

# Redlands Community Sustainability Plan

Redlands, California

March, 2011



## Disclaimer

This document is prepared as a conceptual framework to the City of Redlands City Council only and does not represent formal ordinance, local or otherwise nor does it suggest specific ordinances for codification. The references to state or federal mandates or existing locally adopted ordinances are the only official representation of law.

## Acknowledgements

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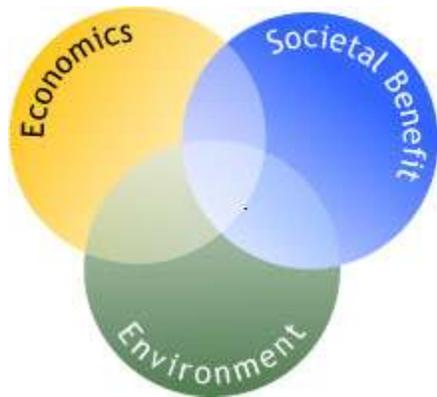
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## EXECUTIVE SUMMARY

Sustainability is generally defined as ensuring that the development and activities undertaken to meet the needs of the present do not compromise the ability of future generations to meet their own needs. The Redlands Community Sustainability Plan (RCSP) is a policy document intended to guide our city's efforts to become



increasingly sustainable. It will be implemented over the coming decades through such documents as the general plan, zoning and other regulations, and the actions of city government and citizens. The Plan identifies opportunities for achieving economic growth based on energy efficiency, expanded use of renewable energy and other clean technologies, and other sustainable practices. The Plan is organized into ten sustainability themes, each of which is summarized below.

There are several reasons for local governments to take leadership and establish a policy framework to achieve a sustainable future. Among those reasons are:

- Participating in economic growth based on clean technology and increased use of clean energy sources
- Enhancing national security by reducing dependence on imported oil
- Improving energy efficiency and cost savings for business owners and homeowners
- Improving air quality and overall public health
- Reducing demand for water through water conservation
- Meeting requirements established by the federal and state governments through use of locally appropriate actions and policies

Redlands' commitment to the Mayors Climate Action Accord, in 2007 put the city on the path towards setting up a strategy for reducing greenhouse gases and achieving a sustainable future. Even before signing this accord, the city had taken several actions to reduce emissions and improve energy and operational efficiency. For example, the Quality of Life Department started converting our solid waste fleet to low-carbon fuels to achieve operational cost savings and reduce air pollutants originating from these vehicles. To date, these efforts have not been guided by a set of coordinated policies or monitored to assess progress towards reducing carbon dioxide and other greenhouse gas emissions. With the RCSP such efforts can also be counted towards meeting state mandates recently established and towards meeting our Mayors Climate Action Accord commitment.

# Energy Efficiency and Conservation

Our homes and businesses make up 21 percent of the energy our nation uses each year and contribute about 17 percent of our nation's emissions of greenhouse gases. While



our homes and businesses are more efficient today than they were 30 years ago, considerable opportunity remains for greater energy efficiency and a lower energy bill. Many households could save 20-30 percent on their household energy bills through cost-effective household improvements such as buying more energy-efficient products, sealing air and duct leaks, and adding insulation.

Key goals for energy efficiency include:

- Promote energy efficiency and conservation technologies and practices that reduce the use of nonrenewable resources by both City government and the community.
- Promote energy awareness community-wide by providing energy audit information for all and by educating the community regarding incentives available for energy conservation.
- Update city plans, resolutions and ordinances to promote greater energy efficiency in both existing and new construction

# Water and Wastewater Systems

The City of Redlands has the advantage of local clean water sources, both surface and groundwater. Redlands Municipal Utilities and Engineering Department operates wells, pipelines, and water and wastewater treatment plants through which it provides potable water, non-potable water, wastewater collection, and recycled water services. The non-potable and reclaimed water sources are used to meet many irrigation and power generation functions which reduce the demand on our potable water for these purposes.



Key goals for water and wastewater systems include:

- Promote Water Conservation Using Multiple Strategies
- Establish Programs to Increase Use of Recycled Water for Irrigation or other Non-Potable Uses
- Reduce Consumption of Carbon-based Fuels for Conveyance and Treatment of Water and Wastewater
- Promote Locally Grown Foods

## Green Buildings

Green building strategies typically consider items such as sustainable site development, water resource conservation, energy conservation and atmospheric protection, material resource conservation, and indoor environmental quality. Several buildings in Redlands have been built to green building standards, and green building is increasingly becoming the norm for construction practices in the state.



The California Green Building Code (Title 24, Part 11, also known as *CalGreen*) was adopted by the state in 2009 and began going into effect in January 2011. Provisions of the Code provide measurable return on investment for building owners and provide measurable quality of life benefits to the Redlands community. Goals for green building in Redlands rely on *CalGreen*

and include:

- Adopt broadly accepted standards for green building
- Demonstrate leadership in the development of City-owned and operated facilities
- Re-evaluate City impact fees in light of the reduced impact of green buildings
- Coordinate development standards with City's alternative transportation plan
- Provide assistance to the development community in adopting economically viable and ecologically responsible green building strategies
- Encourage developers to consider the entire life-cycle of a built project

## Waste Reduction and Recycling

The City of Redlands offers a wide range of programs to reduce waste and maximize recycling. Together, these programs have helped Redlands divert more than 50% of its waste from the landfill. By increasing recycling rates, the City can extend the life of

its landfill and can continue to reap the financial benefits of selling recycled materials. Key goals for waste reduction and recycling include:

- Improve Commercial Recycling Diversion Rates
- Ensure the Financial Stability of Redlands Waste Collection and Waste Diversion Programs
- Improve Single Family and Multi-Family Residential Recycling Rates
- Create Opportunities to Recycle More Materials
- Invest In New Infrastructure and Technology that Contributes to Increased Waste Diversion

## Climate Friendly Purchasing

Redlands has pursued a policy of purchasing climate-friendly products and services for many years. The City relies on standards and information regarding environmental attributes and performance of climate friendly products as determined by recognized certification organizations such as “Energy Star” and “Green Seal.” The U.S. Communities program, in which the City currently participates to receive municipal discounts, is an example of an organization that relies on these certification organizations to guide purchases.



Key goals for climate friendly purchasing include:

- Commit to purchasing products and services that are climate friendly
- Provide preference to climate-friendly vendors in City purchasing policy
- Ensure policies continuously advance climate friendly purchasing practices

## Renewable Energy



Solar photovoltaic and other sources of renewable energy are growing in popularity. Residential and commercial property owners in Redlands recognize, with an average of 279 days of sunshine, Redlands is a perfect city for solar power generation, using photovoltaic technology for electricity and solar thermal technology for heating water. As of the end of 2008, 63 solar PV systems had been installed in

Redlands representing a combined capacity of 1 Megawatt.

Key goals for renewable energy include:

- Accelerate the adoption of solar power usage in Redlands.
- Find more ways to finance energy efficiency and renewable energy systems.
- Pursue implementation of mixed municipal waste to energy conversion technology
- Monitor progress in developing and implementing other renewable energy technologies

## Efficient Transportation and Low Carbon Fuels

Over 40% of greenhouse gas emissions in the state of California are from the transportation sector. Thus, changes in this sector present a great opportunity for reducing emissions. A significant reduction will result from reduced carbon content of fuels and vehicle performance improvements. The greatest opportunities for Redlands to contribute to reducing greenhouse gas emissions from vehicles are the “greening” of its own fleets, expanding the availability of public transportation through light rail and buses, and improving the efficiency of travel in Redlands and the region. Key goals for efficient transportation and low carbon fuels include:



- Reduce Dependence on Single Occupancy Vehicles
- Develop Clean Fuel Strategies for City Vehicles
- Develop Traffic Circulation System Strategies
- Promote the sale of CNG/LNG fuels at the City’s Alternative Fueling Station

## Land Use and Community Design

Redlands has long pursued sustainable land use and community design. Examples of



this philosophy can be seen in our complete neighborhoods, a strong downtown, and access to commercial areas that serve neighborhoods throughout the city. In pursuing a sustainable future land use and community design decisions will focus on enhancing these and other assets of the community through a more compact built environment that takes advantage of light rail and bus transit, as well as pedestrian-oriented features that will encourage walking and bicycling, and

preservation of open spaces. Key goals for land use and urban design include:

- Incorporate mixed land uses
- Encourage compact building design
- Retain Redlands' strong sense of place
- Offer a variety of transportation options
- Create pedestrian-friendly neighborhoods
- Pursue preservation of open space and agricultural land



## Storing and Offsetting Carbon Emissions

The City of Redlands is blessed with one of the most cost effective means to sequester carbon, a healthy urban forest, natural open spaces, and productive agriculture. While there are many sequestration approaches emerging, the City encourages the enhancement of the existing resources, primarily our urban forests, natural open spaces and productive agriculture as the approach most suitable for Redlands. Key goals in this area include:

- Determine the carbon sequestered in the city-owned urban forest, including its citrus, and its value
- Steer new development towards infill type projects to preserve open space and agricultural land that provide natural carbon storage
- Promote the optimization of the street tree palette to enhance shade provision, carbon sequestration and drought tolerance
- Maximize shade tree canopy over urban hardscape areas such as parking lots and roadways

## Promoting Community and Individual Action

Many parts of the Community Sustainability Plan focus on policies that the City might implement to encourage actions in the community to promote sustainability, and to discourage actions that do not lead to a sustainable Redlands. Communications of these policies through a variety of outreach methods will be very helpful in engaging the wider community in this effort. A wide range of tools may be used to engage the citizens, organizations



and other members of the private sector in actions to move towards a more sustainable community. Key goals in this area include:

- Pursue Public Relations Outreach
- Establish an Environmental Advocate Position on City staff
- Mobilize the Community with Broadly Based Awareness Programs

## Implementing the Community Sustainability Plan

The City of Redlands has completed many projects to improve the sustainability of the city, and is adding new projects each year. Among the important accomplishments to date are:



- Converting Heavy Duty Solid Waste Trucks to low carbon fuel
- Installing LED traffic signals to reduce energy demand and save money
- Joining the SCE Energy Leader Partnership Program to identify and fund energy efficiency improvements
- Expand the use of recycled water in lieu of using drinking water for irrigation and industrial purposes
- Preservation of citrus groves to support local agriculture and community heritage

Moving forward, the RCSP will be implemented not as standalone projects, but as adjusting city processes to recognize the sustainability benefits of city actions, as well as the return on investment and other traditional measures of community benefit of city services and operations.

Implementing the RCSP is an ongoing process with a 40 year time horizon. The implementation of the Plan will be monitored to track measureable progress, and the plan will need to be updated periodically to take advantage of advances in technology and to reflect community priorities.

# INTRODUCTION

The Redlands Community Sustainability Plan (RCSP) is a comprehensive strategy for reducing and eventually eliminating the community’s contribution to climate change while enhancing economic prosperity, promoting social equity and protecting nature. The strategy is organized into ten sustainability themes with goals, actions to achieve these goals, and indicators for measuring progress. The actions are intended to reduce greenhouse gas emissions that originate within the city (e.g., automobile emissions) or outside the city (e.g., out of state power plant emissions) in support of daily life here, and to promote local economic growth based on sustainable business practices, energy efficiency, and clean technology and products. This Introduction provides the context in which the RCSP was prepared, the community sustainability imperative, initial findings regarding Redlands’ greenhouse gas emissions in 2008, and Redlands’ developing green economy. Finally, the introduction provides an explanation of the format of the 10 chapters presenting the sustainability goals, actions and indicators.

## Preparing the Redlands Community Sustainability Plan

The city has been pursuing actions to improve its energy efficiency and reduce its greenhouse gas emissions for several years. Many of these actions are listed in Appendix A and key actions are highlighted in the panel below.

### Key Sustainability Accomplishments to Date

Accomplishment	Timeframe
LED Traffic Light Installation	2002
LED Street Light installation	2011 - contingent on financing availability
Energy Leader Partnership	2009, 2010 - 2012
Recycled water use for power plant cooling	2004
Non-potable water production / treatment / distribution improvements	2009 - current
LEED building permit incentives, streamlined permitting process	2007
Construction Waste Ordinance	2003
Solar PV installation at wastewater treatment plant	2011
Open space land acquisition / Measure O	1990 to present
Conversion of solid waste fleet to CNG & LNG fuel	2004
Installation of CNG & LNG fueling facility, including outside sales	2004
Ongoing street tree planting	Ongoing
Collection of Electronics Waste for proper recycling	2009
Partnership with SANBAG to establish GHG baseline	2010

These actions have also reduced the city’s operational costs and in most cases, cost savings was the primary motivator for pursuing these actions. Reduction of greenhouse gases was viewed as an additional benefit to the community.

In October 2007, the City Council endorsed the U.S. Conference of Mayors Climate Protection Agreement, committing the City to include greenhouse gas emission reductions as a key indicator of sustainability for the city. In April 2008, the City Council adopted an initial Climate Action Program that committed city departments to undertake at least one action each year to reduce greenhouse gas emissions. In November 2008, the City Council authorized formation of the Climate Action Task Force (CATF) for the purpose of preparing “. . . an inventory of recommended public and private actions for reducing greenhouse gas emissions within Redlands in accordance with the targets established by AB 32.” AB32 is the common name for the State of California, Global Warming Solutions Act of 2006.

The CATF began the task of preparing the Community Sustainability Plan in January 2009. To guide its work the task force chose the *League of California Cities, Institute for Local Government, Best Practices Framework*. This framework draws together ideas from across the state of how other cities and counties are responding to climate change at the local level. The best practices are organized into 10 categories. These categories were used by the CATF to prepare specific goals, actions, and indicators for Redlands. The 10 categories are:

*Energy Efficiency and Conservation*  
*Green Buildings*  
*Climate-Friendly Purchasing*  
*Efficient Transportation*  
*Land Use and Community Design*

*Water and Wastewater Systems*  
*Waste Reduction and Recycling*  
*Renewable Energy & Low Carbon Fuels*  
*Storing & Offsetting Carbon Emissions*  
*Community and Individual Action*

The CATF put great effort into ensuring preparation of the RCSP was an open and collaborative process. The CATF held monthly public meetings during 2009 to develop the recommended goals and actions. Subcommittees were formed to focus on each of the 10 framework categories. Between meetings of the full CATF, subcommittee meetings were held to research the issues and develop draft recommendations. These draft recommendations were reviewed and revised by the full task force and ultimately recommended for approval.

In addition to its own research and deliberations, the CATF obtained input to the plan through several other means:

- Presentations were made to several City commissions and committees. Feedback was obtained from the commissions and committees and incorporated into the RCSP as appropriate. The commissions and committees included the Business and Economic Development Advisory Commission, the Downtown Redlands Business Association, the Historic and Scenic Preservation Commission, the Human Relations Commission, the Municipal Utilities/Public Works Commission, the Parks Commission, the Planning Commission, the Recreation Commission, the Street Tree Committee, and the Traffic and Parking Commission.
- Meetings with department directors were conducted at the beginning of plan preparation to explain the objectives of the CATF and make sure those objectives were consistent with the work plans and resources of the departments. Department directors also reviewed the draft plan and provided recommended modifications.
- To obtain input from the community, presentations to several service organizations were made. Also, the draft plan was accessible to the community on the City's website for review and comment.
- To ensure the economic growth implications of the plan were reflected in the recommendations, meetings and discussions were held with the Executive Board of the Redlands Chamber of Commerce.
- The CATF maintained a booth over a four-week period at the Redlands Market Night to provide the general public with summary information about the draft plan as well as the city website link for accessing the entire draft plan. Also, a booth was maintained at the Redlands Conservancy's annual Emerald Necklace event.

## Local Responsibility for Sustainability

To guide preparation of the RCSP, the CATF adopted the following definition of sustainability:

*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

United Nations, Decade of Education and Sustainable Development, 2005

To add a local context to this definition, the CATF also recognized that economic growth in Redlands is a fundamental aspect of sustainability for our community. Therefore, prior to inclusion of any recommendation in the RCSP, it was first

evaluated by the CATF to make sure economic prosperity received equal consideration to the environment or social equity components of sustainability.

