8

Sustainable Community

Serve as an environmental steward; ensure that residents enjoy clean air and water; make efficient use of energy, water, and land resources; and grow in a manner in which increased population does not negatively impact resources.

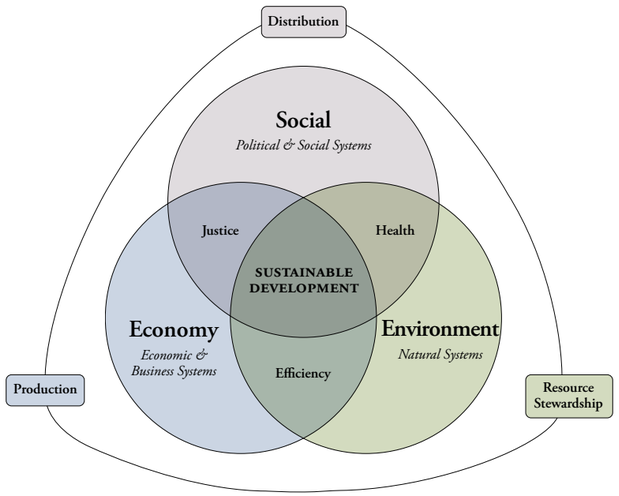
Residents would like Redlands to become more sustainable, and for the City to serve as a steward of its environmental resources. The community would like to see the City promote greater energy and water efficiency in new construction; expand programs for enhanced energy efficiency to existing homes and businesses; promote measures that reduce carbon emissions originating in the city; emphasize water conservation measures; and reduce waste to extend the life of the landfill. Redlanders would like the City to demonstrate environmental leadership by installing solar panels on City facilities, continuing to reduce the carbon emissions from its vehicle fleet, extending the non-potable water system, and approving a "greywater" ordinance.

Harnessing solar power is an effective way for residents and businesses to reduce energy consumption.

8.1 ENERGY EFFICIENCY AND CONSERVATION

The City of Redlands has historically been a leader in alternative energy technologies. In 1893, the first application of three-phase electrical power in the United States was implemented at the Mill Creek No. 1 hydroelectric plant. Since then, Redlands has sought means to adopt renewable energy sources, including solar power, for public and private uses. The General Plan outlines an integrated strategy of land use and transportation development, and close integration between planning for development, and energy and resource conservation in order to ensure the positive social, environmental, and economic conditions fundamental to long-term sustainability (Chart 8-1). Additional measures to promote energy efficiency are outlined in the City's Climate Action Plan.

Chart 8-1: Sustainable Development



Sustainable development requires environmental, economic, and social consideration in equal measure.

POLICIES

Principles

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

8-P.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.

8-P.3 Proactively review and update City plans, resolutions, and ordinances to promote greater energy efficiency in both existing and new construction in regard to site planning, architecture, and landscape design.

Actions

8-A.1 Work with Southern California Edison Company (SCE) and Southern California Gas Company (SCG) to educate the public about the need to conserve energy resources and the higher energy efficiency of new appliances and building materials.

8-A.2 Support San Bernardino County and San Bernardino Associated Governments (SANBAG) in implementation of their energy-related policies.

8-A.3 Leverage and help drive community participation in utility company programs and financial incentives within the City (e.g., one stop information clearinghouse, incentives, on bill financing, etc.).

8-A.4 Continue pursuit of sustainable energy sources—such as hydroelectricity; geothermal, solar, and wind power; and biomethane—to meet the community's needs.

8-A.5 Accelerate the adoption of solar power and/or other alternative energy usage in Redlands through actions such as:

- Establishing incremental growth goals for solar power/alternative energy systems in Redlands;
- Developing guidelines, recommendations, and examples for cost-effective solar and/or other alternative energy-based installation; and
- Installing solar/alternative energy technology on available City spaces.

8-A.6 Complete a cost-benefit analysis for new City energy conservation or renewable energy projects that reviews the costs and benefits of a project over its life cycle to ensure the highest and best use of available funds.

8-A.7 Seek alternatives to reduce non-renewable energy consumption attributable to transportation within the Planning Area. Seek funding and other assistance from the South Coast Air Quality Management District (AQMD) for installation of electric vehicle charging stations at appropriate locations throughout the city.

8-A.8 Implement and enforce California Code of Regulations Title 24 building standards (parts 6 and 11) to improve energy efficiency in new or substantially remodeled construction. Consider implementing incentives for builders that exceed the standards included in Title 24 and recognize their achievements over the minimum standards.

