contribution to GHG emissions.

Figure 3: City of Riverside – Municipal GHG Emissions by Sector (MT CO<sub>2</sub>e), Excluding RPU



## Emissions Baseline

2007 represents the GHG emissions baseline year for the City of Riverside Climate Action Plan. Selecting 2007 as the baseline year recognizes important accomplishments by the City in reducing community-wide GHG emissions, most notably the shift from coal-generated electricity to renewable sources, and ensures that those accomplishments are accounted for in assessing progress toward future goals. Emissions associated with RPU (Municipal Power Generation) fell more than 32% between 2007 and 2010, primarily due to the shift from coal-produced electricity to more low-carbon electricity sources over that time period. The resulting impact on the wider community was a 23% reduction in Residential emissions and a 30% reduction in Commercial/Industrial emissions. Overall, community-wide emissions fell by 13% from 2007 to 2010. Use of a 2007 baseline year in the City’s CAP captures these important reductions in GHG emissions that were the direct result of City policy and related actions.

Another factor influencing the selection of 2007 as the baseline year is the established set of standard elements for a “qualified” climate action plan (or GHG reduction strategy) that can be used under the streamlining provisions of CEQA Guidelines Section §15183.5, to streamline the analysis of GHG emissions. Those standard elements include a provision that the baseline inventory should include one complete calendar year of data for 2008 or earlier (see Section 2.7.2 of the CEQA Guidelines, under Standard Elements of a GHG Reduction Strategy for further guidance). Additional regulatory guidance from CARB,<sup>2</sup> and the precedent set by dozens if not hundreds of communities across California, has established the years 2005 through 2008 as the most commonly used baseline years for community-wide climate action plans and as the basis for setting a significance threshold for CEQA.

<sup>2</sup> In its Climate Change Scoping Plan of September 2008, CARB recommends that local governments adopt a GHG reduction target consistent with the State’s commitment to reach 1990 levels by 2020. This was identified as equivalent to 15% below “current” levels at the time of writing (2008), and is generally interpreted as including the years 2005 through 2008.

# APPENDIX D: MEASURE DESCRIPTIONS AND CALCULATION DETAILS



This appendix summarizes the methodology for quantifying greenhouse gas (GHG) reductions resulting from implementing the Climate Action Plan (CAP) measures. Each quantified reduction measure is presented below with a description of its calculation methodology, progress indicators, and relevant sources or reference documents.

## Statewide Reductions

For climate action planning purposes, baseline GHG emissions are projected under a business-as-usual scenario to a future year, assuming that conditions and consumption rates occurring in the baseline year would continue. However, even without local climate action planning, statewide measures and regulations would affect future business-as-usual GHG emissions.

Estimates of the local effect of statewide reduction measures should be conservative to avoid overestimating GHG reductions. In many cases, the regulation may not have the same effectiveness at a particular local level as it does on a statewide level. Furthermore, some regulations that affect certain industries or practices may occur more frequently in one jurisdiction than another and therefore various levels of statewide reductions would be anticipated in each jurisdiction. Therefore, the following statewide reduction measures were selected to provide reasonably foreseeable emissions reductions attributable to the participating jurisdictions at a local level.

### Measure SR-1: Renewable Portfolio Standard

Executive Order S-21-09 established a statewide renewable energy portfolio target of 33% by year 2020. Therefore, California utilities will increase their renewable portfolio standard (RPS) to at least 33% by year 2020. The City has committed to surpassing this goal to increase its RPS to 40% by 2035. The GHG reductions associated with the RPS were estimated by first calculating the projected electricity emissions using projected electricity consumption and the baseline year (i.e., 2010) emissions factor. Then, the projected electricity emissions were calculated using the projected electricity consumption and the horizon year (i.e., 2020 and 2035) emissions factor. The difference in these two scenarios is the resulting emissions reduction from further implementation of the RPS.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
33% of electricity is generated from RPS-compliant, zero-emissions sources by 2020; 40% of electricity is generated from RPS-compliant, zero-emissions sources by 2035	2020 – 363,096 MT CO <sub>2</sub> e/yr 2035 – 372,020 MT CO <sub>2</sub> e/yr	Riverside Public Utility electricity emissions factors

## **Measure SR-2: 2013 California Building Energy Efficiency Standards (Title 24, Part 6)**

This measure estimates the likely energy reductions that will occur in new construction as a result of the State's energy efficiency building standards as codified in the Code of Regulations, Title 24, Part 6 (referred to herein as Title 24). The regional emissions projections are based on a business-as-usual (BAU) scenario, in which current energy consumption rates continue unchanged into the future. However, the 2013 Title 24 revisions took effect in 2014 and will result in lower levels of energy consumption in new construction than that estimated under the BAU emissions projection scenario. It is estimated that new residential construction will be 15% more efficient than those buildings constructed under the 2008 Title 24 standards. Similarly, new commercial construction is estimated to be 25% more efficient.