There are several reasons for local governments to take leadership and establish a policy framework with goals, indicators and initial actions to achieve a sustainable future. Among those reasons are:

- Participating in economic growth based on clean technology and increased use of clean energy sources
- Reducing dependence on imported carbon-based fuel sources
- Improving energy efficiency and cost savings
- Improving air quality and overall public health
- Reducing demand for local and imported water through water conservation
- Meeting requirements established by the federal and state governments through use of locally appropriate actions and policies

## **Local Economic Benefits of Sustainable Action**

California has become a world leader in addressing global warming. “Green” innovation is expected to have a significant and positive effect on the state’s economic and environmental health (California Green Innovation Index, 2008, published by Next 10). The global movement to shift our source of energy from carbon-based fuels to renewable energy, both low-carbon and carbon-free, is causing growth in this sector of the economy. Even during the recent recession and current slow economic recovery, the clean energy and energy efficiency sectors have remained stronger than other sectors. The emerging “green economy” touches all aspects of economic activity from innovative technologies for capture of solar and geothermal energy to simple energy efficiency improvements to homes and businesses. The green economy has enormous potential to create well-paying jobs with a career path. An important consideration in formulating goals and actions for the RCSP was to ensure that the plan supports, not hinders, economic growth in our city and region.

## **Reduced Dependence on Foreign Oil**

As world-wide production of low-cost oil peaks, and as demand continues to expand, economic disruption caused by competition for energy is inevitable. Americans were first exposed to our dependence on foreign oil during the Arab Oil Embargo in the 1970s. Our nation’s need to reduce that dependence has been underscored by the September 11, 2001, terrorist attack in New York City and wars in the Middle East.

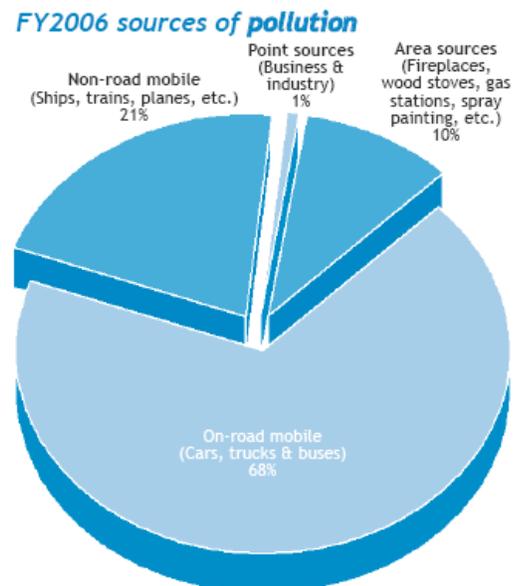
Expanded use of domestically produced cleaner energy sources will provide major economic benefits as it also decreases dependence on imported fuels from unstable regions. Renewable sources of energy like solar, wind, and biomass, are readily available in the United States and development in these industries promotes the growth of the new green economy, creates local green-collar and clean technology jobs and helps ensure a sustainable future. Reducing our dependence on foreign oil will result in greater energy security and will better insulate Americans from fluctuating energy prices while reducing the amount of carbon dioxide emissions released into the atmosphere.

## Improved Energy Efficiency and Cost Savings

As energy prices continue to steadily rise and the supply of carbon-based fuels becomes further constricted, it is important to promote energy efficiency and conservation in buildings, especially in our homes, which account for approximately one-fifth of America's energy demand and greenhouse gas emissions. Using energy efficiently is the easiest way to reduce energy related greenhouse gas emissions because energy efficiency upgrades simply reduce the demand for natural gas and electricity. In 2004, energy saving measures allowed Americans to cut their electric bills by more than \$7 billion and save enough energy to power 15 million homes (US Department of energy [www.eere.energy.gov](http://www.eere.energy.gov)). There is a tremendous opportunity to reduce energy consumption in buildings by replacing older appliances and lighting systems with more energy efficient models, adding insulation to the building envelope, and sealing air leaks. Energy efficiency upgrades to buildings reduce energy costs for the occupant and often have a quick return on investment. Leadership in Energy and Environmental Design (LEED) and Energy Star are the leading national programs to certify energy efficient buildings and appliances respectively.

## Improved Air Quality and Public Health

The City of Redlands' air quality is affected by a variety of factors beyond the community's control including geography, climate and surrounding population density. However, the city can work to reduce tailpipe exhaust and industrial emissions from within its boundaries and collaborate with the South Coast Air Quality Management District (SCAQMD) and surrounding communities on regional solutions that help ensure our air is clean. Currently, Redlands residents suffer from some of the worst air quality in the nation. A study conducted by Cal State Fullerton



found that nearly every resident in the South Coast air basin is exposed to life-threatening pollutants on a regular basis. This is not only an issue of public health; it also directly impacts our economy, with air pollution costing the state of California more than \$28 billion annually in premature deaths, hospitalizations and limitations on normal activity due to respiratory symptoms. In the South Coast Air Basin, the economic cost of poor air quality is estimated at more than \$1,250 per person per year. Improving our community's air quality is an important component of sustainability and will become increasingly challenging to achieve as the region's population increases.

## **Water Conservation**

Redlands must maintain an adequate water supply capable of meeting the needs of a growing population and a community commitment to agriculture as part of our local heritage and economy. Water conservation in southern California has been public policy for decades, and the results have been impressive. Yet, as with air quality, the City of Redlands and other regional water purveyors must work diligently to satisfy the multiple competing demands for water. Although most of the water consumed in Redlands originates in our local mountains and groundwater basin, the disruption in weather patterns associated with climate change is changing the amount and timing of regional precipitation. This disruption has a direct impact on availability of local water, particularly during the summer months. Without conservation, Redlands runs the risk of becoming increasingly dependent upon imported water from the Sacramento-San Joaquin Delta by way of the State Water Project. As conflict increases between environmental and human water needs, it will become even more important that Redlands protect its local water supply to sustain its urban population and agricultural activities.

## **Meeting Federal and State Requirements**

Much of the early efforts to stem the rise in carbon dioxide and other greenhouse gases were spearheaded by local governments and the private sector, essentially on a voluntary basis, in compliance with state and federal regulations that did not directly address climate change. Passed in 2006 by the California Legislature, and taking effect in January 2011, the Global Warming Solutions Act of 2006 (AB 32) set the stage for governments and the private sector to establish a coordinated policy approach, including actions and monitoring tools, for responding to climate change. To meet the requirements of AB 32, statewide carbon dioxide emissions must be reduced to 1990 levels by 2020, and carbon dioxide emissions must be considered as part of the CEQA compliance process for large projects. A recent U.S. Supreme Court

decision determined that carbon dioxide is a gas that can be regulated under the Clean Air Act, and as a result, the U.S. Environmental Protection Agency (EPA) has recently issued draft regulations addressing allowable emission levels for this gas. These legal developments make it clear that all levels of government must address greenhouse gas emissions in their planning as well as operational actions.

Cities and counties must play a major role in meeting the AB 32 requirements here in California, and will be at the forefront of worldwide sustainability efforts as well. Analysis shows that approximately 75% of the human-caused greenhouse gas emissions now occurring originate within or in support of urban areas. However, these urban areas represent only 2% of the earth's surface. Each city establishing its own climate action and sustainability plans ensures that each city takes responsibility for reducing its emissions and promoting its sustainability through actions that fit its local situation.

## **Estimate of Redlands Greenhouse Gas Emissions Baseline**

For the City of Redlands, a greenhouse gas emission (GHG) inventory was developed as part of regional effort by the San Bernardino Associated Governments (SANBAG). The inventory accurately captures countywide information and provides uniform measurement and reporting of GHG emissions across a range of sources. The fixed source components of the emissions inventory include: commercial and industrial, residential, stationary, off-road equipment, water conveyance, solid waste management, wastewater management, agriculture and electricity consumption. The emissions from these different sources were inventoried using 2008 as the baseline year. The emissions are of two categories: Scope 1 emissions that originate in the city, and Scope 2 emissions for which the energy is consumed here, but the emissions occur outside the region. Scope 1 emissions are primarily attributable to consumption of natural gas. Scope 2 emissions are primarily those attributable to the consumption of electricity. Currently, the mobile source components of the emissions inventory are being measured and compiled as a part of this regional effort. Once completed, mobile and motorized sources of emissions will be incorporated into the City's GHG emissions baseline. Also, reductions to emissions resulting from use of renewable energy will be calculated in the future.

<sup>1</sup> Sector	2008 Inventory		2020 Forecast	
	Emissions	Percent	Emissions	Percent
Scope 1 Emissions				
Residential Natural Gas	64,168	13%	72,814	13%
Commercial/Industrial Natural Gas	85,131	17%	98,776	17%
Stationary Sources	124,045	25%	143,842	25%
Passenger Vehicles		0%		0%
Trucks		0%		0%
Off-Road Equipment	37,782	7%	41,841	7%
Agriculture	2,864	1%	1,460	0%
<b>Subtotal Scope 1</b>	<b>313,990</b>	<b>62%</b>	<b>358,733</b>	<b>62%</b>
Scope 2 Emissions				
Residential Electricity	62,315	12%	70,712	12%
Commercial/Industrial Electricity	88,919	18%	102,895	18%
Solid Waste Management	16,812	3%	17,517	3%
Wastewater Treatment	3,154	1%	3,500	1%
Water Conveyance	19,187	4%	22,273	4%
SF6 From Electrical Consumption	1,831	0%	2,104	0%
<b>Subtotal Scope 2</b>	<b>192,220</b>	<b>38%</b>	<b>219,000</b>	<b>38%</b>
<b>Total Scope 1 and 2</b>	<b>506,210</b>	<b>100%</b>	<b>577,733</b>	<b>100%</b>

<sup>1</sup>Source: San Bernardino County Regional Greenhouse Gas Inventory and Reduction Plan, City of Redlands GHG Emissions Inventory By Sector. 2011.

The City will use this baseline as a valuable tool to engage in strategies for emission reductions, to benchmark progress made through various reduction strategies and to meet requirements of AB 32 and State Executive Order S-3-05. By participating in a regional approach to baseline measurement and emission reduction measurement, Redlands efforts can be leveraged as part of regional efforts to reduce emissions. Such countywide collaboration is critical because specific emission sources may be more effectively addressed through a combination of local and regional emission reduction measures to address issues that span multiple cities and jurisdictions within the County. Emission sources related to water, transportation, goods movement, waste and stationary fuel combustion represent some of these regional issues.

Looking forward, a series of greenhouse gas reduction measures will be pursued by the City. Early candidates for these measures are contained among the recommended actions in the remaining chapters of the RCSP. As these recommended actions are developed into reduction measures, they will become part of the City's strategy to meet the targeted reductions set forth in the RCSP and by the State of California. To monitor the effectiveness of the measures, the City will develop an effective mechanism to account for and track progress on an annual basis.

## Understanding Redlands Community Sustainability Plan

Described below are the processes used in preparing the RCSP as well as an explanation of the content in the following chapters that provide the goals, indicators, and actions for implementation. In addition to using an open and collaborative process, the CATF followed four basic principles to guide preparation of the RCSP:

- The recommendations should support the U.N. Commission definition of sustainability expressed previously in this section. : “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (United Nations, Decade of Education and Sustainable Development, 2005)
- The recommendations should be business friendly, and should be supportive of economic growth based on increased use of clean energy, attracting clean technology related businesses, and promoting sustainable business practices
- The recommendations should be practical and flexible to allow for incremental implementation
- The recommendations should, as much as possible, be descriptive of the type of action that could be taken (e.g., conserve potable water) without being prescriptive of specific action (e.g., require installation of dual flush toilets)

### Content of Plan

Each of the following 10 chapters contains background information on its respective sustainability topic. This information is followed by goals, indicators and actions. In addition, each chapter contains *insert panels* that illustrate sustainability practices and the economic value of sustainable action. When possible, examples from Redlands are used.

**Goals** - The goals describe the major objectives to be achieved through local sustainability actions in each of the 10 categories. The goals provide broad policy guidance for the development and implementation of actions.

**Indicators** - The indicators provide means of measuring progress towards the goals. Effective indicators are relevant, easy to understand, reliable, and based on accessible data. The proposed indicators for each of the subject areas are contained in a table. These indicators may be reviewed and refined as part of developing the City's greenhouse gas emissions baseline and as the specifics of sustainability actions are determined by City staff and the community.

**Indicator Targets** - The indicator targets help drive implementation by providing quantifiable goals for achieving success. The proposed indicator targets may be refined as part of developing the City's greenhouse gas emissions baseline and as the specifics of sustainability actions are determined by City staff and the community. Targets may also be adjusted in response to changes in applicable state and federal laws.

**Actions Needed to Reach Indicator Targets** - For each goal, one or more actions is identified that could help the City meet the indicator targets. Before these actions can be undertaken, it will be necessary for City staff, or some other responsible entity, to develop a strategy for carrying them out. Actions to be undertaken by the City also will need to be included in the annual work plan of the responsible department. Due to the limited availability of City resources to undertake an aggressive sustainability program because of current budget constraints, it may be necessary to defer some actions beyond the suggested start-up timeframe contained in the action table. Also, changes in technology, funding sources and other factors may cause changes in the actual start-up timeframe or recommended actions, and may result in the addition of new actions.

For each action, several qualitative descriptors are provided that may help City staff and the community in prioritizing and carrying out the actions. These descriptors are qualitative in nature and are based on the best judgment of the CATF. These descriptors include:

**Policy Mechanism** - Policy Mechanism indicates the anticipated approach to following through on the recommended action. The possible mechanisms indicated include:

**Baseline Information** - an action to help establish the parameters for sustainable action

**Voluntary** - an action that the city, a business and/or an individual in the community might take that is not mandated by state or federal directive.

**Incentive** - an action that includes some form of incentive to pursue a sustainability action. An incentive may be stand alone, or associated with a voluntary or mandatory action.

**Mandatory** - an action that is required by a state or federal mandate, or an action by the city directed at itself to improve its sustainability portfolio.

**Infrastructure** - an action to build some infrastructure (physical asset) that supports sustainability

**Support Public Utility** - an action by the city to support a sustainability program offered by a public utility

**Education & Research** - an action to raise awareness about sustainability, including research when necessary

**Funding** - an action to identify and potentially obtain funding for advancing sustainability

**Economic Effect** - Economic effect is a qualitative indication of the type of economic effect the action is anticipated to cause. Rating categories include:

**Positive** - over time the action should result in a positive return on investment and result in a net increase in job opportunities

**None** - over time the action will have little or no impact on local economic activity

**Undetermined** - the potential economic effect cannot be determined without further analysis

**Negative** - over time the action would likely result in a very limited return on investment and result in a net decrease in job opportunities

*Important Note: Over time many proposed actions may result in a net savings to the City as opposed to costing the City money. Actions that are likely to generate net savings include: energy saving improvements to City facilities, water saving measures such as drought tolerant plants and irrigation changes, and reduced consumption of paper products. It is important to note that the economic effect ratings are subjectively applied based on the best judgment of the CATF, and are therefore qualitative in nature. More detailed quantitative economic effect analyses should be completed prior to implementing the recommendations in each category.*

**GHG Reduction** - GHG Reduction is a qualitative indication of the potential for the recommended action to contribute to reducing GHG emissions attributed to Redlands. The specific amount of reduction would be developed as part of preparing to implement the action. Rating categories include:

**Baseline Information** - the action results in setting emission baseline conditions

**Supportive** - the action will support other actions or programs to reduce emissions but may not by itself result in quantifiable emission reductions

**Quantifiable** - the action will result in quantifiable reductions in emissions

**Non-quantifiable** - the action will not result in quantifiable emission reductions

**Start-up Timeframe** - The Start-up Timeframe represents a recommended window of time during which the action should be started. In some cases, an action may be completed within the phase. However, many actions are ongoing. In order for an action to be undertaken it needs to become part of the workplan for the responsible City department, or private sector entity. Often this will require preparatory work before the action is brought to the City Council for formal endorsement. The Start-up Timeframe categories, expressed in calendar years, include the following:

**Underway** - an action that has already started

**2011 - 2015** - an action that should begin during this time window

**2016 - 2020** - an action that should begin during this time window

**2021 - 2025** - an action that should begin during this time window

**Implemented By** - Implemented By indicates the city department or other entity that would have lead responsibility for the action.