8-A.9 Encourage the use of construction, roofing materials, and paving surfaces with solar reflectance and thermal emittance values per the California Green Building Code (Title 24, Part 11 of the California Code of Regulations) to minimize heat island effects.

8-A.10 Integrate trees and shade into the built environment to mitigate issues such as stormwater runoff and the urban heat island effect.

8-A.11 Further City efforts to be a model of energy conservation stewardship by:

- Continuing participation in SCE/SCG's Community Partnership program;
- Moving City electric load off-peak where practical;
- Partnering directly with large consumers of energy and encouraging and promoting their energy efficiency activities;
- Establishing energy efficiency and conservation baselines; and
- Reporting routinely on the progress of goals.

8-A.12 Explore participating in new high-efficiency technology programs such as LED lighting for City facilities, safety lighting in parks and other public spaces, and LED street lighting conversion for all City-owned street lights.

8-A.13 Identify and obtain funding sources to implement energy conservation and efficiency programs and other emerging energy strategies suitable to conditions within the city.

8-A.14 Seek funding programs to assist low and moderate-income households in energy conservation.

8-A.15 Encourage City employees to submit energy efficiency and conservation recommendations for City operations and follow up on the recommendations.

8-A.16 Complete a comprehensive review of City codes and standards for applicability for energy and water efficiency/conservation measures and make changes to modify them accordingly.

8-A.17 Set goals consistent with the State's Long-Term Energy Efficiency Strategic Plan. Design and implement programs and incentives to meet these goals in both private and public sector construction:

- 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 improved to ensure optimal equipment performance; and all eligible low-income homes will be energy efficient by 2020.

8-A.18 Allocate savings realized from energy efficiency improvements at City facilities to implement additional energy efficiency improvements at City facilities.

8-A.19 Explore adoption of a model dark sky ordinance for appropriate areas of the city i.e. the rural areas of the canyons and Crafton.

8-A.20 Support energy resiliency through a diversified system of energy sources including zero and near-zero emission technologies.

8-A.21 Support the development of distributed energy resources (DER), such as combined heat and power (CHP) from microturbines, fuel cells, etc., to assist in local energy security.

Given the environmental pressures facing Southern California, it is increasingly important for energy providers, such as the Southern California Edison Company, to educate customers about energy conservation.

Drought conditions diminish the supply of surface water. Efficient water utilization can preserve Redlands' water supply and reduce the necessity for importing potable water.

TABLE 8-1: HISTORIC AND PROJECTED USAGE (POTABLE WATER)

Year	Average Total Usage (acre feet per year)
2005	28,615
2010	26,107
2014	27,172
2015	20,005
2020 (projected)	26,296
2025 (projected)	27,026
2030 (projected)	27,756
2035 (projected)	28,483

Source: City of Redlands MUED, 2016.

8.2 WATER CONSERVATION

Water in the Planning Area is provided by the City of Redlands and the Western Heights Water Company. The city's water system is maintained by the Municipal Utilities and Engineering Department (MUED) and covers most of the city, a small area in Loma Linda, the County's East Valley Corridor area, Mentone, and most of Crafton. The Western Heights Water Company serves a small portion of the southeastern part of the City in the Highlands-Canyon area and portions of Crafton.

Water Sources

Local Supply

The Redlands Planning Area domestic water sources consist of both surface (about 50 percent of total supply) and groundwater (about 50 percent of total supply). The City is entitled to surface water from both Mill Creek and the Santa Ana River. Mill Creek water is available on the basis of rights owned directly by the City, and by virtue of the City's direct and indirect stock ownership in the Crafton Water Company, which has established rights on the remainder of Mill Creek flows.

Imported Water

Imported State Water Project (SWP) water is available to the Planning Area. The San Bernardino Valley Municipal Water District (SBVMWD) has an entitlement of about 102,600 acre feet a year of SWP water, which is transported from the Feather River in Northern California, along the California Aqueduct, and to the Aqueduct's East Branch, where it is conveyed eastward to the Planning Area via the 17-mile Foothill Pipeline.

The City of Redlands, like other cities in SBVMWD's service area, may purchase SWP water. The City has no entitlement to a set amount of water, but may request it in competition with other cities served by SBVMWD. Typically, the City receives approximately four percent of the water it delivers to its customers from SBVMWD.

Groundwater

The City of Redlands owns 18 wells that pump directly into the system or into reservoirs. All of these wells are adequately separated from sewerage facilities. All wells are free from serious flooding hazard. Although the City's domestic water wells constitute about 50 percent of the water supply, some of the wells require treatment. Because of contamination (typically due to agricultural nitrates), the City has wells that are not used for domestic purposes and are instead used for irrigation.