The CAPCOA report "*Quantifying Greenhouse Gas Mitigation Measures*" provides a methodology for calculating the reduction in energy-related emissions (i.e., electricity and natural gas) resulting from new construction built to energy efficiency standards above the previous (2008) Title 24 energy code. The methodology calculates the reduction in electricity and natural gas consumption for each percent increase over current Title 24 standards per residential and non-residential building type and climate zone. Baseline electricity and natural gas consumption levels for residential and non-residential construction were established using the CEC's Residential Appliance Saturation Survey data and the Commercial End Use Survey data for Forecast Climate Zone 10. Mitigated levels of electricity and natural gas consumption levels per building type were calculated using the CAPCOA methodology. The measure assumes that all new buildings constructed after January 2014 will exceed 2008 Title 24 energy standards by 15% in residential buildings and 25% in commercial buildings. To quantify 2035 emissions reductions, this measure assumes that all new residential buildings will be zero net energy (ZNE) by 2020, and all new commercial buildings will be ZNE by 2030, consistent with the State's goal as described in the California Energy Efficiency Strategic Plan (CEESP), which was published in 2008.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
<p>New construction complies with 2013 Title 24, Part 6 of California Code of Regulations</p>	<p>2020 - 19,156 MT CO<sub>2</sub>e/yr 2035 - 62,927 MT CO<sub>2</sub>e/yr</p>	<p>Background Information, 2013 Building Energy Efficiency Standards &lt; <a href="http://www.energy.ca.gov/title24/2013standards/prerulemaking/background.html">http://www.energy.ca.gov/title24/2013standards/prerulemaking/background.html</a>&gt;</p> <p>Frequently asked Questions, Building Energy Efficiency Standards, California Energy Commission &lt; <a href="http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2013_Building_Energy_Efficiency_Standards_FAQ.pdf">www.energy.ca.gov/title24/2013standards/rulemaking/documents/2013_Building_Energy_Efficiency_Standards_FAQ.pdf</a>&gt;</p> <p>Baseline Energy Consumption: Commercial End Use Survey, CEC, 2006</p> <p>Baseline Energy Consumption: Residential Appliance Saturation Survey, CEC, 2010</p> <p>California Energy Efficiency Strategic Plan (CEESP), CPUC, 2008.</p> <p>CAPCOA</p> <p>Riverside Public Utility electricity emissions factors</p>

### Measure SR-3: HERO Residential Program

This measure estimates the reduction in electricity-related emissions resulting from installation of grid connected photovoltaic (PV) systems in residential uses. The measure is based on past solar PV installation data and estimated future installations (through 2035) from the HERO program administrator. Total annual energy savings in kWh resulting from installed solar PV capacity was provided for each of the WRCOG CAP participating jurisdictions for 2012 (approximately 50.5 million kWh/yr) and the proportional share of the total solar PV installations for Riverside was calculated based on program participation in 2012, and then applied to the total 2020 and 2035 projected solar PV installations anticipated to occur by the HERO program administrator. It is anticipated that residential solar PV installations through the HERO program will total approximately 458 million kWh/yr in 2020 and 859 million kWh/yr in 2035. Of this total, Riverside was estimated to account for approximately 105 million kWh/yr in 2020 and 196 million kWh/yr in 2035, assuming the same proportional share of installations per city in 2020 and 2035 as was seen in 2012. Riverside’s estimated kWh/yr generation was then multiplied by RPU’s 2020 and 2035 emissions factors to calculate total emissions reductions that would occur as a result of grid electricity use being offset by on-site solar PV systems.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Total electricity generated annually by residential PV capacity: 2020 – 104,700,000 kWh 2035 – 196,414,342 kWh	2020 - 38,681 MT CO <sub>2</sub> e/yr 2035 - 64,964 MT CO <sub>2</sub> e/yr	HERO program administrator; Riverside Public Utility electricity emissions factors

## **Measure SR-4: HERO Commercial Program**

This measure estimates the reduction in electricity-related emissions resulting from installation of grid connected photovoltaic (PV) systems on non-residential buildings. The measure uses National Renewable Energy Laboratory (NREL) solar insolation data specific to the cities' geographic location and climate to calculate the electricity generation potential of a given solar PV system size.