## **Future Implementation Timeframes**

The three timeframes contained in the RCSP are just the beginning of Redlands' efforts to be a sustainable city. The implementation of the RCSP should be monitored annually, at a minimum, and the plan should be updated every four years. With each update, new actions, as well as changes to existing actions, may be recommended to continue progress toward our goals. As Redlands and other cities pursue their respective sustainability plans, a growing set of best practices will emerge. It will be important for Redlands to draw from these best practices in order to increase our progress toward sustainability.

## **Funding For Sustainability Actions**

Sustainability Actions by the city that are currently underway receive funding through the city's budget. These actions are funded using the General Fund, Enterprise Fund, grants, or reimbursements from the utility companies, as appropriate to the action. The RCSP does not specify funding sources or costs for actions identified for start-up in the 2011-15 timeframe. In preparing future city budgets, notation should be made of funding source for actions and which actions, if any, are part of existing funding streams. Effort should also be made to identify federal or other outside funding

sources that can support implementation of additional actions. It is not the intent of the RCSP that budget funds be redirected or reprioritized to implement recommended actions. Rather, it is the intent of the plan that departments determine how actions can be undertaken, or at least partially undertaken, through modification of the work plan or procedures associated with current City operations.

# CHAPTER 1: ENERGY EFFICIENCY AND CONSERVATION

Energy efficiency and conservation are foundational elements of sustainability and are the most direct and cost effective way to reduce energy related greenhouse gas emissions. The City has taken a leading role in affecting municipal and community wide cultural changes towards energy conservation and efficiency, and moving forward, the City can make additional strides in these areas by leveraging existing utility company and statewide programs to accelerate energy efficiency and conservation education, awareness and projects.

The energy efficiency and conservation recommendations in this section focus on natural gas and electric energy efficiency and conservation with transportation related energy usage addressed in Chapter 7. The proposed goals focus on both City assets and the Redlands community as a whole, and seek to achieve significant reductions in greenhouse gas emissions.

	<p><b>Energy Conservation and Efficiency Benefits</b></p> <p>Our homes consume a lot of energy:</p> <ul style="list-style-type: none"><li>• More than \$160 billion a year to heat, cool, light and live in our homes. This energy bill continues to grow.</li><li>• Our homes make up 21 percent of the energy our nation uses each year and contribute about 17 percent of our nation's emissions of greenhouse gases.</li></ul> <p>While our homes are more efficient today than they were 30 years ago, considerable opportunity remains for greater energy efficiency and a lower energy bill. Many households could save 20-30 percent on their household energy bills through cost-effective household improvements such as:</p> <ul style="list-style-type: none"><li>• Buying more energy-efficient products and appliances</li><li>• Sealing air and duct leaks</li><li>• Adding insulation</li></ul> <p>Source- <a href="http://www.energysavers.gov/">http://www.energysavers.gov/</a></p>
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## GOALS for Energy Efficiency and Conservation

The following goals include major objectives for sustainability through energy efficiency and conservation in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

- EE.1**      Promote energy efficiency and conservation technologies and practices that reduce the use of nonrenewable resources by both City government and the community.

The City has taken great steps in positioning Redlands as a strong environmental steward that recognizes energy, economics and the environment will be critical for future sustainability. Through partnership with Southern California Edison, the City now has the opportunity to promote energy efficiency and conservation citywide.

**EE.2 Promote energy awareness community-wide by educating the community regarding energy audits and incentive programs (tax credits, rebates, exchanges, etc.) available for energy conservation.**

Completing a comprehensive energy assessment of City facilities to determine the most beneficial areas to implement energy efficiency and conservations measures would be prudent. The City should also partner with key high energy users assisting them with reducing energy consumption (including securing funds). Consideration should be given to developing funding mechanisms that encourage energy efficiency and conservation investments broadly within the City.

**EE.3 Update city plans, resolutions and ordinances to promote greater energy efficiency in both existing and new construction**

The City has a real opportunity to revisit codes and ordinances reshaping them to encourage the efficient use of energy. Care should be taken to promote energy efficiency improvements with incentives and without burdening the property owner with excessive costs.

**City of Redlands Benefits of reducing Peak electric load**

- The City saves roughly \$60,000 per year by participating in an electric load shedding program
- City staff regularly tests the efficiency of pumps and motors and replaces the least efficient ones saving energy
- The City is designing a SCADA system that will control electric equipment to reduce power demands during peak hours



## **INDICATORS for Energy Efficiency and Conservation**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for

monitoring progress is also indicated. Further explanation is contained in the Introduction.

Indicator	Target	Agency Responsible for Tracking
Increase residents' awareness of city's energy efficiency and conservation strategies and goals	Achieve 20% residential awareness of city's energy efficiency goals and strategies by 2015	Quality of Life, Municipal Utilities
Increase residents' awareness of household opportunities for energy conservation strategies and technology	Increase household participation in energy conservation programs and rebates by 20% by 2015	Quality of Life, Municipal Utilities
Reduce energy use by city-owned facilities	Reduce energy costs by 15% by 2015	Quality of Life, Finance
Reduce energy use by business and residential consumers	Achieve 10% reduction in city-wide energy consumption by 2015	Quality of Life, Finance
Minimize on peak and expand off peak electric usage (shift load where possible)	Increase load shedding by 10% by 2015	Quality of Life
Increase residential access to affordable funding mechanisms for energy and conservation	Establish Property Assessed Clean Energy (PACE) District	Quality of Life, Finance

## **ACTIONS for Energy Efficiency and Conservation**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

**ENERGY EFFICIENCY AND CONSERVATION ACTIONS**

NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
<b>EE1</b>	<b>Promote energy efficiency and conservation technologies and practices to reduce the use of nonrenewable resources by both City government and the community.</b>					
EE 1.1	Continue City efforts to be a model of energy conservation stewardship.	Education & Research	Positive	Supportive	Underway	Quality of Life
EE 1.2	Continue City participation in SCE/SCG's Community Partnership program.	Incentive Support Utility Program	Positive	Quantifiable	Underway	SCE, SCG, City
EE 1.3	Continue with moving City electric load off-peak	Support Utility Program / City - Mandatory*	Positive	Quantifiable	Underway	Quality of Life, MUED, SCE, SCG
EE 1.4	City should partner directly with the 5 largest consumers of energy and encourage and promote their energy efficiency activities.	Voluntary Incentive	Positive	Quantifiable	2011-2015	Quality of Life
EE 1.5	Establish Energy Efficiency and Conservation baselines.	Support Utility Program / City - Mandatory*	None	Baseline Information	Underway	Quality of Life, Consultant
EE 1.6	Pursue early participation in the smart meter rollout with SCE and automated meter reading at SCG	Support Utility Program	Positive	Quantifiable	2011-2015	SCE, SCG, City
EE 1.7	Explore participating in new high efficiency technology programs such as the LED City program and LED Street Lighting Conversion	Voluntary	Undetermined	Quantifiable	2011-2015	Quality of Life, MUED

\*These actions are supported and required of the City by the Energy Leader Partnership Agreement between the City of Redlands and Southern California Edison, approved by the City Council of the City of Redlands, 11/17/2009.

<b>EE2</b>	<b>Promote energy awareness community wide with energy audit information for all and by educating the community regarding incentives (grants, rebates, exchanges, etc.) available for energy conservation.</b>					
EE 2.1	Complete a comprehensive energy assessment of all City facilities to identify EE&C opportunities (e.g., HVAC, lighting, weatherization, appliances)	Baseline	Positive	Quantifiable	Underway	Quality of Life, Third Party
EE 2.2	Identify and obtain funding sources to implement energy conservation & efficiency programs adopted by the City.	Incentive	Positive	Quantifiable	2011-2015	Quality of Life, Finance
EE 2.3	Leverage and help drive community participation in utility company programs and financial incentives within the city (e.g., incentives, core programs, on bill financing etc.)	Incentive Support Utility Program	Positive	Quantifiable	2011-15	City, SCE, SCG
EE 2.4	Encourage City employees to submit energy efficiency and conservation recommendations for City operations and follow-up on them.	Voluntary	Positive	Supportive	2011-2015	City Manager
<b>EE3</b>	<b>Update city plans, resolutions and ordinances to promote greater energy efficiency in both existing and new construction</b>					
EE 3.1	Complete comprehensive review of City codes and standards for energy and water applicability for energy efficiency conservation measures and make changes to modify accordingly.	Voluntary-City	Positive	Supportive	2011-2015	Community Development, MUED

EE 3.2	Set goals consistent with the State's Long Term Strategic Plan: All new residential construction in California will be zero net energy by 2020. All new commercial construction in California will be zero net energy by 2030. The heating, ventilation, and air conditioning (HVAC) industry will be reshaped to ensure optimal equipment performance; and all eligible low-income homes will be energy-efficient by 2020.	Voluntary* Incentive*	Undetermined	Quantifiable	2016-2020	Quality of Life, Community Development, Consultant
EE 3.3	Allocate savings realized from energy efficiency improvements to additional energy efficiency improvements (Consider making it a line item in the budget)	Voluntary-City	Positive	Quantifiable	2016-2020	City and Utility Partnership
EE 3.4	Be an early adopter of model dark sky ordinance	Voluntary-City	Undetermined	Supportive	2011-2015	Community Development

\*These recommendations are a part of the California Energy Commission's "Four Big, Bold Strategies" and are specific programmatic goals with specific implementation plans that recommend coordinated action among the State, public utilities and the private sector.

## Chapter 2: WATER AND WASTEWATER SYSTEMS

Redlands has delivered water and recycled water at inexpensive rates to city residents and businesses since the late 1950's, and today, more than 75,000 residents in Redlands, Mentone, parts of Crafton Hills and San Timoteo Canyon, and a small part of San Bernardino depend on the Redlands Municipal Utilities and Engineering Department for these services. A small section of Redlands relies on Western Heights Water Company for its potable water, and some homes rely on septic systems. Today, the City's water supply is a blend of local groundwater, local surface water, and imported water from the State Water Project. The Redlands wastewater treatment plant is located on approximately 50 acres currently processing about 5.5 million gallons of wastewater per day. It provides tertiary level treatment which allows the treated wastewater to be used as recycled water for a variety of uses.

Experts agree that climate change will alter precipitation patterns, increase storm frequency and intensity, and otherwise disrupt the water cycle worldwide. In addition, cycles of drought and increases in population make water conservation a top sustainability priority for all of southern California, including Redlands. Wise water use and innovative conservation strategies will help ensure a sustainable water supply for our community.



### **OVER CONSUMPTION and INEFFICIENT SYSTEMS**

Some residential areas in Redlands still have water drains in the middle of a huge lawn. Climate change and drought have changed our view of water usages and disposal.

Redlands has recently adopted two significant water conservation strategies -- a water-efficient landscape ordinance (in 2009), and a tiered rate structure. Other water conservation strategies that the City could encourage are residential systems for rainwater capture and storage for irrigation.

Water is also an energy issue. An estimated 20% of electricity use statewide is associated with the transportation of water. In Redlands, pumps and treatment plants are our single largest use of electricity, representing about 70% of the City's electricity consumption. The City has taken steps to reduce use of electricity for

these purposes. In the past, a co-generation facility produced a portion of the electricity needed by the wastewater treatment plant. In 2011, the City will install solar PV panels on site to provide additional renewable energy for this plant. As mentioned previously, the City is working with SCE to upgrade pumps in water wells and boosters to be more energy efficient.

Agriculture consumes more water than industrial and residential sectors combined, and also provides the greatest opportunity for increased efficiency and sustainability; with this in mind, the City has included local food production in this section of its sustainability plan. Due to the diversity of micro-climates in the area many crops flourish, and in recent years, this diversity has led to an increase in small sustainable farms producing year-round supplies of vegetables and fruits. Local crops include nectarines, plums, avocados, apples, persimmons, pomegranates, citrus of all kinds, strawberries, broccoli, lettuces, herbs, cauliflower, onions, and other root and fruit crops. The City itself actively farms approximately 200 acres of citrus. Residents can also garden year round and most practice sustainable agriculture that, like small commercial operations surrounding the City, use drip irrigation and consume significantly less water than industrial agriculture to produce the same crop. Backyard farming can also be considered as a residential water conservation strategy; growing fruits and vegetables requires less water than maintaining a lush green lawn.

## **Goals for Water and Wastewater**

The following goals comprise major objectives for water and wastewater sustainability in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### **WW1      Promote Residential and Commercial Water Conservation Using Multiple Strategies**

The City has a long history of promoting water conservation. It will be important for the City to not only continue its efforts but to expand them given the common occurrence of drought conditions in our region and the continued growing demand for water that accompanies population and economic growth.

### **WW2      Establish Programs to Increase Use of Rainwater Collection and Use for Landscape Irrigation**

Communities throughout California have adopted policies to encourage rainwater collection systems in new construction and in retrofitting existing buildings.

**WW3 Reduce Consumption of Carbon-based Fuels for Conveyance and Treatment of Water and Wastewater**

The combination of recycled water usage, introduction of renewable energy sources, and effective water conservation measures will reduce use of fossil-fuel-based energy to run the City’s water and wastewater operations. The Municipal Utilities and Engineering Department should be continuously vigilant to identify opportunities to accomplish this goal, including federal, state and local funding sources that can be used to supplant funds from local ratepayers.

**WW4 Promote Locally Grown Foods**

Redlands roots are in agriculture, in particular citrus, with other orchard and row crops also thriving in region. In the past decade, the organic and/or sustainable agriculture movement has taken hold in Redlands with new commercial growers in San Timoteo Canyon and the Crafton area, a waiting list for Redlands’ community garden program, more “backyard” farmers, a new downtown farmers market and a thriving community supported agriculture program all delivering local, healthy produce to Redlanders. Compared to the same amount of food produced by industrial agriculture, these sustainable growing methods use less water and do not contribute to water pollution. In addition, appropriately designed residential rainwater systems can irrigate backyard produce, and backyard drip irrigation systems require less water than the same amount of space devoted to turf.