Water Conservation

Water conservation—the reduction of water loss, use or waste via behavioral or technological changes—can ensure high-quality water supply for years to come. Redlands has recently seen a substantial drop in overall and per capita water use as compared to historical levels a result of ongoing conservation measures. (see Table 8-1). Reusing treated wastewater for purposes such as irrigation, industry, and toilet flushing can further conserve the water supply. Though Redlands' water supply has typically originated in nearby mountains and basins, regional water pressures and climate change may limit supply, thereby forcing Redlanders to import increasing amounts of water.

POLICIES

Principles

8-P.4 Promote residential and commercial water conservation using multiple strategies.

8-P.5 Conserve the highest quality of water reasonably available for domestic use.

8-P.6 Minimize dependence on imported water through efficient use of local surface sources, using wise groundwater management practices, conservation measures, and the use of reclaimed wastewater and non-potable water for irrigation of landscaping and agriculture, where feasible.

Actions

8-A.22 Engage with the Santa Ana Watershed Project Authority (SAWPA) in preparation and periodic updating of the Integrated Regional Water Management (IRWM) Plan for surface and groundwater resources. Update the City of Redlands' Water Master Plan, within the structure and guidelines of the IRWM Plan, including an assessment of Redlands' position relative to regional demand and availability of water resources through buildout.

8-A.23 Work with the SAWPA, Bear Valley Mutual Water Company, San Bernardino Valley Municipal Water District, and Western Heights Water Company to educate the public and implement water conservation measures. Update the Redlands' Water Conservation Plan, Ordinance No. 2151, to reflect current best practices for water conservation.

8-A.24 Participate in regional efforts to clean up the Bunker Hill Groundwater Basin and maintain high water quality going forward so that it can be used to its full potential.

8-A.25 Encourage water conservation through the following strategies:

- Establish water and wastewater rates that encourage conservation and provide for system maintenance.
- Update the landscape irrigation ordinance to continue reducing the use of potable water for landscape irrigation to CALGreen requirements. All aspects of landscaping from the selection of plants to soil preparation and the installation of irrigation systems should be designed to reduce water demand, retain runoff, decrease flooding, and recharge groundwater.
- Establish incentives for use of water efficient fixtures and fittings.
- Expand the current landscaping ordinance for parking lots (Section 18.168.210 of the Municipal Code) to encourage the use of drought tolerant species.
- Promote the use of permeable surfaces for hardscape. Impervious surfaces such as driveways, streets, and parking lots should be minimized so that land is available to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding.
- Incorporate water holding areas such as creek beds, recessed athletic fields, ponds, cisterns, and other features that serve to recharge groundwater, reduce runoff, improve water quality, and decrease flooding into the urban landscape.

8-A.26 Implement the following programs to increase the use of reclaimed and other non-potable water and decrease the use of potable water for irrigation:

- Conduct rainfall runoff capture and other system research and pilot studies;
- Develop guidebooks for irrigation Best Management Practices (BMPs) and other systems;
- Update ordinances to allow for the use of reclaimed water for landscape irrigation;
- Update ordinances to allow for use of various greywater sources for use as subsurface landscape irrigation per California Plumbing Code; and
- Require inclusion of dual plumbing that allows greywater from showers, sinks, and washers to be reused for landscape irrigation in the infrastructure of new development where appropriate.

8-A.27 Seek funding sources to implement renewable energy sources determined to be feasible for water and wastewater operations.

8-A.28 Permit greywater use for irrigation, and adopt ordinance or other measures allowing for expanded use of graywater as permitted by the California Plumbing Code.

8-A.29 Reduce consumption of carbon-based fuels for conveyance and treatment of water and wastewater.

Drought-tolerant landscaping, such as the vegetation in front of Redlands Fire Station No. 1, requires less water than and has the same curb appeal as water-intensive landscaping.

8.3 WASTE REDUCTION AND RECYCLING

Waste collection services are provided by the City of Redlands for areas within city limits. Waste collection for the Mentone and Crafton areas is carried out by private haulers contracted with San Bernardino County.

Solid waste from Redlands is primarily disposed of at the California Street Landfill (encompassing 115 acres) and the San Timoteo Sanitary Landfill (encompassing 366 acres) operated by the County, both within the city limits. These have more than adequate capacity to meet the city's needs for the foreseeable future.

