

# 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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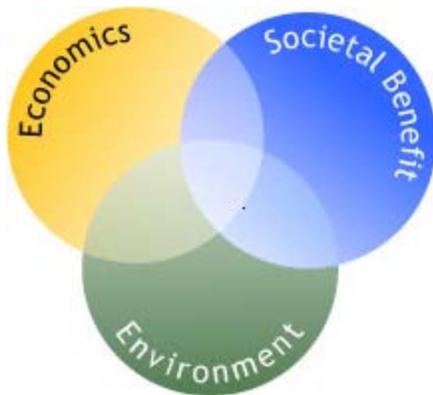
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# Table of Contents

	PAGE
Acknowledgements	i
Table of Contents	ii
Executive Summary	1
Introduction	8
Chapter 1: Energy Efficiency and Conservation	21
Chapter 2: Water and Wastewater	27
Chapter 3: Green Building	33
Chapter 4: Waste Reduction and Recycling	42
Chapter 5: Climate Friendly Purchasing	49
Chapter 6: Renewable Energy	54
Chapter 7: Efficient Transportation and Low Carbon Fuels	63
Chapter 8: Land Use and Community Design	70
Chapter 9: Storing and Offsetting Carbon Emissions	78
Chapter 10: Promoting Community and Individual Action	85
Chapter 11: Short Term Actions for Implementation	90
Appendix A: Prior Sustainability Accomplishments	92

# 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 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 with energy audit information for all and by educating the community regarding incentive 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

## 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 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 day 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 “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

## 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 existing available 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 Sustainability Action 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 our trash trucks to low carbon fuel
- Installing LED traffic signals to reduce energy demand and save money
- Joining the SCE Community 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
- Purchase 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 climate action 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, Downtown Redlands Business Association, Historic and Scenic Preservation Commission, Human Relations Commission, Municipal Utilities/Public Works Commission, Parks Commission, Planning Commission, Recreation Commission, 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, and “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.

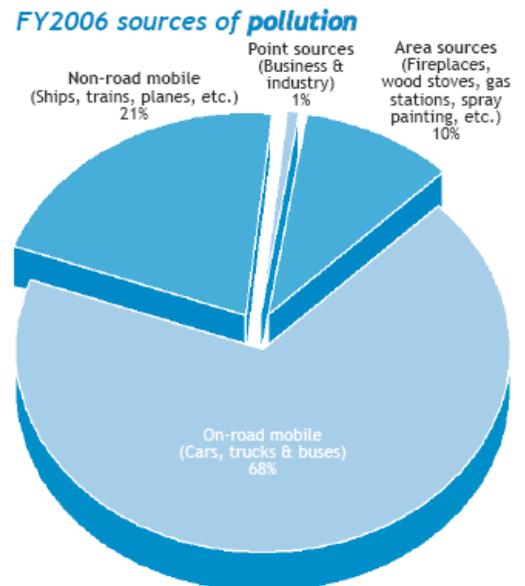
Expanded use of domestically produced cleaner energy sources will provide major economic benefits as it also decreases dependence on imported fuels from unstable regions. Renewable sources of energy like solar, wind, and biomass, are readily available in the United States and development in these industries 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 protect 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 reduces energy costs for the occupant and depending on the measures taken can 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, and 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 also needs to 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 by which 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 contained in the remaining chapters of the RCSP. As these recommended actions are developed into reduction measure, 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 by which 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. Through a series of appendices, the RCSP also provides a glossary of terms and links to websites that contain additional information on a particular topic.

**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 and the Gas Company, 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 incentive programs (grants, 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 On-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.