**INDICATOR for Water and Wastewater**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

<b>Indicator</b>	<b>Target</b>	<b>Agency Responsible for Tracking</b>
Reduce use of potable water in landscape irrigation	20% reduction by 2020	Municipal Utilities and Engineering Dept. (MUED)
Increase reuse of water in landscape irrigation	Incorporate rainwater harvesting technologies at the municipal, business and household level by 10% by 2015 50% by 2020 & 100% by 2025	Municipal Utilities & Engineering Dept. (MUED), Community Development

Increase local food production	Increase community gardens by 10% by 2020 & 25% by 2030  Increase households and businesses with on-site gardens (backyard farming) 50% by 2015	Community Development & Quality of Life
Increase California Friendly residential and commercial landscapes	50% increase in drought tolerant landscapes by 2015	Community Development, Quality of Life, MUED

## **ACTIONS for Water and Wastewater**

The actions in the table below will individually and cumulatively contribute to achieving Redlands’ sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

## WATER AND WASTEWATER ACTIONS

NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
<b>WW.1</b>	<b>Promote Water Conservation Using Multiple Strategies</b>					
WW 1.1	Update water and wastewater rates including review of tiered rates to encourage water conservation.	Voluntary-City	Undetermined	Supportive	Underway	MUED
WW 1.2	Review and update the landscape irrigation ordinance to continue lowering use of potable water for landscape irrigation to CALGreen requirements.	Voluntary-City	Positive	Supportive	2011-2015	MUED, Community Development
WW 1.3	Establish incentives for use of water efficient fixtures and fittings.	Incentive	Undetermined	Supportive	2011-2015	MUED
WW 1.4	For new citywide development, expand the current landscape parking lot tree (ordinance or resolution) to include drought tolerant species.	Voluntary-City	Positive	Supportive	Underway	Community Development
<b>WW.2</b>	<b>Establish Programs to Increase Use of Recycled Water for Irrigation</b>					
WW2.1	Conduct rainfall runoff and other system research and pilot study.	Other	Undetermined	Baseline Information	Underway	MUED, Community Development
WW2.2	Develop irrigation BMP and other system guidebooks.	Voluntary-City	Positive	Baseline Information	2011-2015	MUED, Community Development
WW2.3	Update ordinances to allow for the use of recycled water for landscape irrigation.	Voluntary-City	Positive	Baseline Information	2016-2020	MUED, Community Development

WW2.3	Update ordinances to allow for use of various wastewater sources for landscape irrigation.	Voluntary-City	Positive	Baseline Information	2016-2020	MUED, Community Development
<b>WW.3</b>	<b>Reduce Consumption of Carbon-based Fuels for Water and Wastewater Treatment and Conveyance</b>					
WW3.1	Evaluate feasibility of renewable energy sources for water and wastewater operations	Baseline	Undetermined	Supportive	Underway	MUED
WW3.2	Seek funding sources to implement feasible renewable energy sources	Funding - external	Positive	Supportive	2011-2015	MUED
<b>WW.4</b>	<b>Promote Locally Grown Foods</b>					
WW4.1	Establish organic and local farming economic development zones in San Timoteo Canyon, Crafton and other suitable locations	Voluntary	Undetermined	Supportive	2016-2020	Community Development
WW4.2	Investigate state and local financing programs to assist with expanding the local farming programs	Voluntary	Positive	Supportive	2016-2020	Community Development, QOL
WW4.3	Expand the community garden program subject to funding and land availability	Voluntary	Positive	Supportive	2016-2020	Quality of Life
WW4.4	Eliminate barriers and establish incentives for increased local food production	Voluntary	Undetermined	Supportive	2011-2015	Community Development

## Chapter 3: GREEN BUILDINGS

A well-planned green building is designed, constructed, and operated to meet the triple bottom-line of economic sustainability, ecological responsibility, and social equity. Green building strategies generally belong to one or more of five categories: sustainable site development, water resource conservation, energy conservation and atmospheric protection, material resource conservation, and indoor environmental quality.

There are a number of organizations that provide third-party verification (or certification) of the achievement of green building goals. Some of the most well-known rating systems include Leadership in Energy and Environmental Design (LEED), Collaborative for High Performance Schools (CHPS), Green Guide for Healthcare (GGHC), Build It Green, and Green Globes. Although LEED is the most widely accepted of these, the City does not advocate the use of one over the other; they may be considered interchangeable in the text below. It is recommended below that the city adopt a rating system within the next three years.



### Lewis Hall, University of Redlands

LEWIS HALL is a one-story, earth-sheltered, 14,484 square foot “green” high-performance building, named in honor of Congressman Jerry Lewis. The building is located on the University of Redlands campus, just north of the existing courtyard of the Stauffer Science Center. Design and construction conformed to LEED requirements for Green Building Certification, earning Lewis Hall a Silver Level certificate. A few of the environmental performance indicators evaluated are erosion & sedimentation control, alternative transportation options, stormwater management, heat island effect, water efficient landscaping, CFC reduction, storage & collection of recyclables, low-emitting materials, and recycled content. The building utilizes energy efficient design and a small solar photovoltaic array which generates a total of 9.4 kW.

## GOALS for Green Buildings

The following goals comprise major objectives for sustainability through green building practices in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### **GB1 Adopt broadly accepted standards for green building.**

In 2009, the State of California adopted the first state green building code in the US. The California Green Building Code (Title 24, Part 11, also known as *CalGreen*) went

into effect for most projects on January 1, 2011. Additional provisions of the measure will gradually become mandatory over the next several years as well. Many of the Code's measures are derived from the LEED for New Construction Rating System.

The RCSP recommends early adoption of specific measures of the Code that provide returns on investment for building owners and provide measurable quality of life benefits to the Redlands community. Along with adoption of measures of the Green Building Code, the City should also encourage building owners, developers, designers, and contractors to pursue LEED certification for new projects and major renovations.

Some of the measures recommended for early adoption are listed below under Actions for Green Buildings. This is not a complete list. All of the measures in the *CalGreen* code should be analyzed for feasibility of implementation.

**GB2 Demonstrate leadership in the development of City-owned and operated facilities.**

The City should demonstrate leadership by designing, constructing, and operating its own facilities according to green building principles. These projects should be publicized as case studies to educate the development community. Building performance should be measured to assess cost-effectiveness and demonstrate good stewardship of funds to taxpayers.

**GB3 Re-evaluate City impact fees in light of the reduced impact of green buildings.**

Green buildings reduce the development impact by reducing stormwater rates and volumes, habitat destruction, loss of contiguous open space, water use, transportation, heat island effect, energy consumption, greenhouse gas emissions, and material resource use and waste. Many of these development impacts are used as the basis for the assessment of development impact fees by the City. The City should evaluate appropriate reduction in fees related to new development standards.

**GB4 Coordinate development standards with City's alternative transportation plan.**

Developments should be designed to accommodate all forms of transportation. The RCSP recommends that developments provide structural improvements for pedestrian, bicycle, carpool, and public transportation to the same extent they provide improvements for single-occupant automotive transportation.

**GB5 Provide assistance to the development community in adopting economically viable and ecologically responsible green building strategies.**

There is an abundance of free and easily accessible resources to assist the development community with green building. The RCSP does not advocate that City staff spend valuable time in educating the development community in green building practices; however, it does recommend that City staff be able to guide developers with formulating unique, site-specific green building strategies.

### **“Doing Well By Doing Good”**

The Royal Institute of Chartered Surveyors (RICS) recently released a report that offers evidence of the economic benefit of green buildings in the US. The study discovered that buildings certified green can significantly impact market rents and values of commercial space. The study revealed that buildings with the green certification rent for roughly 3% more per sq ft with the difference in effective rent estimated at about 6% per sq ft. The increment to the selling price may reach as high as 16%.

Source: Piet Eichholtz, Nils Kok, and John Quigley. “Doing Well By Doing Good? An Analysis of the Financial Performance of Green Office Buildings in the USA”. RICS Research. March 2009.



### **GB6 Encourage developers to consider the entire life-cycle of a built project.**

The construction and demolition of a development can contribute significantly to loss of contiguous open space, creation of underutilized development, material resource impacts, greenhouse gas emissions, soil erosion, consumption of landfill space, reduction of air quality, loss of historic resources, and heavy transportation impacts. These impacts are compounded when developments are designed for a short life-span, and developed without an “exit strategy”. The RCSP recommends that the development community design not just for immediate needs, but for the entire life-span of the development.

The RCSP recommends the creation of a template “Decommissioning Plan” that can be easily and quickly filled out by an architect or developer. This Plan would not commit or obligate the developer, but would serve as a template for future use of the property after the expected life-span of the development

## **INDICATORS for Green Buildings**

Indicators contained in the table below provide recognizable and, where possible, measurable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in Tthe Introduction.

<b>INDICATOR</b>	<b>TARGET</b>	<b>AGENCY RESPONSIBLE FOR TRACKING</b>
Increase in municipal green buildings	LEED Silver or equivalent certification for 75% of municipally owned or operated buildings by 2030	Community Development
Reduce non-renewable energy use in municipal buildings	Exceed Title 24 requirements by 10%	Southern California Edison Southern California Gas
Reduce city’s contribution to urban heat island effect	Downward trend of summer nighttime ambient temperature by 2050	Community Development
Increase on-site water retention and groundwater recharge	Decrease storm water runoff rates and volumes for 1and 2 year & 24 hour storm events by 25% by 2050	Municipal Utilities
Decrease single occupancy non-commercial vehicle miles travelled.	25% decrease by 2050	Community Development
Reduce construction waste	Decrease weight of construction and demolition debris hauled to landfill by 90% by 2050	Quality of Life
Increase market demand for residential and commercial green buildings	Increase lease rates in certified green buildings and resale values due to certification by 5% by 2020	Redevelopment Agency

## **ACTIONS for Green Buildings**

The actions in the table below will individually and cumulatively contribute to achieving Redlands’ sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

GREEN BUILDING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
<b>GB1</b>	<b>Adopt broadly accepted standards for green building.</b>					
GB 1.1	Implement integrated stormwater management plan (CALGreen mandatory measure)	Mandatory*	Undetermined	Supportive	2011-2015	Municipal Utilities & Engineering
GB 1.2	Urge the use of Energy Star equipment and appliances in new construction & renovations (CALGreen voluntary measure)	Mandatory*	Positive	Supportive	2011-2015	Building & Safety
GB 1.3	Submeter major energy (HVAC equipment, lighting, plug loads, process load) (CALGreen mandatory measure for water; Nonres. CALGreen voluntary measure for energy. Encourage real-time monitoring.	Voluntary-City	Undetermined	Supportive	2011-2015	Building & Safety
GB 1.4	Encourage submittal of Owner's Project Requirements (OPR) and Basis of Design (BoD) for permitting. (CALGreen mandatory measure; Nonres)	Mandatory*	Undetermined	Non-Quantifiable	2011-2015	Building & Safety
GB 1.5	Encourage submittal of Systems Manual prior to occupancy. (CALGreen mandatory measure; Nonres.)	Mandatory*	None	Supportive	2011-2015	Building & Safety

\*CALGreen Code is a part of the California Code of Regulations, Title 24. These building regulations and standards implement the State's statutes and have the same force of law. This Code applies to all occupancies in the State of California. Effective date: 1/1/2011.

GB 1.6	Consider establishing minimum energy performance using performance-based energy modeling. Consider a minimum compliance margin of 15% better than Title 24 Part 6. Encourage non-compliance reporting, to include estimates of process, plug loads. (CALGreen voluntary measure)	Voluntary-City	Undetermined	Supportive	2011-2015	Municipal Utilities & Engineering
GB 1.7	Implement a 20% (40% in office/retail) reduction in domestic water usage, using EAct as a baseline (for new construction). Develop prescriptive fixture rates for renovations. (CALGreen mandatory and voluntary measures)	Mandatory*	None	Quantifiable	2011-2015	Municipal Utilities & Engineering
GB 1.8	Encourage 50% reduction in irrigation water usage (performance) on new construction. Possibly limit turfgrass coverage to [0-5% commercial, 50% residential]. (CALGreen mandatory measure)	Mandatory*	Undetermined	Quantifiable	2011-2015	Municipal Utilities & Engineering
GB 1.9	Encourage having a construction indoor air quality plan (CIAQ), including a pre-occupancy building flush-out. (CALGreen voluntary measure; Nonres.)	Voluntary-City	None	Baseline Information	2011-2015	Building & Safety
GB 1.10	Specify no- or low-VOC materials. (CALGreen mandatory measure)	Mandatory*	Undetermined	Baseline Information	2011-2015	Building & Safety

\*CALGreen Code is a part of the California Code of Regulations, Title 24. These building regulations and standards implement the State's statutes and have the same force of law. This Code applies to all occupancies in the State of California. Effective date: 1/1/2011.

GB 1.11	Entryway systems. All major points of entry will have a permanent walk-off system (commercial only). (CalGreen voluntary measure; Nonres.)	Voluntary	Undetermined	Non-Quantifiable	2011-2015	Building & Safety
GB 1.12	Tobacco smoke control. Prohibit smoking within 25' of any opening or air intake of any publicly accessible building. Can apply to all new and existing buildings. (CALGreen mandatory measure)	Mandatory*	None	Supportive	2011-2015	Building & Safety
<b>GB2</b>	<b>Demonstrate leadership in the development of City-owned and operated facilities.</b>					
GB 2.1	Require LEED Building Design and Construction Silver certification (at minimum), or the then-current green building standard for all municipal construction and renovation projects exceeding 5,000 gross square feet. Encourage LEED Operations and Maintenance Silver certification for all existing municipal facilities exceeding 5,000 gross square feet.	Voluntary-City	Undetermined	Supportive	Underway	Community Development
GB 2.2	Consider documenting municipal green building efforts and post-occupancy building performance metrics on the city's website for use as an educational resource for the development community.	Education & Research	None	Non-Quantifiable	Underway	Municipal Utilities & Engineering

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<b>GB3</b>	<b>Re-evaluate City impact fees in light of the reduced impact of green buildings</b>					
GB 3.1	Consider adopting broadly accepted design-phase calculation methodologies for energy conservation, water conservation, irrigation water conservation, alternative transportation use, and stormwater management; consider adjusting development impact fees for new development standards.	Voluntary-City	Positive	Supportive	2016-2020	Municipal Utilities & Engineering
GB 3.2	Consider developing protocols for aligning predicted impact reductions with measured impact reductions.	Voluntary	None	Non-Quantifiable	2016-2020	Municipal Utilities & Engineering
<b>GB 4</b>	<b>Coordinate development standards with City's General Plan.</b>					
GB 4.1	Consider developing shaded, protected, attractive, and accessible pedestrian paths of travel between building entrances and parking lots, sidewalks, adjacent properties, and public transportation stops.	Voluntary	None	Supportive	2016-2020	Community Development
<b>GB5</b>	<b>Provide assistance to the development community in adopting economically viable and ecologically responsible green building strategies.</b>					
GB 5.1	In Environmental Review Committee, review projects for compliance with green building requirements and for opportunities for potential green building strategies.	Mandatory*	Undetermined	Non-quantifiable	Underway	Community Development
GB 5.2	Consider providing incentives for city staff to develop expertise in	Voluntary	Undetermined	Non-	Underway	Community Development and

	green building strategies and certification.			quantifiable		Building & Safety
<b>GB 6</b>	Encourage developers to consider the entire life-cycle of a built project.					
GB 6.1	Consider developing a decommissioning plan that describes the design intent for the end-of-life of new projects, including expected life span of core and shell, possible adaptive reuse scenarios, potential material reuses, recyclability of demolished materials, and disassembly of building systems.	Education & Research	None	Non-quantifiable	2016-2020	Community Development
GB 6.2	File away decommissioning plans in digital format for future reference upon application for major renovation or demolition.	Voluntary - City	None	Non-quantifiable	2016-2020	Building & Safety

\*CALGreen Code is a part of the California Code of Regulations, Title 24. These building regulations and standards implement the State's statutes and have the same force of law. This Code applies to all occupancies in the State of California. Effective date: 1/1/2011.

## Chapter 4: WASTE REDUCTION AND RECYCLING

The City of Redlands is a model city in terms of the programs it offers to reduce landfill waste and maximize recycling. Redlands offers curbside green waste collection as well as construction and demolition programs; commingled curbside recycling for single-family residences; commingled commercial recycling program for businesses and multi-family units; and public drop-off recycling at the City yard. The City also provides residents the opportunity for weekly drop-off of electronics waste for recycling. In addition, it offered a backyard composting program in the past. Together, these programs have helped Redlands satisfy AB 939 which mandated that cities divert 50% of their waste from landfills by the year 2000.

By placing further emphasis on recycling, the city can realize additional benefits. Redlands landfill generates approximately \$700,000 annually for the general fund through tipping fee revenue from non-Redlands waste haulers. By increasing recycling rates, the City can extend the life of its landfill and can continue to reap these financial benefits. Unlike garbage, recyclables also have value. As recently as fall 2008, Redlands' recycling was generating approximately \$25,000 per month which covered one third of its collection costs. A special focus on recycling will also help the City satisfy future regulations and legislation related to reducing the amount of waste going to landfills. AB 32 recommends in its scoping plan that recycling be used as a means to reduce GHG's down to 1990 levels, and legislation (e.g., AB479) has been proposed in prior legislative session that would mandate 75% diversion of waste by 2020.