Diverting waste from landfills by promoting reduction, reuse, recycling, and composting of materials can substantially reduce greenhouse gas emissions. Recycling and waste prevention programs reduce energy and transportation needed to manufacture and ship resource-intensive products and packing. Composting food and yard waste reduces the amount of methane produced in landfills. Moreover, the combination of waste management and diversion strategies can extend the life of existing landfills. Redlands offers public recycling drop-off, commercial recycling, composting programs, and curbside green waste programs.

POLICIES

Principles

8-P.7 Reduce the generation of solid waste, including household hazardous waste, and recycle those materials that are used, to slow the filling of local and regional landfills.

Actions

8-A.30 Meet the State's policy goal that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by the year 2020; and reduce landfill disposal of household hazardous waste as much as feasibly possible.

8-A.31 Develop programs to divert food waste and other biodegradable waste to composting facilities rather than disposing of them in the landfill.

8-A.32 Mitigate impacts associated with the expansion of existing landfills or development of new landfills to include effects on streets and highways, drainage systems, groundwater, air quality, natural resources, aesthetics, and property maintenance.

8-A.33 Improve commercial recycling diversion rates (including those for multi-unit housing) through education, including electronic and mailing campaigns, and partnerships with large employers, organizations, and institutions such as University of Redlands.

8-A.34 Work with private industry to encourage the reduction and reuse of construction and demolition materials through deconstruction and other methods.

8-A.35 Invest in new infrastructure and technology and partnerships that contribute to increased waste diversion and capture/reuse of methane gas emissions from the landfill.

8-A.36 Work with public and private entities to generate creative new opportunities that use solid waste as a resource.

8-A.37 Promote design in new development that incorporates space for recycling containers and other waste diversion facilities.

8-A.38 Explore the potential to generate energy using biomethane from the City's landfill and wastewater treatment plant.

8.4
GREEN BUILDING AND LANDSCAPES

The California Green Building Standards Code (CALGREEN) was adopted in 2010. It was the first code of its kind to mandate green building design and construction in categories related to planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and air quality standards. Redlands implemented measures from the CALGREEN code, and seeks to adopt additional green building strategies and provide incentives for retrofitting non-compliant structures.

POLICIES

Principles

8-P.8 Promote sustainability by reducing the community's greenhouse gas (GHG) emissions and fostering green development patterns – including buildings, sites, and landscapes.

Actions

8-A.39 Continue implementation and enforcement of the California Building and Energy codes to promote energy efficient building design and construction.

8-A.40 Promote the Leadership in Energy and Environmental Design (LEED) certification program for the design, operation, and construction of high-performance green buildings.

8-A.41 Promote energy conservation and retrofitting of existing buildings through:

- Encouraging point-of-sale residential energy and water efficiency audits. Provide information on upgrading requirements and/or incentives if necessary;
- Providing financial incentives and low-cost financing products and programs that encourage investment in energy efficiency and renewable energy within existing residential buildings; and
- Educating residents about the availability of free home energy audit programs and encouraging the implementation of audit findings.

8-A.42 Adopt a construction and demolition waste recycling ordinance that requires, except in unusual circumstances, all construction, demolition and renovation projects that meet a certain size or dollar value to divert from landfills 100 percent of all cement concrete and asphalt concrete, and an average of at least 75 percent of all remaining non-hazardous debris.

8-A.43 Decrease the need for artificial cooling, heating, and lighting, and promote outdoor lifestyles in Redlands' moderate climate by:

- Updating the Zoning Ordinance to provide for adequate private and common open spaces as part of multi-family developments; and
- Encouraging residential and office buildings to have windows that open to the outside in all habitable rooms and maximize the use of daylight.

8-A.44 Prepare a Landscape Manual or enhance landscape standards in the Municipal Code to mitigate urban heat island effects through maximum tree canopy coverage and minimum asphalt and paving coverage – particularly for denser areas like Downtown, Transit Villages, shopping centers, and industrial and other areas with expansive surface parking. Consider the reflectance of stone and rock ground cover in heat generation.

Homes in Redlands are constructed in accordance with CALGREEN policies concerning energy and resource efficiency.