Unlike the HERO Residential Program, the Commercial Program did not have historic participation data upon which to base future participation estimates. Given the relatively short implementation timeframe (i.e., 2015-2020) and the recent development of the Commercial Program in general, this measure conservatively assumed a low level of participation for 2020 and more aggressive assumptions for 2035, based on estimated for future program funding. This measure assumes that approximately 7.5 MW of solar PV will be installed on non-residential properties in Riverside by 2020 with 130 MW installed by 2035. Based on the NREL solar power assumptions for Western Riverside County, the new solar installations are estimated to provide approximately 14,928 MWh/yr of clean electricity in 2020 and 260,850 MWh/yr in 2035.

The measure estimated program participation based on the proportional commercial building space available in Riverside, compared to other participating cities. Total square footage for building use types (i.e., office, warehouse, retail) was generated by running a Co-Star real estate data model for Riverside, and the other participating cities, for the baseline year (i.e., 2010). The relative proportion of commercial space was then calculated and applied to the total estimated installation capacity to determine the total installation capacity estimates for Riverside. The total installed capacity was multiplied by NREL solar insolation data to calculate total kWh of electricity of generation potential. This total was then multiplied by the appropriate utility company electricity emissions factors to calculate the GHG emissions that would be offset by installation of the assumed PV systems.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
<p>Total installed commercial PV capacity: 2020 – 7.5 MW 2035 – 130 MW</p>	<p>2020 - 6,618 MT CO<sub>2</sub>e/yr 2035 - 86,276 MT CO<sub>2</sub>e/yr</p>	<p>Solar Insolation: National Renewable Energy Laboratory Renewable Resource Data Center, 2011</p> <p>Riverside Public Utility electricity emissions factors</p> <p>Estimates for program funding and participation from HERO Commercial program administrators</p>

### Measure SR-6: Pavley and Low Carbon Fuel Standard

The primary means to evaluate the effectiveness of the Pavley and LCFS program is through the use of the EMFAC 2011 emissions analysis program. Fehr & Peers ran EMFAC 2011 for Riverside County, which provided a Countywide GHG reduction associated with these programs. The reduction percentage was then applied to the City of Riverside. The reduction percentage equated to 27% when applied to 2020 emissions and approximately 30% when applied to 2035 emissions.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Statewide implementation of Pavley fuel economy and LCFS Fuel Standards	2020- 429,447 MT CO <sub>2</sub> e/yr 2035- 694,841 MT CO <sub>2</sub> e/yr	EMFAC 2011 estimate for Riverside County

### Measure SR-7: Metrolink Expansion

The Perris Valley Line (PVL) EIR provides an estimate of the overall GHG reduction associated with the project. These reductions were then proportioned out to the City of Riverside based on the likely utilization of this new service.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Construction of the Perris Valley Line	2020- 9,045 MT CO <sub>2</sub> e/yr 2035- 11,289 MT CO <sub>2</sub> e/yr	Perris Valley Line EIR

### Measure SR-8: Express Lanes

The Riverside County Transportation Commission (RCTC) is developing a comprehensive network of toll lanes on I-15 and SR-91. The primary benefit of these lanes will be a reduction in congestion for travelers along these roadways. The CAPCOA document estimates that the maximum benefit of congestion reduction measures is 15 percent, which was discounted to reflect the percentage of regional travel from the City which is anticipated to use these facilities.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Completion of Express Lanes on I-15 and SR-91	2020- 23,858 MT CO <sub>2</sub> e/yr 2035- 29,779 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure SR-9: Congestion Pricing

SCAG is evaluating regional congestion pricing strategies throughout the SCAG Region, which would apply a variety of techniques to divert single-occupant vehicles to carpooling and other non-SOV modes. The CAPCOA document estimates the maximum effectiveness of these regional strategies as 8 percent, which were discounted to reflect the amount of VMT associated with commuters who would be affected by these regional strategies.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Implementation of Regional Congestion Pricing Program	2020- 1,272 MT CO <sub>2</sub> e/yr 2035- 1,588 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure SR-10: Telecommuting

Regional measures related to telecommuting have the potential to reduce single-occupant vehicle trips, in addition to other regional and local travel demand management measures. The effectiveness is estimated based on data provided by the CAPCOA manual, which is discounted to reflect the anticipated level of participation. The estimated level of regional VMT reduction is 2 percent, which is the lower end of VMT reduction encountered in regional TDM measures.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Implementation of Regional Telecommuting Measures by SCAG, RCTC, WRCOG, and other agencies	2020- 15,905 MT CO <sub>2</sub> e/yr 2035- 19,853 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure SR-11: Goods Movement