### Recycling Benefits

- Creates jobs-**Recycling creates 1.1 million U.S. jobs**, \$236 billion in gross annual sales and \$37 billion in annual payrolls.
- Public sector investment in local recycling programs pays great dividends by **creating private sector jobs**. For every job collecting recyclables, there are 26 jobs in processing the materials and manufacturing them into new products.
- Reduces Green House Gases-A national recycling rate of 30% **reduces greenhouse gas emissions** as much as removing nearly 25 million cars from the road.
- Extends landfill life
- Costs less than landfilling
- Saves energy and water
- Saves resources such as trees and petroleum

Source- <http://www.recycling-revolution.com/recycling-benefits.html>

## **GOALS for Waste Reduction and Recycling**

The following goals comprise major objectives for sustainability through waste reduction and recycling in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### **WR1 Improve Commercial Recycling Diversion Rates (Includes Multi-Unit Housing)**

Since less than 50% of multi-unit housing complexes have recycle bins and less than 50% of commercial accounts have recycle bins, Redlands should encourage use of existing programs offered by the City or establish additional programs to increase recycling by these accounts. The current and future programs offered by the City will enable these accounts to take advantage of the financial rewards of recycling. For instance, a four cubic yard recycle bin costs \$9.40 per month (2009) for unlimited pick-ups. A 4 cubic yard mixed-waste bin picked-up once a week costs \$112.70 per month (2009). Not only will recycling save these entities a significant amount of money, it will also help Redlands divert a considerable amount of waste.

### **WR2 Ensure the Financial Stability of Redlands Waste Collection and Waste Diversion Programs**

Monthly charges (2009) for our commercial and residential waste collection program currently do not fully cover operating costs. Moreover, our monthly charges are among the lowest of local jurisdictions. With this in mind the City needs to take steps to make the program cost neutral. In doing so, it is important to recognize that the revenue generated by recycling reduces waste collection costs. Commercial recycling should also be emphasized as a way to offset the costs of any possible increases to monthly charges for waste collection.

### **WR3 Create Opportunities to Recycle More Materials**

The City should consider creating opportunities to recycle more materials. Lightweight bulky materials have historically been unattractive for diversion due to AB 939's measurement of diversion by weight rather than volume. Options should be explored for recycling large volume materials such as mattresses and foam. In addition to diverting more materials from our landfill, creating new recycling opportunities will invigorate the program.

**Increase Diversion by Accepting New Materials**

The City of Roseville, located in Northern California, increased its diversion rate by accepting additional items in their drop-off program such as foam (commonly known as Styrofoam®, a registered trademark of The Dow Chemical Company). In 2008, they diverted 20 tons of this material from their landfill. This is the equivalent of 120,000 cubic feet of space!



**WR4 Invest In New Infrastructure and Technology that Contributes to Increased Waste Diversion**

The City should consider investing in infrastructure that will help it reach the next benchmark level of waste diversion (75%). Since such investments should be financially self-supporting, grants should be pursued to minimize the financial burden for our residents. In addition to helping Redlands increase its diversion rates, enhanced infrastructure will also help the City comply with aforementioned legislation, increase the lifespan of our landfill and other benefits listed in the “Recycling Benefits” panel above.

**INDICATORS for Waste Reduction and Recycling**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

INDICATOR	TARGET	AGENCY RESPONSIBLE FOR TRACKING
Reduce mixed solid waste landfill stream from both businesses and households, including multi-housing households	Reduce mixed solid waste entering landfill by 10% by 2015	Quality of Life
Increase commercial and residential recycling, including multi-housing and institutional recycling	Increase city-wide recycling by 20% by 2015	Quality of Life
Increase commercial and residential composting of organic (food) waste	Establish curbside food composting program by 2012 & reduce food waste to landfill by 10% by 2012.	Quality of Life

## **ACTIONS for Waste Reduction and Recycling**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

WASTE REDUCTION AND RECYCLING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
WR.1	<b>Improve Commercial Recycling Diversion Rates (Includes Multi-Unit Housing)</b>					
WR1.1	Target commercial (including facilities for education, health care, etc...) and multi-unit housing (MUH) locations with a direct mail recycling campaign (Include a cost analysis).	Voluntary	Undetermined	Supportive	2011-2015	Quality of Life
WR1.2	Enlist the U of R to design and be responsible for a program to improve commercial and MUH recycling rates. This program should consider having students partner with local commercial accounts.	Education & Research	Undetermined	Supportive	2011-2015	Quality of Life
WR1.3	Use multiple media forms to encourage commercial and MUH employees and residents to assist with enrolling property in recycling programs.	Voluntary	Undetermined	Supportive	2011-2015	Quality of Life
WR1.4	Work with stakeholders to eliminat3 obstacles that hinder commercial and MUH recycling	Voluntary	Undetermined	Supportive	2011-2015	Quality of Life & City Council
WR.2	<b>Ensure the Financial Stability of Redlands Waste Collection and Waste Diversion Programs</b>					
WR2.1	Consider a rate increase to augment the QOL conversion of its solid waste recycling fleet to LNG fuel and to provide for augmented	Funding - City	Positive	Supportive	2016-2020	Quality of Life & City Council

WASTE REDUCTION AND RECYCLING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	recycling programs.					
WR2.2	If warranted, raise residential collection rates in a manner that encourages use of smaller 60 gallon bins instead of the 90 gallon bins.	Funding - City	Undetermined	Supportive	2011-2015	Quality of Life & City Council
WR2.3	Ensure that the cost effectiveness of recycling bins is clearly communicated to all MUH and commercial entities.	Voluntary	Undetermined	Supportive	2011-2015	Quality of Life & City Council
WR.3	<b>Create Opportunities to Recycle More Materials</b>					
WR3.1	Create a contest that encourages increased residential recycling.	Incentive	Undetermined	Supportive	2011-2015	Quality of Life & City Council
WR3.2	Offer rewards that will motivate all demographics to recycle.	Incentive	Undetermined	Supportive	2016-2020	Quality of Life & City Council
WR3.3	Publicize recycling contest in a manner that reinforces what should be placed in the recycle bin.	Voluntary	Undetermined	Supportive	2011-2015	Quality of Life & City Council
WR3.4	Identify new items to add to the list of accepted recycled materials.	Education & Research	Undetermined	Supportive	2011-2015	Quality of Life
WR3.5	Support and encourage Extended Producer Responsibility (EPR) for difficult to recycle materials.	Education & Research	Positive	Supportive	2016-2020	City Council
WR.4	<b>Invest In New Infrastructure and Technology that Contributes to Increased Waste Diversion</b>					

WASTE REDUCTION AND RECYCLING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
WR4.1	Continue to explore the possibility of private-public venture for biomass to energy program	Infrastructure	Undetermined	Quantifiable	Underway	Quality of Life & City Council
WR4.2	If Action 4.1 does not occur, consider building a dirty MRF at the landfill to process MSW. It is estimated that 30% of the waste recovered could be diverted from the landfill.	Infrastructure	Undetermined	Quantifiable	2016-20	Quality of Life & City Council
WR4.3	The City should explore grants that could pay for recycling collection devices to be placed wherever we have public trash bins and should be designed to minimize contamination and possible theft.	Infrastructure	Undetermined	Supportive	2011-2015	Quality of Life & City Council

## Chapter 5: CLIMATE FRIENDLY PURCHASING

The recommendations for climate friendly purchasing are focused upon purchasing practices and policies of the City. The RCSP is mindful that these recommendations may translate to other public institutions in the City, and even private enterprises. Wherever institutional purchasing is undertaken, efforts to develop climate friendly purchasing may be undertaken. By taking a leadership role in shaping climate friendly purchasing practices, the City may contribute to the growing trend among businesses to offer increasingly climate friendly products and for consumers to expect to find such products on the shelves of retailers.

### Climate Friendly Purchasing Benefits



- Redlands as a city can model climate-sensitive purchasing policies for other local institutions.
- Concern for recycled-content in products and in packaging can contribute to a greener community.
- Vendors who follow climate-friendly practices may choose to do business in Redlands.
- The City might help identify products and vendors which meet climate friendly standards, and assist in them in locating in our city or region.
- Products to be considered might include cleaning products, appliances, electronic equipment, flooring, foods and food services, fluids, paints and coatings, and paper products.

## GOALS for Climate Friendly Purchasing

The following goals comprise major objectives for sustainability through climate friendly purchasing practices in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### CF1 Commit to purchasing Products and Services that are Climate Friendly

Redlands has pursued a policy of purchasing climate-friendly products and services for many years. Because of complexity in this marketplace, the City should rely on standards and information regarding environmental attributes and performance of climate friendly products as determined by recognized certification organizations such as “Energy Star” and “Green Seal.” The U.S. Communities program, in which the City currently participates to receive municipal discounts, is an example of an organization that relies on these certification organizations to guide purchases.

**CF2**            **Provide Preference to Climate-Friendly Vendors in City Purchasing Policy**

By seeking or preferring to do business with vendors of climate friendly products and services, the City can take a leadership role that encourages wider climate-sensitive purchasing throughout the community. The City’s climate friendly and sustainable endeavors are not conducted in a vacuum, and each decision affects many others. When bid specifications and requests for proposals are prepared, City departments should include provisions that provide preference to vendors whose practices are aligned with the RCSP. Examples of such provisions include but are not limited to, use of products with recycled or climate friendly content and packaging, use of alternative fuel vehicles, and use of locally produced goods.

**CF3**            **Ensure Policies Continuously Advance Climate Friendly Purchasing Practices**

The constant change in the number and character of climate friendly products makes climate friendly purchasing a very dynamic process. Standards for greenhouse gas emissions, water conservation, waste reduction, fuel efficiency and more are consistently being reassessed and implemented. As a result, City procurement policies may easily become outdated. To ensure purchasing policies are up to date, it is important to consistently review and analyze current (baseline) purchasing and recognize areas of needed updating and improvement. Such practices will ensure the City provides leadership in climate friendly purchasing. As part of this review and update, the City should consistently expand the percentage of its purchases that meet climate friendly standards.

## **INDICATORS for Climate Friendly Purchasing**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

<b>INDICATOR -</b>	<b>TARGET</b>	<b>AGENCY RESPONSIBLE FOR TRACKING</b>
Increase municipal purchase of sustainable products	Increase city purchases of sustainable office supplies, products and equipment by 50% by 2012	Purchasing/Procurement
Increase municipal patronage of	Increase city purchase of services	All departments

climate-friendly vendors	from sustainable vendors by 50% by 2012	
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## **ACTIONS for Climate Friendly Purchasing**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

CLIMATE FRIENDLY PURCHASING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
<b>CF1</b>	<b>Commit to purchasing Products and Services that are Climate Friendly</b>					
CF1.1	Purchasing decisions based on accurate environmental information from recognized certification organizations	Voluntary-City	Undetermined	Supportive	2011-2015	Purchasing/ Procurement
CF1.2	Include environmental factors along with price and performance in purchasing policy and decisions	Voluntary-City	Undetermined	Supportive	2011-2015	Purchasing/ Procurement
CF1.3	Evaluate on-line purchasing for climate friendly benefits	Education & Research	Undetermined	Non-Quantifiable	2016-2020	Purchasing/ Procurement
<b>CF2</b>	<b>Provide Preference to Climate-Friendly Vendors in City Purchasing Policy</b>					
CF2.1	Provide preference to climate-friendly vendors in bid and proposal documents	Voluntary-City	Undetermined	Supportive	2016-2020	All departments
<b>CF3</b>	<b>Ensure Policies Continuously Advance Climate Friendly Purchasing Practices</b>					
CF3.1	Track changes in climate friendly marketplace and constantly update procurement policies	Voluntary-City	Undetermined	Supportive	2016-2020	All departments
CF3.2	Increase percentage of climate friendly purchase by 5 per cent each year	Voluntary-City	Positive	Supportive	2016-2020	All departments

CLIMATE FRIENDLY PURCHASING ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
CF3.3	Establish departmental and interdepartmental teams to review climate friendly purchasing policy	Voluntary-City	None	Non-quantifiable	2016-2020	All departments

## Chapter 6: RENEWABLE ENERGY

The City of Redlands has been a pioneer in new energy technologies since 1893. In that year the first commercial application of three-phase electrical power in the United States and probably the world was successfully deployed at the Mill Creek No. 1 hydroelectric plant. Sources of renewable energy available today and relevant to Redlands' location include solar, such as photovoltaic (PV) and thermal technologies, wind, biomass or waste to energy, and geothermal. Each can play a role in increasing the generation of renewable energy in Redlands.

Solar PV is growing in popularity as a renewable energy source for our city. With an average of 279 day of sunshine, Redlands is ideal for solar power generation and as of the end of 2008, 63 solar photovoltaic systems had been installed in Redlands (Solar Baseline). These systems, including four large commercial ( $\geq 10$  kilowatt/kW) and 59 residential and small commercial ( $< 10$  kW) provide nearly one megawatt of power generation. Every megawatt of solar energy generated eliminates 2.5 tons of CO<sub>2</sub> per day or 900 tons per year.



Solar power generation using PV and solar thermal technologies create three distinct types of benefits for the City of Redlands: economic, environmental and regulatory compliance. Economic benefits include offsetting the rising cost of electricity and creation of new sustainable businesses and jobs. Electricity costs have increased an average of 6% per year for the last decade, while the cost of a solar PV power installation is at an all time low, in part due to federal, state and local financial incentives, as well as a drop in the cost of solar panels. Thus, the average repayment period has dropped significantly in the last year. Increasing the installation rates of solar power systems in the city also creates jobs and growth of local solar installation firms. For businesses that install solar PV or geothermal technologies the reduction in energy costs can increase bottom line profitability.

Note: The local electrical utility for Redlands is Southern California Edison (SCE). SCE manages the California Solar Initiative (CSI) program under the direction and auspices of the CPUC. This program offers incentives that help defray the initial costs of solar power systems for residential, commercial and community building owners. Interconnection requirements exist for any SCE customer to connect their solar power

system to the electrical grid. These requirements exist to ensure compatibility and safety standards. More information can be found at:

<http://www.sce.com/customergeneration/customer-generation.htm>.

The CO<sub>2</sub> emissions reduction from solar energy will help Redlands fulfill its obligations for meeting regulatory requirements now and in the future. The Scoping Plan prepared by the California Air Resources Board to direct implementing of AB 32 outlines the important role of solar PV in reducing CO<sub>2</sub> emissions. Programs such as California's Million Solar Roofs provide incentives for solar PV installation and play an important role in reaching our state GHG reduction goals. More environmental benefits of solar PV power are outlined in the box below:

	<p><b>Solar Environmental Benefits:</b></p> <ul style="list-style-type: none"><li>• Solar power generation has the lowest environmental impact of any electricity generating technology. It contributes to the realization of a sustainable society, creating energy to meet future demand.</li><li>• Photovoltaic (PV) systems require no fuel, produce no emissions and generate no waste. They have no moving parts.</li><li>• Sustainable energy systems like solar PV panels help to slow global warming by reducing carbon emissions.</li><li>• The use of renewable energy reduces our profound reliance on fossil fuels by lowering the amount of energy needed from conventional power generation sources.</li><li>• Solar electricity generation produces zero carbon emissions. However, electricity produced from coal and natural gas produces 2.10 and 1.32 pounds of carbon emissions per kilowatt-hour respectively.</li><li>• Solar PV taps a practically inexhaustible power source—the sun</li><li>• Because photovoltaic systems are most frequently mounted on rooftops, they have minimal or no negative impact on land use.</li></ul>
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Other emerging technologies that should be considered for inclusion in Redlands' renewable energy portfolio are geothermal heat pumps, gasification of municipal waste and other biosolids, and solar thermal water heating.

Low carbon fuels are sometimes associated with renewable energy endeavors, and are an important part of efforts to reduce greenhouse gas emissions and spur economic growth through research and development of new technologies. Discussion of the role of low carbon fuels in Redlands' sustainability efforts and the expanded role they may play in the future is contained in Chapter 7, Efficient Transportation.