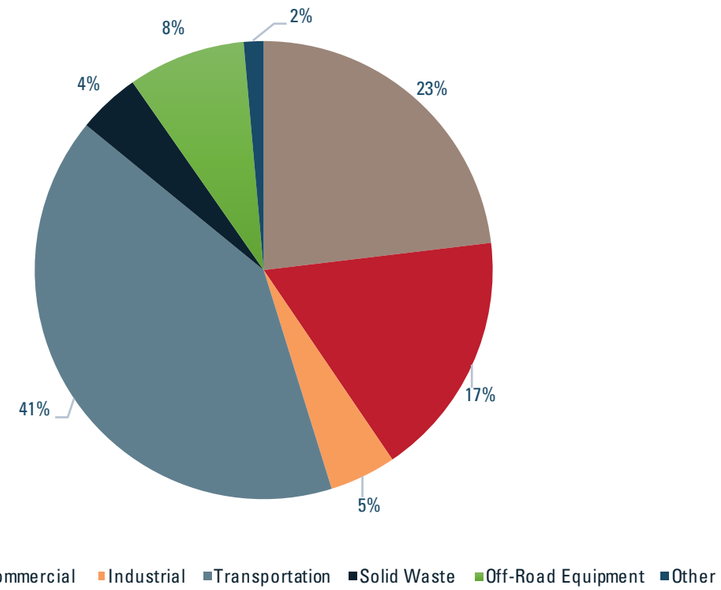
8.5 GREENHOUSE GAS (GHG) REDUCTION

Greenhouse gases (GHGs) are released during energy production and consumption. Principal GHGs include carbon dioxide, methane, nitrous oxide, ozone, and water vapor. The primary sources of GHG emissions in the United States are electricity production (30% of 2014 GHG emissions), transportation (26%), and industry (21%). Though the greenhouse effect is a natural process, the confluence of an excessive amount of GHGs in the atmosphere leads to climate change. Reducing the carbon content of the fuel source (e.g. solar or wind power versus fossil fuel) or reducing energy consumption (e.g. using energy efficient appliances or designing buildings for solar access) may limit negative impacts on global climate change.

Redlands GHG

Most Redlands GHG gas emissions in 2008 originated from on-road transportation and building energy (Chart 8.2; this information may be updated following completion of a Climate Action Plan). On-road transportation refers to emissions that result from burning gasoline and diesel fuel on Redlands roadways. Building energy refers to emissions from the use of natural gas and electricity by residential, commercial, and industrial buildings. Building energy emissions may be high in Redlands due to the presence of heavy industry.

Chart 8-2: Redlands GHG Emissions by Sector



Note: Other includes public lighting; agriculture; wastewater; and water transport, distribution, and treatment.

Source: Redlands Draft Climate Action Plan, 2017.

State Mandates

The State of California has enacted several measures to combat global warming and climate change. The Governor's Executive Order S-3-05 commits California to reducing its GHG emissions to Year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Global Warming Solutions Act of 2006 (AB 32) codifies the 2020 target and tasks the California Air Resources Board (CARB) with developing a plan to achieve this target. Most recently, Executive Order B-30-15 (Brown, 2015) established a California GHG target of 40 percent below 1990 levels by 2030.

Redlands Climate Action Plan

The Redlands Climate Action Plan (CAP) was prepared concurrently with the General Plan update, and provides an analysis of GHG emissions to the year 2035. The CAP reinforces the City's commitment to reducing GHG emissions and demonstrates how the City will comply with State of California's GHG emission reduction standards. The CAP's GHG emission targets are based on CARB guidelines established in the 2017 Scoping Plan for local jurisdictions. The CAP includes:

- An inventory of the city's GHG emissions;
- Forecasts of future GHG emissions through the year 2035;
- Monitoring and reporting processes to ensure targets are met; and
- Options for reducing GHG emissions beyond State requirements that could be adopted at a future date, if so needed or desired.

POLICIES

Principles

8-P.9 Undertake initiatives to enhance sustainability by reducing the community's GHG emissions.

8-P.10 Demonstrate leadership by reducing the use of energy and fossil fuel consumption in municipal operations, including transportation, waste reduction, and recycling, and by promoting efficient building design and use.

Actions

8-A.45 Prepare a Climate Action Plan to ensure that the Planning Area complies with State-mandated GHG emissions.

8-A.46 Continue to monitor the City's compliance with State-mandated GHG emissions, as provided for in the Climate Action Plan. Make timely adjustments to City policies as required to continue meeting State GHG targets, and as changes in technology, federal and State programs, or other circumstances warrant.

8-A.47 Demonstrate City leadership by giving preference to or providing incentives for climate-friendly purchasing.

8-A.48 Support a regional approach to study the feasibility of establishing Community Choice Aggregation (CCA) or another program that increases the renewable energy supply and maintains the reliability and sustainability of the electrical grid.