Goods movement measures include the construction of grade separations, freeway improvements, and truck climbing lanes to reduce congestion associated with freight vehicles. The estimated benefits of these strategies are estimated to be 0.5%, based on the application of similar strategies identified by the CAPCOA document. This estimate of Goods Movement VMT reduction is also consistent with estimates in the SCAG SCS/RTP document.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Implementation of freight bottleneck improvements by SCAG, RCTC, Riverside, County, and other agencies	2020- 8,893 MT CO <sub>2</sub> e/yr 2035- 10,811 MT CO <sub>2</sub> e/yr	CAPCOA, SCAG 2012 SCS/RTP

### Measure SR-12: Electric Vehicle Plan and Infrastructure

SCAG is evaluating regional and sub-regional strategies to encourage the use of electric vehicles. These strategies include the deployment of charging facilities and updating building codes to allow for charging in residential and commercial facilities. The incremental reduction in VMT is assumed to be 1 percent, based on estimated reductions provided by the SCAG SCS/RTP and the CAPCOA document.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Completion of the electric vehicle plan and deployment of regional charging facilities	2020- 31,811 MT CO <sub>2</sub> e/yr 2035- 39,705 MT CO <sub>2</sub> e/yr	CAPCOA, SCAG 2012 SCS/RTP

### Measure SR-13: Construction and Demolition Waste Diversion

This measure assumes communitywide compliance with the Stat’s CalGreen Code requirements for 50% of construction and demolition (C&D) waste to be diverted from landfills. An inventory of the community’s organic waste was created using Cal Recycle waste volume and characterization data. Using the first-order decay methodology from the 2006 IPCC guidelines, fugitive methane emissions from the organic landfill waste were calculated for base-case and mitigated scenarios. This measure assumes that 90% of new and applicable retrofit projects will divert 50% of their generated C&D waste from landfills by 2020 and 75% of C&D waste by 3025. This measure would apply to GHG emissions associated with new waste generated and would not apply to waste in place disposed prior to CAP implementation.

Riverside’s waste inventory was developed using communitywide waste disposal data collected from CalRecycle for the years 1995-2012. These historical disposal rates (i.e., waste tons disposed per population) were projected to 2020 using estimated population growth rates. The 2008 State Waste Characterization Study was used to estimate the volume of communitywide waste by various waste categories (e.g., lumber, food scraps, grass clippings). It was assumed that the City’s waste composition is comparable to that of the statewide average (as represented in the State Waste Characterization Study). The communitywide total 2020 and 2035 estimated tonnages were then multiplied by the proportional share of each appropriate waste category in the State’s waste characterization study, and multiplied by the participation rates shown in the Progress Indicator table below to determine the total solid waste to be diverted from implementation of this measure. The IPCC’s first-order decay methodology was then applied to calculate the total GHG emissions associated with that volume of waste to determine the measure’s GHG reduction.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
50% of C&D waste is diverted from 90% of applicable new construction/renovation projects by 2020 and 75% by 2035	2020 - 1,789 MT CO <sub>2</sub> e/yr 2035 - 4,865 MT CO <sub>2</sub> e/yr	Historic Waste Disposal Tonnage Data by City, CalRecycle California 2008 Statewide Waste Characterization Study, CalRecycle IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5 Chapter 3

## Energy Measures

### Measure E-1: Traffic and Street Lights

This measure estimates the reduction in electricity-related emissions resulting from installation of high-efficiency traffic and street light bulbs. The measure assumed that all existing street lights were conventional high-pressure sodium cobra head lights, which would be retrofitted to LED technology. It was also assumed that the street lighting retrofit would achieve a 59% electricity reduction in street light energy use, based on a similar retrofit program in Los Angeles. The measures assumed that all traffic lights used conventional incandescent bulbs, which would be retrofitted to LED or similarly efficient technology. While energy savings of up to 90% have been reported by cities throughout the county, the measure conservatively assumed 60% savings from the retrofits.