## GOALS for Renewable Energy

The following goals comprise major objectives for sustainability through increased use of renewable energy sources energy in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### **RE1      Accelerate the adoption of solar power usage in Redlands:**

Distributed solar photovoltaic and other solar energy-based systems, such as solar thermal, are important renewable energy opportunities for Redlands. The City can encourage residents, landlords and business owners to install solar PV and other solar-energy based equipment on their property. By installing solar PV and other solar energy-based systems at City facilities, the City can lead by example in efforts to increase local use of renewable energy sources. The City can also provide a variety of educational materials to assist property owners in this process, and can make sure that City policies and ordinances support rather than restrict the implementation of solar-energy based systems.

#### **SCE Solar Power Rooftop Installation in Redlands**

In February 2011, Southern California Edison installed rooftop solar photovoltaic panels across 1.5 million square feet on three ProLogis warehouse roofs in the northwestern most part of the city.

The 34,600 panels installed in Redlands can generate enough energy to power 4,550 average homes, according to SCE. The project is estimated to provide over 7 million watts of clean power to the community.



### **RE2      Establish a Property Assessed Clean Energy (PACE) Assessment District for Financing Renewable Energy and Energy Efficiency Installations**

Financing continues to be a barrier for property owners wishing to install renewable energy equipment or make energy efficiency improvements to their property. The passage and signing of AB 811 in 2008 by the California State Legislature, provided a new mechanism for financing these improvements. However, in 2010 an opinion issued at a national level delayed the use of this method. Efforts are underway to address the concerns raised at the national level so this financing tool can be put to use again. Prior to this national level action, use of this financing mechanism by Palm Desert proved its popularity and its success. Redlands should evaluate the different methods of obtaining funding to support a PACE District and move forward with

setting up such a citywide district based on the financing tools deemed most suited to the city.

### **AB 811: Energy Independence Success Story in Palm Desert**

Highlights of the economic benefits reaped from the Palm Desert AB 811 Energy Independence program Include:

(Source: Patrick Conlon, (past) Director, EIP)

- \$7.5 million dollars injected into the community through program loans over the course of one year
- Annual consumer savings from program: \$19,637,000
- Program administrative fees from loan program support 1.5 city employees at about \$140,000 annually
- Growth of contractors in the area supporting program, from 4-5 to over 20



### **RE3 Pursue implementation of Mixed Municipal Waste to Energy Conversion Technology**

Many sources of renewable energy are available today. Among those potentially suited to Redlands is conversion of mixed municipal waste to energy using gasification technology. Because Redlands operates its own solid waste collection fleet and its own landfill, the City is in a position to develop a self-contained mixed municipal waste to energy facility. The City has been exploring development of a pilot gasification system near the City's landfill and wastewater treatment facilities. Such a facility could provide a significant supply of renewable energy to the City. The methane gas produced by the landfill and the wastewater treatment plant may also prove to be effective feedstock for the gasification facility.

### **RE4 Monitor Progress in Developing and Implementing Other Renewable Energy Technologies**

New renewable energy technologies are constantly emerging, and existing technologies are constantly being improved. It is important for the City to keep abreast of these technologies for possible use at City facilities, inclusion in future phases of the PACE district, and providing public outreach and education. Equally important, many of these advances in renewable energy and energy efficiency hold the potential for creating local business development and employment in areas of manufacture, assembly, installation and consulting.

## **INDICATORS Renewable Energy**

Indicators contained in the table below provide recognizable and, where possible, measurable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

<b>INDICATOR</b>	<b>TARGET</b>	<b>AGENCY RESPONSIBLE FOR TRACKING</b>
Increase renewable power generation on residential, commercial, public and City owned buildings and lands	Increase renewable energy from all sources by 20% by 2015, 40% by 2020 and 60% by 2025	Quality of Life

## **ACTIONS for Renewable Energy**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

RENEWABLE ENERGY ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
RE 1	Accelerate the adoption of solar power and/or other alternative energy usage in Redlands					
RE 1.1	Establish incremental growth goals for solar power/alternative energy systems in Redlands (e.g., solar PV, solar thermal, biomass, wind, etc...)	Voluntary-City	Positive	Baseline	2011-2015	Quality of Life & City Council
RE 1.2	Create scorecard process so that attainment of goals can be easily communicated to the residents.	Voluntary-City	Positive	Supportive	2011-2015	Quality of Life
RE 1.3	Accelerate implementation of solar/ alternative energy-based technology through permitting process (e.g., reduced permit fees, streamlined permit approval process)	Incentive	Positive	Quantifiable	2011-2015	Community Development & City Council
RE 1.4	Put recommendations and examples together for cost-effective solar and/or other alternative energy-based technology installations on historic public and residential buildings to be used as guidelines.	Voluntary-City	Positive	Quantifiable	2011-2015	Quality of Life & City Council
RE 1.5	City ordinances should clearly articulate guidelines to address tree shading issues associated with solar power and/or other alternative energy installations.	Voluntary-City	None	Supportive	2011-2015	Community Development, Quality of Life & City Council
RE 1.6	Install solar / alternative energy technology on city available space	Voluntary-City	Positive	Quantifiable	2011-2015	Quality of Life

RENEWABLE ENERGY ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	based on demonstrated return on investment (ROI), for both city owned and PPA purchased energy					
RE 1.7	Investigate and distribute information on Multi-Family Affordable Solar Housing (MASH), Single-Family Affordable Solar Housing (SASH) and any other incentive programs for solar / alternative energy-based technology for multi-family and residential housing and city owned buildings. In new construction stipulate that solar/alternative energy-based technology incentive programs be investigated.	Incentive	Undetermined	Quantifiable	2011-2015	Community Development
RE 1.8	Encourage event organizers to use solar/alternative energy technology in event staging as possible including an outline of types of technologies available to assist event staging.	Voluntary	None	Non-Quantifiable	2011-2015	Quality of Life
RE 2	<b>Establish a PACE Assessment District for Financing Renewable Energy and Energy Efficiency Installations</b>					
RE 2.1	Establish PACE district (city or regional) and include recommendations for energy efficiency and renewable energy technologies acceptable under loan program. Specify percentages of PACE funds allotted to energy	Voluntary - City	Undetermined	Quantifiable	2011-2015	Quality of Life & City Council

RENEWABLE ENERGY ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	efficiency and solar/alternative energy technology installations, respectively.					
RE 2.2	Constantly monitor activities in other areas in California, such as the Sonoma County Energy Independence Program, to identify other energy saving and climate impact reducing programs suitable for inclusion in the PACE program. Recommend inclusion of programs appropriate for Redlands.	Education & Research	None	Supportive	2011-2015	Community Development & Quality of Life
RE 2.3	Integrate energy efficiency surveys or audits into the PACE program.	Voluntary-City	None	Supportive	2011-2015	Quality of Life
<b>RE 3</b>	<b>Pursue implementation of Mixed Municipal Waste to Energy Conversion Technology</b>					
RE 3.1	Continue the city's effort to become the pilot location for conversion of mixed municipal waste to energy based on the advanced gasification technology	Voluntary-City	Positive	Quantifiable	Underway	City Council & Quality of Life
RE 3.2	Continue city's efforts to convert methane gas from the landfill and wastewater treatment plant to energy to power the plant	Voluntary-City	Positive	Quantifiable	Underway	Quality of Life
RE 3.3	In the absence of implementing a gasification project, investigate anaerobic composting of mixed solid waste to reduce GHG, divert	Education & Research	Undetermined	Quantifiable	2016-2020	Quality of Life & City Council

RENEWABLE ENERGY ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	MSW and to generate electricity from the off-gas.					
<b>RE 4</b>	<b>Monitor Progress in Developing and Implementing Other Renewable Energy Technologies</b>					
RE 4.1	Explore use of other renewable energy technologies that hold potential of contributing to Redlands' efforts to expand generation of renewable energy. Seek opportunities to align with university and other programs to explore these technologies.	Education & Research	Undetermined	Supportive	2016-2020	Quality of Life & City Council
RE 4.2	Monitor development in renewable energy technologies to identify potential opportunities to include renewable energy research, manufacture, assembly, installation, consulting and other activities into Redlands economic development strategy.	Education & Research	Undetermined	Supportive	2011-2015	Quality of Life & City Council

## Chapter 7: EFFICIENT TRANSPORTATION AND LOW CARBON FUELS

More than 40% of greenhouse gas emissions in the state of California are from the transportation sector, and local action to reduce this impact is integral to Redlands' sustainability plan. The community's greatest opportunities for reducing greenhouse gas emissions from vehicles are the "greening" of its own fleets, expanding the availability of public transportation through light rail and buses, and improving the efficiency with which people travel in the City of Redlands and the surrounding region. The City can also implement new approaches to delivery of transportation services and infrastructure, such as better coordination of land use and transportation plans, increased access and availability of transit services, improved road connectivity and signal synchronization, improved transportation amenities for bicyclists and pedestrians, and expanded carpool/van pool programs.



### Develop Clean Fuel Strategies

The University of Redlands currently has two functioning charging stations for electric vehicles. In addition, the City of Redlands City Yard includes a new Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG) fueling station. This station serves the City's fleet of 18 LNG vehicles and 10 CNG vehicles. This station is also open to the public.

## GOALS for Efficient Transportation and Low Carbon Fuels

The following goals comprise major objectives for sustainability through efficient transportation and low carbon fuels in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### ET1 Incorporate Transportation Demand Management Strategies to Reduce Dependence on Single Occupancy Vehicles

The City should explore strategies and policies that reduce the dependency on single occupancy vehicles by developing alternative modes of transportation. For example,

the City could coordinate with Omnitrans, SANBAG and Metrolink to improve public transit services. Also, greater use of shuttle services between event facilities, like the Redlands Bowl and downtown could be established as part of Transit Oriented Development projects. Continued promotion of vanpool, carpool and rideshare programs for major employers in the city also reduce dependence on single occupancy vehicles. Improving the environment for non-motorized transportation (i.e., bicycles, pedestrians) through master planning followed by construction can also help reduce dependence on single occupancy vehicles.

### **Business Development**

Expansion of existing non-motorized transportation amenities increases business development opportunities within the local economy. The more demand for bicycles for example, the more demand for businesses that sell and service bicycles.



### **ET2      Develop Clean Fuel Strategies for City Vehicles**

The City should initiate obtaining more fuel-efficient vehicles throughout the City fleet. The type of fuel-efficient vehicles purchased should reflect the predominant uses for which the vehicles are intended rather than the demands from occasional and extraordinary uses. Other opportunities such as car share programs for fuel-efficient vehicles should be considered as well. The City can also support private sector efforts to make greater use of clean fuel vehicles by advocating incentives to purchase fuel-efficient vehicles.

## **INDICATORS for Efficient Transportation and Low Carbon Fuels**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

INDICATOR	TARGET	AGENCY RESPONSIBLE FOR TRACKING
Increase use of public transportation	Increase public transportation use by 10% by 2015 & increase shuttle services for relevant populations by 10% by 2015	Omnitrans
Reduce vehicle miles traveled within city	Reduce single-occupancy vehicle travel within city by 20% by 2020	SANBAG, Community Development
Encourage pedestrian and bicycle travel	Complete Redlands Orange Blossom Trail and Santa Ana River Trail by 2015; adopt master sidewalk plan by 2012	Community Development/QOL/MUED
Establish Non-Motorized Transportation Plan	Adopted by 2012	Community Development
Increase business participation in commuter alternative transportation and carpooling programs	Increase businesses offering employee alternative transportation incentive programs by 20% by 2015	Community Development
Increased use of fuel-efficient light duty vehicles in City fleet	15% of fleet by 2015 20% of fleet by 2020 25% of fleet by 2030	Quality of Life

## **ACTIONS for Efficient Transportation and Low Carbon Fuels**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

EFFICIENT TRANSPORTATION AND LOW CARBON FUELS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
ET1	Incorporate Transportation Demand Management Strategies to Reduce Dependence on Single Occupancy Vehicles					
ET1.1	Expand local bus transit service by increasing frequency and adding more routes along arterial streets during peak periods.	Infrastructure	Positive	Quantifiable	2011-2015	Omintrans
ET1.2	Promote shuttle service connecting to Metrolink and local rail that synchronizes with schedules.	Incentive	Positive	Supportive	2016-2020	Omnitrans, private shuttle companies
ET1.3	Evaluate expanding access to (public transit) by adding routes, and shelters and benches within 1/4 mile of as many residential areas, employment centers, commercial centers, schools, and parks as possible. Evaluate existing lighting at all shelters to improve safety.	Voluntary-City	Positive	Supportive	2016-2020	Omnitrans, City
ET1.4	Explore trip reduction programs such as carpools/vanpools with City staff, large employers and with neighborhoods with various incentives.	Incentive	Positive	Supportive	2011-2015	Quality of Life/Treasurer
ET1.5	Expand carpool/vanpool preferential parking areas for downtown area, large commercial areas, large employers, City staff.	Incentive	None	Supportive	2011-2015	Quality of Life/Community Development
ET1.6	Promote school rideshare programs to assist parents/students forming carpools.	Incentive	None	Supportive	2011-2015	School District

EFFICIENT TRANSPORTATION AND LOW CARBON FUELS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
ET1.7	Reduce the usage of school buses and increase the use of "bicycle trains and walking school buses", where applicable; and explore incentives for vehicle reduction.	Voluntary	Positive	Supportive	2016-2020	School District & Omnitrans
ET1.8	Encourage schools to incorporate pick-up/drop-off zones. Zones should be separated according to mode of transportation, where feasible.	Incentive	None	Supportive	2016-2020	School District
ET1.9	Coordinate with the school district to adopt the League of America Bicyclists' Cycling curriculum so students learn safest way to bike.	Incentive	None	Supportive	2016-2020	School District
ET1.10	Coordinate with area school district to install bike racks on school buses similar to public buses	Incentive	None	Supportive	2016-2020	Quality of Life/School District
ET1.11	Develop a program with school district that provides incentives for students to purchase bikes. Bikes would "rollover" from advancing class to incoming students.	Incentive	Positive	Supportive	2016-2020	Quality of Life/School District
ET1.12	The City should adopt a Non-Motorized Transportation Plan that focuses on pedestrian and bicycle routes (Class I, Class II, Class III, sharrow travel lanes), and Master Sidewalk Plan. (See also Land Use and Community Design)	Voluntary-City	Positive	Supportive	2011-2015	Community Development, Municipal Utilities and Engineering
ET1.13	Encourage telecommuting for City	Incentive	Positive	Supportive	2016-2020	Quality of Life/City

EFFICIENT TRANSPORTATION AND LOW CARBON FUELS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	staff and for the private sector.					Manager
ET1.14	Promote “Stay-cations” with discount packages showcasing local merchants and events.	Incentive	Positive	Supportive	2011-2015	Chamber of Commerce/DRBA
ET1.15	Implement “Smart Bus” technology - GPS with electronic displays at stops to provide actual time data to passengers.	Infrastructure	Positive	Quantifiable	2021-2025	Omnitrans
ET1.16	Aggressively pursue light rail connection to Metrolink.	Mandatory*	Positive	Quantifiable	2021-2025	Municipal Utilities and Engineering
ET1.17	Develop and offer incentives to residents that downsize the number of cars in their household.	Incentive	Positive	Supportive	2021-2025	Quality of Life
<b>ET2</b>	<b>Develop Clean Fuel Strategies for City Vehicles</b>					
ET2.1	Purchase fuel-efficient vehicles for City fleet. Purchase vehicles geared toward what the vehicle will be used for on a regular basis (i.e., “right size” vehicles rather than size for the exceptional use)	Infrastructure	Positive	Quantifiable	2011-2015	Quality of Life

\* As a part of compliance with Senate Bill 375, Transportation, Housing and Greenhouse Gases, enacted 9/30/2009. SB 375 uses the regional transportation planning process to achieve reduction in greenhouse gas emissions that are consistent with the goals of Assembly Bill 32.