RPU’s municipal energy use report was used to determine the baseline year (i.e., 2010) energy use for street lights and traffic signals. The measure used a baseline and mitigated scenario to calculate emissions reductions from retrofit improvements. In the baseline scenario, street and traffic light electricity use would remain constant (i.e., no efficiency upgrades made, and no expansion of the 2010 street light system). The mitigated scenario represents a 100% street light retrofit that achieves 59% electricity savings in street lights and 60% electricity savings in traffic lights from the baseline scenario. The difference in these two scenarios (i.e., baseline - mitigated) was multiplied by the applicable utility companies’ estimated 2020 and 2035 electricity emissions factor to calculate the total GHG emissions to be offset by implementation of this measure.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Riverside saves 12.6 million kWh/yr by 2035	2020 - 549 MT CO <sub>2</sub> e/yr 2035 - 4,153 MT CO <sub>2</sub> e/yr	Street Light Energy Reduction Case Study: <a href="http://www.mwcog.org/uploads/committee_documents/11fWV9e20111024153039.pdf">http://www.mwcog.org/uploads/committee_documents/11fWV9e20111024153039.pdf</a>  Traffic Light Energy Reduction Case Studies: <a href="http://www.lrc.rpi.edu/programs/transportation/LED/pdf/review.pdf">http://www.lrc.rpi.edu/programs/transportation/LED/pdf/review.pdf</a>  Riverside Public Utility electricity emissions factors

## Measure E-2: Shade Trees

This measure is based on estimates of the energy savings associated with building shade trees planted next to single- and multi-family residential units. The measure assumes that an equal number of shade trees will be planted from 2015 through 2020 and 2035 until the total number of trees shown in the progress indicator table below is achieved. The measure also assumes that the trees are 10-years old at planting, and that each year their ability to offset electricity use (through increased shade generation) also increases.

The measure calculated the total annual electricity savings in 2020 and 2035 associated with building shade trees based on their relative age from the planting year (i.e., all trees are 10-years old at planting; trees planted in 2015 offset more electricity by 2020 than those planted in 2019). Total electricity savings were then multiplied by the relevant utility companies’ estimated 2020 and 2035 electricity emissions factor to calculate the total GHG emissions to be avoided by implementation of this measure.

Based on the cities’ participation levels, it was assumed Riverside would achieve 1 shade tree per new residential unit through incentive-based planting programs.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Plant 6,000 new shade trees by 2020 and 18,800 new shade trees by 2035	2020 - 96 MT CO <sub>2</sub> e/yr 2035 – 841 MT CO <sub>2</sub> e/yr	Riverside Public Utility electricity emissions factors

### Measure SR-3: Utility Programs

Energy reduction estimates associated with implementation of municipally-owned utility company efficiency improvement programs are documented in *Energy Efficiency in California’s Public Power Sector: A 2013 Status Report*. This report provides annual kWh savings estimates for the various utility programs of each municipal utility company. This measure assumed that the energy savings reported for FY 2012 would continue to increase by 2020. The measure used the kWh/yr savings from this report and multiplied by the applicable utility company’s estimated 2020 emissions factor to calculate GHG emissions reductions.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
RPU saves 87.2 million kWh/yr by 2020 and 131.5 million kWh/yr by 2035	2020 - 32,197 MT CO <sub>2</sub> e/yr 2035 - 43,491 MT CO <sub>2</sub> e/yr	Energy Efficiency in California’s Public Power Sector: A 2013 Status Report, pgs. 58 and 157 Riverside Public Utility electricity emissions factors

### Measure T-1: Bicycle Infrastructure Improvement

Bicycle infrastructure includes off-street bicycle pathways and trails (Class I facilities) and on-street bicycle lanes (Class II). The effectiveness of this measure is based on the percentage increase in the number of facilities, which is estimated to be 1% for the City of Riverside, derived from data provided by CAPCOA.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Percentage increase in the lane miles of bicycle facilities per jurisdiction per year.	2020- 15,905 MT CO <sub>2</sub> e/yr 2035- 20,839 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-2: Bicycle Parking

Bicycle parking includes bicycle racks, bicycle lockers, and other types of public and private bicycle parking facilities. The CAPCOA document notes a maximum effectiveness for this strategy as 0.625 percent, which is discounted to reflect likely levels of participation.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of new development projects which provide bicycle racks, lockers, or other bicycle storage facilities per year.	2020- 2,168 MT CO <sub>2</sub> e/yr 2035- 2,889 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-3: End of Trip Facilities

End of trip facilities incorporate showers, changing rooms, lockers, and other similar amenities which encourage employees to walk and bike to work. The maximum effectiveness of these strategies is less than 1 percent of VMT, which was discounted further based on anticipated levels of participation.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of new non-residential development projects which include any type of end of trip facility	2020- 1,119 MT CO <sub>2</sub> e/yr 2035- 1,491 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-4: Promotional Transportation Demand Management