ET2.2	Create idling ordinance for delivery trucks/buses.	Voluntary-City	None	Supportive	2011-2015	Community Development,
ET2.3	Develop renewable fuel locations and electric plug-in stations including a map for drivers to find refueling locations.	Incentive	Positive	Supportive	2011-2015	Information Technology
ET2.4	Use AQMD's diesel retrofit program and continue retrofit all City-operated diesel engines to comply with clean diesel combustion.	Mandatory*	None	Quantifiable	2016-2020	Quality of Life
ET2.5	Consider joining Pluginpartners ( <a href="http://www.pluginpartners.org">www.pluginpartners.org</a> ) a national organization that supports hybrid electric vehicles.	Incentive	Positive	Supportive	2016-2020	Quality of Life

\* California Code of Regulations § 2020, 2020.1, 2020.2, Title 13, Division 3 - Air Resources Board, Chapter 1, Article 4 - Diesel Particulate Matter Control Measures.

## Chapter 8: LAND USE AND COMMUNITY DESIGN

Incorporating smart growth principles into future development for Redlands is a key to Redlands becoming a sustainable community. Smart growth principles seek to reduce urban sprawl and decrease dependency on single occupancy vehicles by encouraging: development within and in close proximity to existing neighborhoods already served by infrastructure; compact neighborhood design and revitalization of the downtown core; and integration of transit and pedestrian-oriented elements into new, mixed use development projects. Smart growth policies would improve quality of life for Redlands residents by restoring and revitalizing downtown and existing neighborhoods, and they would increase the city's tax base and local economy.

### Revitalize Downtown

Developing a wide range of housing opportunities within the downtown area creates the opportunity to improve the City's local economy by bringing people closer to existing shops, restaurants, and entertainment uses.



## GOALS for Land Use and Community Design

The following goals comprise major objectives for sustainable land use and community design in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

### LU1 Incorporate Mixed-use in Community Design

Mixed-use development has emerged as an important contributor to sustainable development and effective community design. Often mixed land use is associated with downtown areas in which commercial and residential land uses are mixed vertically (i.e., one use on top of another). Often vertical mixed use is associated with transit oriented development (TOD) around stops on light rail systems such as the one being planned to pass through the center of Redlands. However, if done in a sensitive manner, mixed land use of a horizontal nature (i.e., one use next to another) can create "Village Centers" that establish small-scale, mixed use centers for

employment, housing, and neighborhood commercial opportunities. "Village Centers" would be subject to a form-based code and design standards, sometimes referred to as a Smart Code, that create walkable communities instead of urban sprawl.



### **Incorporate Mix Land Uses**

Developing small-scaled "Village Centers" such as The Olive Market and Gerrard's near established and planned communities encourages residents to walk, or bike to these destinations. Mixed land use planning encourages a walkable community that reduces automobile dependency.

## **LU2 Encourage compact building design**

Compact building design techniques serve to make the best use of individual building sites to reduce onsite and offsite impacts of development. For example, compact building design can limit impervious surfaces and increase storm water infiltration. Compact building design techniques can be applied to the building footprint, setbacks, height, scale, and hardscape requirements. Increased use of native trees and other low water demand plants are additional examples of reducing the impact of building on the land. Reduced parking requirements as part of mixed-use developments in both downtown and village center settings can encourage transit/non-motorized transportation. A method to reduce parking area (impervious surface) already used in Redlands that has potential to be expanded is shared parking between uses that require parking at different times of day.

## **LU3 Encourage non-motorized transportation**

A network of non-motorized trails is emerging in Redlands. It is anchored by the Orange Blossom Trail and the Santa Ana River Trail. A city-wide comprehensive Non-Motorized Transportation Plan for both bicycle and pedestrian travel can be developed around these two backbone elements and existing streets and sidewalks in town.

**LU4            Create pedestrian-friendly neighborhoods**

An important aspect of Redlands sense of place is the pedestrian friendly nature of its downtown and many of its older neighborhoods. “Complete streets” is a street design concept that places equal value on the movement of motor vehicles, pedestrians and non-motorized vehicles. The intent of complete streets is to enable people of all ages and abilities to travel safely and easily, whether they are walking, riding a bike, or driving a vehicle. Filling in missing sidewalks and adopting a “complete streets” model for future street design will extend a pedestrian friendly approach to streets where appropriate within the city.

**LU5            Ensure preservation of open space and agricultural land**

A substantial portion of the city of Redlands and its Sphere of Influence remains in natural open space or agricultural open space. Retaining as much of this open space as possible will contribute to the sustainability of the city.

**LU6            Solicit and use Federal, State, regional, and local funding mechanisms to encourage smart growth development**

Funding for the planning and implementation of smart growth or sustainable development is often available through federal and state programs. The City will need to constantly monitor these funding opportunities and make every effort to obtain applicable funds.

**INDICATORS for Land Use and Community Design**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

INDICATOR	TARGET	AGENCY RESPONSIBLE FOR TRACKING
Encourage mixed-use planning and construction	Update Zoning to support mixed use by 2015; update General Plan to include sustainability principles by 2012; updated impact fee to encourage compact development by 2015	Community Development
Encourage preservation of open	Include open space preservation	Community

space	incentives in updated General Plan by 2015.	Development
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**ACTIONS for Land Use and Community Design**

The actions in the table below will individually and cumulatively contribute to achieving Redlands’ sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

**LAND USE AND COMMUNITY DESIGN ACTIONS**

<b>NO.</b>	<b>RECOMMENDATION</b>	<b>POLICY MECHANISM</b>	<b>ECONOMIC EFFECT</b>	<b>GHG REDUCTION</b>	<b>START-UP TIMEFRAME</b>	<b>IMPLEMENTED BY</b>
<b>LU1 Incorporate mixed land uses in community design</b>						
LU1.1	Identify "Village Centers" and develop a incentive-based code	Voluntary-City	Positive	Supportive	2011-2015	Community Development
LU1.2	Designate Transit-Oriented Development (TOD) district(s) in downtown and along local rail service alignment.	Mandatory*	Positive	Supportive	2011-2015	Community Development
LU1.3	Expedited permit application review for compact development projects.	Incentive	Positive	Supportive	2011-2015	Community Development, Municipal Utilities and Engineering
<b>LU2 Encourage compact building and site design</b>						
LU2.1	Explore building footprint, setbacks, height, scale, hardscape requirements to create compact building design techniques.	Voluntary-City	None	Supportive	2011-2015	Community Development, Municipal Utilities and Engineering
LU2.2	Where appropriate and feasible, increase native tree planting requirements and establish incentives to plant native or low water plantings for all private and public projects. (see City Resolution 6938)	Voluntary-City	Positive	Supportive	2016-2020	Community Development/Quality of Life

\* As a part of compliance with Senate Bill 375, Transportation, Housing and Greenhouse Gases, enacted 9/30/2009. SB 375 uses the regional transportation planning process to achieve reduction in greenhouse gas emissions that are consistent with the goals of Assembly Bill 32.

LU2.3	Explore reduced parking minimums required for mixed-use developments to encourage transit/non-motorized transportation.	Incentive	Positive	Supportive	2016-2020	Community Development
LU2.4	Evaluate programs that would provide engines that use fewer emissions.	Incentive	None	Supportive	2016-2020	Community Development
LU2.5	Explore greater flexibility with shared parking requirements.	Voluntary-City	Positive	Supportive	2016-2020	Community Development
<b>LU3</b>	<b>Encourage non-motorized transportation</b>					
LU3.1	Construction of Orange Blossom Trail	Voluntary-City	Positive	Supportive	2011-2015	Community Development
LU3.2	In accordance with the General Plan, develop a city-wide comprehensive Non-Motorized Transportation Plan. Among its elements, the plan should consider bike lanes with “sharrows” for appropriate locations.	Voluntary-City	Positive	Supportive	2011-2015	Community Development
LU3.3	Complete Santa Ana River Trail including connections to Redlands Citrus Valley High School, Mentone Senior Center/Library, and employment areas in northeast Redlands.	Voluntary-City	None	Supportive	2016-2020	Municipal Utilities/Quality of Life
LU3.4	Encourage employers to implement carpools/vanpools incentives.	Incentive	Positive	Supportive	2016-2020	SANBAG/Treasurer
LU3.5	Encourage businesses to offer discounts for customers who use alternative modes of transportation.	Incentive	Positive	Supportive	2021-2025	DRBA/Chamber of Commerce

LU3.6	Explore developing a performance-based zoning matrix that includes incentives and/or disincentives.	Incentive	Undetermined	Supportive	2021-2025	Community Development
<b>LU4</b>	<b>Create pedestrian-friendly neighborhoods</b>					
LU4.1	Prepare a Master Sidewalk Plan that identifies "missing links" where sidewalks are necessary and identifies streets for which no sidewalk is required.	Voluntary-City	Positive	Supportive	2011-2015	Community Development
LU4.2	Evaluate and update existing General Plan street cross-sections to accommodate "complete streets" design standards.	Voluntary-City	None	Supportive	2016-2020	Community Development, Municipal Utilities and Engineering
LU4.3	Explore incorporating non-motorized boulevards in the downtown area and Citrus Avenue directly in front of the Redlands High School.	Incentive	None	Supportive	2021-2025	Community Development, Municipal Utilities and Engineering
<b>LU5</b>	<b>Ensure preservation of open space and agricultural land</b>					
LU5.1	Develop a regional Transfer of Development Rights (TDR) program.	Voluntary-City	None	Supportive	2016-2020	Community Development
LU5.2	Explore incentive techniques for developer to build more intensity in exchange for open space protection.	Voluntary	None	Supportive	2016-2020	Community Development
LU5.3	Develop an incentive program for infill projects that include significant open space.	Incentive	None	Supportive	2016-2020	Community Development
LU5.4	Explore infrastructure master plans and focus expansion in designated growth areas away from open space areas to reduce development pressure and avoid urban sprawl.	Incentive	None	Supportive	2016-2020	Community Development, Municipal Utilities and Engineering

<b>LU6</b>	<b>Solicit and use Federal, State, regional, and local funding mechanisms to encourage smart growth development.</b>					
LU6.1	Obtain funding sources to implement strategies.	Voluntary-City	Positive	Supportive	Underway	Community Development

## Chapter 9: STORING AND OFFSETTING CARBON EMISSIONS

The City of Redlands' healthy urban forest, natural open spaces, and productive agriculture are natural community assets that contribute to economic, environmental and social sustainability. They are the most cost effective means to sequester carbon. The recommendations in this chapter guide the community toward recognition of this function of these community assets. A multitude of economic benefits are derived from healthy urban tree canopies including a reduction of the urban heat island effect, mitigation of storm water runoff, air quality improvements and shade for pedestrians, cyclists and parked cars during the hot summer months.

The City of Redlands must educate the community about the importance of our urban forest and support the critical role of the Street Tree Committee in enhancing our urban tree canopy. The City has an accurate database of its street trees which can be utilized in analytical software to derive a sense of the real economic benefits these trees deliver to the community each day. Increasing awareness of the wisdom of this community's visionary founders who endowed us with our beautiful urban forest and charged us to preserve and enhance it, is paramount to maximizing the potential for carbon sequestration locally.



photo courtesy: David Estes

Data Source:

<http://www.americanforests.org>

### Value of a Healthy Urban Forest:

The City of Laurel, MD conducted a Tree Canopy Analysis and estimated the following ecosystem services provided by its urban forest canopy:

- \$86,000 in air quality benefits
- 15,790 tons of CO<sub>2</sub> stored and 123 tons sequestered annually;
- \$994,072 in storm water retention and water quality improvement by filtration of surface water and erosion prevention.

## GOALS for Storing and Offsetting Carbon Emissions

The following goals comprise major objectives for sustainability through storing and offsetting carbon emissions in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

**C01 Determine the carbon sequestered in the city-owned urban forest (including citrus) and its value**

The City has developed a comprehensive and accurate database of street trees, park trees and city citrus groves. This investment in accurate data can be leveraged to quickly assess the carbon sequestered in our city-owned urban forest. If this is analyzed in a software system which is approved by applicable carbon registries, the carbon credits may, some day, be able to be valued as a way to help support urban forest and city owned grove operations.

**C02 Recognize other contributions of urban forest to sustainability**

In addition to its valuable role for carbon sequestration, the urban forest can reduce summer street surface temperatures up to 50 degrees Fahrenheit and help reduce the urban heat island effect. Urban trees also reduce air conditioning demands, mitigate noise, improve air quality, reduce residential irrigation demands and reduce storm water runoff, all of which contribute to community sustainability.

**C03 Promote carbon neutrality at city-sponsored events through conservation, efficiency and carbon offset opportunities**

Through outreach and education, community awareness of the benefits of carbon offsets and reducing greenhouse gas emissions can be increased. This is an important step towards attaining carbon neutrality.

**Redlands Wins!**

- The City of Redlands won a \$25,000 grant in 2009 to replant citrus trees in city owned groves – this helps sequester carbon and reduces the urban heat island effect.

**Urban Heat Island Facts:**

- On warm days urban areas can be up to 6 degrees F warmer than surrounding areas.
- Dark, unshaded surfaces such as asphalt absorb heat.
- Heat islands reduce air quality, increase energy usage and thus increase CO2 emissions.
- Mitigating heat islands with good urban forests, and citrus groves yields many benefits by reducing all of the above impacts.
- The LA Basin has been extensively studied and more details can be found here:



photos courtesy: David Estes

<http://heatisland.lbl.gov/LEARN/LAIsland/>

## **INDICATORS for Storing and Offsetting Carbon Emissions**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

<b>INDICATOR</b>	<b>TARGET</b>	<b>AGENCY RESPONSIBLE FOR TRACKING</b>
Establish carbon offset value of urban forest	Determine carbon offset value of entire urban forest by 2015	Quality of Life Department
Increase percentage of development as infill rather than on agricultural land and open space	Increase percentage of Economic Development incentives for infill development by 5%	Community Development Department
Reduce heat island effect with shade trees	Increase hardscape and parking lots shaded by trees by 25% by 2020	Community Development Department
Increase volunteer maintenance of street trees	Reduce street tree gaps by 90% by 2020	Quality of Life Department, Street Tree Committee

## **ACTIONS for Storing and Offsetting Carbon Emissions**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

STORING AND OFFSETTING CARBON EMISSIONS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
CO1	<b>Determine the carbon sequestered in the city-owned urban forest and its value</b>					
CO1.1	Develop sequestration value for street trees from City database/determine impact on reducing the City's mandated goal for reducing carbon footprint.	Voluntary-City	Positive	Baseline Information	2011-2015	Quality of Life /Consultant /University of Redlands
CO1.2	Select and apply suitable program for measuring carbon offset value of urban forest and seek opportunities to participate in carbon markets.	Baseline	None	Baseline Information	2011-2015	Quality of Life, Consultant, University of Redlands
CO2	<b>Include city-owned citrus groves and privately owned trees and groves in database to develop a comprehensive sense of the carbon sequestered in the community's urban forest.</b>					
CO2.1	Expand that assessment to entire Redlands urban forest.	Baseline	None	Baseline Information	2011-2015	Quality of Life /Consultant /University of Redlands
CO2.2	Promote local efforts to preserve our citrus and agricultural heritage such as Inland Orange Conservancy and Downtown Farmer's Markets.	Voluntary	Positive	Support	2011-2015	Quality of Life /Consultant /University of Redlands
CO3	<b>Steer new development towards infill type projects to preserve open space and agricultural land that provide natural carbon storage.</b>					
CO3.1	Steer development towards Infill rather than greenfield areas.	Voluntary	Undetermined	Support	2011-2015	Community Development, Private Sector

STORING AND OFFSETTING CARBON EMISSIONS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
CO3.2	Develop incentives for Landowners to preserve groves and open space.	Incentive	Positive	Support	2011-2015	Planning / Finance / Land Owners
<b>CO4</b>	<b>Promote the optimization of the street tree palette to enhance shade provision, carbon sequestration and drought tolerance.</b>					
CO4.1	Optimize street tree palette for carbon sequestration, drought tolerance and shade provision.	Voluntary	Positive	Quantifiable	2011-2015	Quality of Life / Street Tree Committee
CO4.2	As funding permits, develop a shade tree program for the planting of trees on private property with a goal of filling 90% of street tree vacancies.	Voluntary	None	Quantifiable	2011-2015	Street Tree Committee / Community Organizations / Residents
CO4.3	Send a thank you note with a “benefits of your street tree” as a bill insert to all residents with street trees in front of their homes.	Education & Research	None	Support	2011-2015	Quality of Life / Finance / Utility Billing
CO4.4	Optimize street tree, sidewalk, and hardscape interface design when planning new projects to minimize future maintenance impacts.	Voluntary	Positive	Quantifiable	2011-2015	Street Tree Committee / Planning
<b>CO5</b>	<b>Maximize shade tree canopy over urban hardscape areas such as parking lots and roadways.</b>					
CO5.1	Use satellite imagery to develop a shade tree canopy coverage assessment of all parking lots in Redlands to establish baseline.	Baseline	Undetermined	Quantifiable	2011-2015	Planning / Consultant / University of Redlands / ESRI

STORING AND OFFSETTING CARBON EMISSIONS ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
CO5.2	Revise Redlands Municipal Code (e.g., RMC §18.168.210) to require hardscape and parking lots be shaded.	Voluntary	Undetermined	Quantifiable	2011-2015	Planning / Stretch Goals for Code
CO5.3	Develop “retrofit strategy” for existing parking lots that lack shade.	Education & Research	Undetermined	Quantifiable	2011-2015	Quality of Life & Community Development
CO5.4	Carefully consider a shade tree ordinance and utility incentives for shading south and west faces of dwelling units.	Incentives	Positive	Quantifiable	2011-2015	Quality of Life / Community Development / SCE
CO5.5	Revise municipal code to ensure solar access is maintained for future solar electric and solar hot water installations.	Voluntary - City	Positive	Supportive	2011-2015	Planning
CO5.6	Explore ways to utilize GIS analysis to optimize tree placement to consider utility lines, automated recycling truck arms, and hardscape.	Education & Research	Positive	Supportive	2011-2015	City / University Research partnership
<b>CO6</b>	<b>Promote carbon neutrality at city-sponsored events through conservation, efficiency and carbon offset opportunities.</b>					
CO6.1	Establish programs and incentives for achieving carbon neutrality at City sponsored events.	Incentives	Undetermined	Supportive	2011-2015	Community Organizations
CO6.2	Recommend all events receiving in-kind support in lieu of event permit	Voluntary	Positive	Supportive	2011-2015	Quality of Life / Community

**STORING AND OFFSETTING CARBON EMISSIONS ACTIONS**

<b>NO.</b>	<b>RECOMMENDATION</b>	<b>POLICY MECHANISM</b>	<b>ECONOMIC EFFECT</b>	<b>GHG REDUCTION</b>	<b>START-UP TIMEFRAME</b>	<b>IMPLEMENTED BY</b>
	fees to explore carbon offsets for their events.					Organizations
CO6.3	Develop closed loop process whereby carbon credits generated from urban forest can be sold to offset community emissions.	Funding	Positive	Supportive	2011-2015	Quality of Life / Community Organizations

## Chapter 10: PROMOTING COMMUNITY AND INDIVIDUAL ACTION

The City of Redlands is embarking on a comprehensive “sustainable agenda,” led by the research and recommendations of its Climate Action Task Force (CATF). While many of the recommendations focus on actions and regulations the City might undertake, the RCSP also recommends the development of a plan for outreach to the wider community. This part of the RCSP provides guidance and recommendations about how to engage the citizens and organizations throughout Redlands in activities to move towards a more sustainable community.

The outreach endeavor, titled “Promoting Community and Individual Action,” describes mechanisms for communicating information about climate action efforts in Redlands. This outreach recognizes that public acceptance of climate change, and the necessity for citizens and institutions to adjust lifestyles and policies, is critical to creating community sustainability.

	<p style="text-align: center;"><b>Community and Individual Action Benefits</b></p> <ul style="list-style-type: none"><li>• Redlands prides itself on its community involvement, and will benefit from building community coalescence around sustainable action.</li><li>• Faith-based and service organizations bring thousands of people together regularly in Redlands, and these groups initiate scores of service projects annually.</li><li>• The public schools can help prepare the next generation to be environmentally-sensitive citizens.</li><li>• Web-based climate information will reach Redlands’ computer-savvy residents.</li><li>• Generating public support contributes to cost-efficiency.</li></ul>
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### GOALS for Promoting Community and Individual Action

The following goals comprise major objectives for sustainability through promoting community and individual action in Redlands. Achieving these goals would require a combination of actions by the public and private sectors.

#### **PA1            Increase Community Understanding of Sustainability**

It is imperative to communicate the many positive economic and environmental benefits of the sustainability action plan to garner the public’s support. This requires

a wide outreach effort using such methods as a community website, various community education initiatives, and expanded use of the media.

### **Increase Awareness of Community Actions**

The University of Redlands recently constructed a high-performance “green” building, earning a LEED Silver level recognition; and construction was recently completed on the new Center for the Arts, also being built to conform to LEED standards. To date, Redlands has over one megawatt in solar systems within the city limits. Greater public awareness of these accomplishments can further the public’s commitment to sustainability.



### **PA2 Collaborate with community organizations to build awareness of sustainability**

There are many community organizations and institutions with which the City can collaborate to educate residents about and mobilize activity around sustainability including the University, the public and private schools, the AK Smiley Library, the Chamber of Commerce, the Redlands Conservancy and other community nonprofit organizations, the Redlands YMCA, and faith-based institutions.

### **PA3 Establish a Sustainability Advocate/Champion Team on City staff and hire City Sustainability Coordinator**

The City of Redlands, through its staff and departments, should make a permanent commitment to being a sustainable city by involving staff in sustainability efforts. The City should also research and seek grants to potentially fund a sustainability staff position.

## **INDICATORS for Promoting Community and Individual Action**

Indicators contained in the table below provide recognizable and, where possible, measureable means of assessing progress towards established goals. The targets provide progress milestones. The City agency or other organization most suited for monitoring progress is also indicated. Further explanation is contained in the Introduction.

INDICATOR	TARGET	AGENCY RESPONSIBLE FOR TRACKING
Increase public participation in sustainability efforts	Sustainable Redlands citizens group formed in 2011 with active members by end of 2011	Quality of Life; Public Information Officer
Increase public awareness of city-wide sustainability efforts	Launch sustainability webpage for City in 2012 and monitor hits with a 25% increase in hits within six months of launch	Quality of Life; Information Services
Increase public awareness of climate change and mitigation and adaptation strategies	Launch public awareness campaign in 2012 with PSAs, sustainability column in local paper, and displays and announcements at Redlands Bowl and other events	Quality of Life; Public Information Officer
Increase ongoing commitment of city staff to sustainability staff position dedicated to sustainability program.	Hire sustainability director or coordinator in 2012	City Council; City Manager

## **ACTIONS for Promoting Community and Individual Action**

The actions in the table below will individually and cumulatively contribute to achieving Redlands' sustainability goals. Qualitative descriptors are provided for each action to guide decision making. These descriptors are explained in the Introduction.

PROMOTE COMMUNITY AND INDIVIDUAL ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
<b>PA1</b>	<b>Pursue Public Relations Outreach Program</b>					
PA1.1	Provide community sustainability action website that will appeal to all residents and businesses and will provide a comprehensive level of information.	Voluntary-City	None	Non-quantifiable	2011-2015	Information Services
PA1.2	Develop community education initiative that provides consistent educational materials and resources for use by City staff and community groups	Voluntary-City	None	Non-quantifiable	2011-2015	Quality of Life
PA1.3	Promote sustainability actions through various media using public service announcements, features in the local press, the Redlands Public Access Channels, community events such as summer entertainment at the Redlands Bowl, and inserts in municipal bills.	Voluntary-City & Community	None	Non-quantifiable	2011-2015	Public Information Officer, Chamber of Commerce
PA1.4	Partner with local businesses to promote sustainability action	Voluntary-City & Community	Positive	Non-quantifiable	2016-2020	Chamber of Commerce, Quality of Life
<b>PA2</b>	<b>Mobilize the Community with Broadly Based Awareness Program</b>					
PA2.1	Mobilize educational sectors of community to develop their own climate and sustainability action	Voluntary	None	Non-quantifiable	2016-2020	School District

PROMOTE COMMUNITY AND INDIVIDUAL ACTIONS						
NO.	RECOMMENDATION	POLICY MECHANISM	ECONOMIC EFFECT	GHG REDUCTION	START-UP TIMEFRAME	IMPLEMENTED BY
	awareness programs					
<b>PA3</b>	<b>Establish an Environmental Advocate Position on City staff</b>					
PA3.1	Designate city staff person responsible for coordinating climate action by city departments	Voluntary-City	None	Supportive	2011-2015	City Council, City Manager
PA3.2	Seek state and federal grants to fund City sustainability staff position	Funding	Positive	Non-quantifiable	2011-2015	City Manager & Quality of Life

## Chapter 11: SHORT TERM ACTIONS FOR IMPLEMENTATION

The RCSP presents a framework of goals, indicators and actions that may serve to guide the City's efforts to integrate community sustainability into all its endeavors. The RCSP provides guidance for the next fifteen years, although most research shows that such efforts will span a period of 40 more years to keep the impacts of climate change at less than catastrophic levels. In the short term, Redlands should take several actions to structure its efforts for maximum long-term benefit while still achieving measurable progress towards sustainability. Several steps the City should take immediately to establish its sustainability program include:

1. **Complete Emissions Baseline Preparation** - In cooperation with SANBAG and other local jurisdictions Redlands should complete its baseline greenhouse gas inventory. Once these materials are completed City staff will need to incorporate them, as appropriate into city policies and operations.
2. **Establish Annual Reporting Process** - Redlands should begin reporting of annual progress toward meeting the targets and indicators outlined in this plan. This process could take the form of a community sustainability report card that is incorporated into standard City operations.
3. **Work Sustainability Actions into Annual City Workplan** - The City already is pursuing many actions as part of its regular operations that contribute to sustainability. For these actions, work procedures need to be adjusted to ensure information is captured that can be used for reporting. This should represent a minimal impact to City operations. Some actions may represent new elements added to the annual work program of departments. These actions should be included in the annual budget process to ensure any resource demands are included in the approved budget.
4. **Continue Citizen Involvement in Sustainability Planning and Action** - The CATF served an important role in crafting a comprehensive and coordinated approach to sustainability for Redlands. Moving forward, it will be vital to continue a strong role for community participation. This may take different forms. For example, the current Community Partnership program with SCE may serve this role. Another approach could be the creation of a Sustainability Group comprised of representatives of City commissions and the community at large. A third approach could be assigning responsibility for monitoring sustainability progress to one or

more existing commissions. Due to current constraints on City staff time, the approach taken should seek to minimize time demands placed on city employees and take advantage of volunteer time as much as possible.

5. **Set-up a Strong Community Outreach Program** - Through community outreach, businesses and individuals can become aware of steps they can make that contribute to Redlands' sustainability. Community outreach can also help identify groups with which the City can partner and spread the load for monitoring and reporting progress towards sustainability goals.
  
6. **Identify Priority Actions Areas for Participation in Green Communities Challenge** - By relying on expertise of City staff, the utility companies and local experts, the City should select one or more of the 10 framework categories as the primary focus for sustainability. This will enable limited resources to be used in a focused manner and enable the City to achieve recognizable results.

## Appendix A: Prior Sustainability Accomplishments

Many of the actions taken by the City of Redlands over the last two decades have contributed to sustainability. These actions, some of which are ongoing, can provide a springboard for forming a more intensive and comprehensive program. The table below lists many of the City's prior actions including associated costs and benefits, when available. Also included are some of the key activities occurring in the private sector. Because these city and private actions were not taken with climate change in mind, calculations of greenhouse gas emission reductions were not previously conducted. A future activity may be to perform these calculations, where possible.

### Prior Sustainability Accomplishments

Accomplishment	Timeframe	Cost / Benefit	Entity
<b>Energy Efficiency &amp; Conservation</b>			
LED Traffic Light Installation	2002	90% reduction in energy use; 3.7 year payback	MUED
LED Street Lighting Upgrade Program: Comprehensive citywide analysis of street lighting conversion to LED including implementation strategies and full environmental advantages and cost benefit analysis of this conversion	2011 - contingent on financing availability	1.3 million KWH/yr reduction in energy consumption; 950 ton reduction of CO2 /year	MUED
Energy Leader Partnership	2009, 2010 - 2012	Funding for 2010 - 2012: \$280,222	SCE, Quality of Life, City
Facilities Upgrades to Improve Energy Efficiency (HVAC, Lighting, Energy Management System)	2010 - 2012	Grant funding in the amount of \$900,000	Dept. of Energy, Quality of Life, City
Addition of higher efficiency HVAC unit for Redlands TV office. Allows for added conservation of entire chiller system operation during non-office hours.	2009		Quality of Life, Innovation and Technology
Decreased energy usage for water use and wastewater treatment during peak demand hours	ongoing		
<b>Water &amp; Wastewater</b>			
Reclaimed Water Facility/water use for power plant cooling, irrigation			
Non-potable water production/treatment/distribution improvements	2009 - current	Improvements funded as much as 50% by SCE depending on	SCE, MUED, City

Accomplishment	Timeframe	Cost / Benefit	Entity
		the amount of increases in energy efficiency.	
EnerNoc Energy Savings Program	2008	\$188,608 Savings	MUED
Drought tolerant landscape ordinance	2010		MUED, City
Citrus grove purchase & operations	2010 - 2011	City is planting grant-funded low VOC emitting citrus	City, AQMD
<b>Green Building</b>			
LEED Buildings at University of Redlands			University of Redlands
LEED building permit incentives, streamlined permitting process	2007		MUED
<b>Waste Reduction &amp; Recycling</b>			
Construction Waste Ordinance	2003	Increased diversion of recyclables from the waste stream.	Quality of Life, City
Reduction on Energy Consumption and Reduction of Paper usage within the city.	2009 and Ongoing	Replaced entire Xerox MFP fleet with newer energy efficient models	Innovation and Technology
Expansion of recycling programs, addition of electronics waste recycling drop-off services.	Ongoing	Continued diversion of almost 50% of the waste stream away from the landfill while overall waste volumes have increased	Quality of Life, Fire Department, City
<b>Climate Friendly Purchasing</b>			
Recycled Product preference policy	2002		Finance
<b>Renewable Energy</b>			
Permitting of private Solar PV installations			
Solar PV installation at wastewater treatment plant	2011	Grant-funded, energy production of 120,000 kWh/year	Quality of Life, MUED, City
<b>Land Use &amp; Community Design</b>			
LEED incentives in Residential Development Allocation process	1984		Development Services Dept.
Open space land acquisition / Measure O	1990 to present		City

<b>Accomplishment</b>	<b>Timeframe</b>	<b>Cost / Benefit</b>	<b>Entity</b>
Shade trees in parking lots Resolution 6978			
Downtown Specific Plan update	2007 - latest amendment		Development Services Dept.
Non-motorized trail planning and development	2008		City, Community
<b>Efficient Transportation &amp; Low Carbon Fuels</b>			
City ride share program	1989		City
Conversion of solid waste fleet to CNG & LNG fuel	2004	21 of 32 trucks converted	Quality of Life, City
Installation of CNG & LNG fueling facility, including outside sales	2004	Outside sales generate profit margins with which we can invest into our fleet and maintenance of the fueling station	Quality of Life, City
Installation of particulate filters on heavy equipment	2006	Entire diesel fleet converted	Quality of Life, City
CNG police car test project	2008	Grant-funded retrofit	Redlands PD, Quality of Life
<b>Carbon Offset</b>			
Ongoing street tree planting	Ongoing		Quality of Life, City
<b>Promote Individual &amp; Community Action</b>			
Adopt US Conference of Mayors Climate Protection Agreement	2007		Quality of Life, City
City Green Action Awards	2009		Quality of Life
Energy efficient appliance competitions	2009		CATF
Energy Efficiency for Businesses	2009		Chamber of Commerce