Promotional travel demand management (TDM) refers to the practice of allocating, or having dedicated staff within an agency that are tasked with encouraging the formation of TDM programs by private employers. The maximum effectiveness of this strategy could be as much as 5 percent for a specific employment area, though the maximum citywide effectiveness is discounted based on the share of commute VMT as compared to total VMT and the anticipated level of participation.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of City employees or FTE equivalents who are allocated to promotional TDM activities	2020- 909 MT CO <sub>2</sub> e/yr 2035- 1,212 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-5: Traffic Signal Coordination

Traffic signal coordination reduces stops and idling at traffic signals by creating a more even traffic flow. The effectiveness of this measure is provided by CAPCOA, which notes that up to a 13 percent reduction in GHG emissions can occur within a corridor where this strategy has been deployed. This maximum level of effectiveness has been reduced to account for partial deployment on arterial roadways within the City of Riverside.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of new arterials within each City with signal coordination implemented	2020- 51,693 MT CO <sub>2</sub> e/yr 2035- 68,754 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-6: Density

Increasing density provides incentives to walk, bike, and use transit, which produce corresponding decreases in single occupancy vehicle usage. Density refers to the average number of residents and employees per square mile within a new development as compared to the Citywide average. The maximum effectiveness of this strategy is 9 percent which occurs with a doubling of density. The maximum effectiveness is discounted to reflect the anticipated level of participation and the application to only new development.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
<p>Population and employment density for all new development projects within the City, as compared to the Countywide average. Population and employment is measured as total service population per square mile of developable area.</p>	<p>2020- 1,259 MT CO<sub>2</sub>e/yr 2035- 1,887 MT CO<sub>2</sub>e/yr</p>	<p>CAPCOA</p>

### Measure T-7: Mixed-Use Development

Increasing the level of mixed-use within each City can provide more opportunities for walking, biking, and transit trips by allowing persons to satisfy multiple trip needs within one automobile trip. Similar to density, the maximum effectiveness is established by the CAPCOA document as 9 percent, which is discounted based on the level of participation and the application of the reduction to new development only.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Job to dwelling ratio for new development, as compared to the regional average.	2020- 769 MT CO <sub>2</sub> e/yr 2035- 1,153 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-8: Pedestrian Only Areas

A pedestrian only area refers to an instance in which a street or series of streets are closed to restrict vehicular traffic for either temporary purposes (such as a farmers market) or on a more permanent basis such as within the City of Riverside (Main Street Pedestrian Mall). Pedestrian only areas complement other land use and active transportation related strategies by encouraging pedestrian travel and can also encourage transit usage within select areas. The estimated range of reduction would range from 0.1 to 0.2 percent.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of new pedestrian only areas created within the City	2020- 1,399 MT CO <sub>2</sub> e/yr 2035- 1,824 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-9: Limited Parking Requirements for New Development

One primary reason for the high level of automobile usage within the City of Riverside is the availability of parking, which is often accessible without restriction or cost. Reducing the parking requirements in new development projects can encourage the use of alternative travel modes. The estimated effectiveness of this strategy would be 2.5 percent. The calculations assume a reduction of 25 percent in the parking requirements.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Updated zoning code or ordinance to reduce parking required at new development	2020- 17,842 MT CO <sub>2</sub> e/yr 2035- 24,757 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-10: Bus Rapid Transit Services

This strategy primarily refers to bus rapid transit (BRT) service. This strategy would be implemented as RTA developments BRT or other types of high frequency transit service within each City. The estimated effectiveness of this strategy is 0.2 percent, based on the guidance in CAPCOA.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of new high frequency transit routes within each city operated by RTA. RTA currently does not operate any high frequency transit routes in the City of Riverside	2020- 1,399 MT CO <sub>2</sub> e/yr 2035- 2,330 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-11: Voluntary Transportation Demand Management

Voluntary travel demand management (TDM) refers to instances in which employees implement strategies such as ride sharing, van pooling, and other related items absent regulatory requirements. The maximum effectiveness of a comprehensive TDM program is 25 percent, which is discounted based on the assumption that no more than no more than 5 percent of any employees within a City would participate. The effectiveness is further reduced to account for commute VMT being 25 percent of total Citywide VMT.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of employers in each City who have employment voluntary TDM measures	2020- 2,185 MT CO <sub>2</sub> e/yr 2035- 3,095 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-12: Accelerated Bike Plan Implementation

This measure relates to additional bicycle facilities which would be implemented beyond those identified in Measure T-1, based on the City’s adopted Bicycle Master Plan. The reduction factor was estimated to be no more than 25 percent of the maximum effectiveness of Measure T-1 to reduce the potential for overlap between the two measures.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Percentage of bicycle lanes in Bicycle Master Plan or Active Transportation Plan which have been implemented in Riverside.	2020- 3,496 MT CO <sub>2</sub> e/yr 2035- 4,951 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-13: Fixed Guideway Transit

This measure includes a fixed guideway or transit system for the City of Riverside, which is currently being evaluated by the City. The VMT reduction is assumed to be 1.5 percent, which is based on a doubling of the current transit mode split within the City.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Implementation of a streetcar system.	2020- 0 MT CO <sub>2</sub> e/yr 2035- 13,981 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-14: Neighborhood Electric Vehicle Programs

Neighborhood electric vehicles (NEV’s) provide an alternative means to address travel needs over short distances, outside of areas that can be comfortably served by biking and walking. The assumed level of reduction, based on direction from CAPCOA, is that the maximum feasible VMT reduction would be 0.5 percent. This reduction would occur as NEV facilities, including off-street trails, and on-street lanes, are added to the City’s transportation systems.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Miles of NEV facilities added within the City	2020- 3,496 MT CO <sub>2</sub> e/yr 2035- 4,660 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-15: Subsidized Transit

Currently, several agencies subsidize passes for transit users such as students, the elderly, and others. This measure relates to the provision of additional transit passes such that up to three percent of the City’s service population would receive these transit subsidies. The maximum effectiveness of this strategy would be 15 percent per person in terms of VMT reduction, which would then apply to up to 3 percent of the total service population.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Percent of City’s service population (residents, employees, and students) who receive subsidized transit passes	2020- 3,496 MT CO <sub>2</sub> e/yr 2035- 4,951 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-16: Bike Sharing

Bike sharing provides opportunities for short-term bicycle rentals, often for short-distance or one-way trips. Bike sharing stations can be operated through a variety of mechanisms such as through private, turn-key vendors, or through public/private partnerships. Bike sharing has previously been widely deployed in larger urban areas such as New York, Washington, and Chicago but is now more widely available in mid-size cities. Bike sharing stations are often provided at major destinations such as universities, transit stations, and adjacent to City facilities (City Hall, City offices, etc). Bike sharing could also be deployed in Downtown Riverside, given the high level of transit service and the mix of land uses within this area.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Bike sharing stations deployed throughout the City	2020- 210 MT CO <sub>2</sub> e/yr 2035- 280 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure T-17: Car Sharing

Car sharing involves short-term car rentals through vendors such as ZipCar, Car2Go, DriveNow, and others. Potential car sharing users in the City of Riverside could include:

- A person traveling to Downtown Riverside via the Vine Street Metrolink Station. Car sharing would allow that person to travel to their final destination without walking, biking, or using a transit connection.
- Faculty, staff, and students at one of the various educational institutions. UC Riverside currently offers car sharing through ZipCar on the campus.
- A Riverside resident who may lack access to a car for a variety of reasons.

Long-term access to car sharing has been shown to reduce the number of vehicles owned by a household, which further reduces vehicular travel.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Car sharing stations deployed in the City	2020- 2,797 MT CO <sub>2</sub> e/yr 2035- 3,728 MT CO <sub>2</sub> e/yr	CAPCOA

**Measure T-18: SB 743- Alternative to LOS**

SB 743 modifies the CEQA guidelines to eliminate level of service (LOS) and other delay measures as significance criteria under CEQA. Vehicle miles traveled (VMT) then replaces LOS as the primary transportation metric. The intent of SB 743 is to encourage infill development by reducing the likelihood that these types of projects will generate significant and unavoidable traffic impacts under CEQA. The use of traditional traffic study methodologies such as LOS, often lead to the identification of significant transportation impacts when applied to infill projects. With the implementation of SB 743, the City can further encourage infill development within established areas of the City, such as the Downtown.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Development of CEQA and traffic study guidelines to implement SB743 requirements	2020- 2,028 MT CO <sub>2</sub> e/yr 2035- 2,703 MT CO <sub>2</sub> e/yr	Assumed to be equivalent to the aggregate effectiveness of T-6 and T-7

### Measure T-18: Alternative Fuel and Vehicle Technology and Infrastructure

Alternative fueled vehicles such as electric cars and those powered by natural gas, fuel cells, and other technologies are becoming increasingly available to consumers. The City of Riverside currently operates one compressed natural gas (CNG) fueling facility and could potentially operate more facilities. These facilities, such as electric vehicle charging stations, could be provided within City parking garages, at City Hall, transit stations, and other locations.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Number of alternative fuel vehicle charging/filling stations	2020- 5,245 MT CO <sub>2</sub> e/yr 2035- 6.991 MT CO <sub>2</sub> e/yr	CAPCOA

### Measure W-1: Water Conservation and Efficiency

This measure quantifies the GHG reduction associated with SB X7-7, which was part of a California legislative package passed in 2009 that requires urban retail water suppliers to reduce per-capita water use by 10% from a baseline level by 2015, and to reduce per-capita water use by 20% by 2020. This measure estimates the reduction in electricity used to treat and convey potable water from its sources to customers in Riverside.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
Percent reduction in water consumption	2020- 10,748 MT CO <sub>2</sub> e/yr 2035- 10,748 MT CO <sub>2</sub> e/yr	City of Riverside Urban Water Management Plan, 2010

### Measure SW-1: Yard Waste Collection

An inventory of the communities’ organic waste was created using Cal Recycle waste volume and characterization data. Using the first-order decay methodology from the 2006 IPCC guidelines, fugitive methane emissions from the organic landfill waste were calculated for base-case (i.e., no implementation of the measure) and mitigated scenarios (i.e., with implementation of the measure). This measure assumes that 90% of residential uses will divert 95% of yard waste and landscape trimmings from landfills by 2020. This measure would apply to GHG emissions associated with new waste generated and would not apply to waste in place disposed prior to CAP implementation.

The City’s waste inventory was developed using communitywide waste disposal data collected from CalRecycle for the years 1995-2012. These historical disposal rates (i.e., waste tons disposed per population) were projected to 2020 and 2035 using estimated population growth rates. The 2008 State Waste Characterization Study was used to estimate the volume of communitywide waste by various waste categories (e.g., lumber, food scraps, grass clippings). It was assumed that the city’s waste composition is comparable to that of the statewide average (as represented in the State Waste Characterization Study). The communitywide total 2020 estimated tonnages were then multiplied by the proportional share of each appropriate waste category in the State’s waste characterization study, and multiplied by the participation rates shown in the Progress Indicator table below to determine the total solid waste to be diverted from implementation of this measure. The IPCC’s first-order decay methodology was then applied to calculate the total GHG emissions associated with that volume of waste to determine the measure’s GHG reduction.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
95% diversion of residential yard waste from solid waste stream	2020 - 468 MT CO <sub>2</sub> e/yr 2035 - 468 MT CO <sub>2</sub> e/yr	Historic Waste Disposal Tonnage Data by City, CalRecycle California 2008 Statewide Waste Characterization Study, CalRecycle IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5 Chapter 3

## Measure SW-2: Food Scrap and Paper Diversion

An inventory of the community’s organic waste was created using Cal Recycle waste volume and characterization data. Using the first-order decay methodology from the 2006 IPCC guidelines, fugitive methane emissions from the organic landfill waste were calculated for base-case (i.e., no implementation of the measure) and mitigated scenarios (i.e., with implementation of the measure). This measure assumes that 20% of commercial uses will divert 90% of food scrap waste from landfills by 2020, and 90% of combined residents and businesses will divert 75% of total food scrap waste by 2035. This measure would apply to GHG emissions associated with new waste generated and would not apply to waste in place disposed prior to CAP implementation.

The city’s waste inventory was developed using communitywide waste disposal data collected from CalRecycle for the years 1995-2012. These historical disposal rates (i.e., waste tons disposed per population) were projected to 2020 and 2035 using estimated population growth rates. The 2008 State Waste Characterization Study was used to estimate the volume of communitywide waste by various waste categories (e.g., lumber, food scraps, grass clippings). It was assumed that the city’s waste composition is comparable to that of the statewide average (as represented in the State Waste Characterization Study). The communitywide total 2020 estimated tonnage was then multiplied by the proportional share of each appropriate waste category in the State’s waste characterization study, and multiplied by the participation rates shown in the Progress Indicator table below to determine the total solid waste to be diverted from implementation of this measure. The IPCC’s first-order decay methodology was then applied to calculate the total GHG emissions associated with that volume of waste to determine the measure’s GHG reduction.

Progress Indicators	GHG Reduction (MT CO <sub>2</sub> e/yr)	Data Sources
20% of businesses divert 90% of their waste 90% of residents and businesses divert 75% by 2035	2020 - 571 MT CO <sub>2</sub> e/yr 2035 - 9,317 MT CO <sub>2</sub> e/yr	Historic Waste Disposal Tonnage Data by City, CalRecycle California 2008 Statewide Waste Characterization Study, CalRecycle IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5 Chapter 3