

Infrastructure

An efficient and reliable infrastructure system is vital to any city’s health, safety, livability, and its economic well-being. The Infrastructure Chapter addresses the physical facilities needed for the conveyance of vital services and functions such as water storage and distribution, wastewater collection and treatment, storm drainage and flood control, energy, communications, and solid waste disposal. Infrastructure related to transportation, such as our streets, is addressed in the Circulation Chapter of this Element.



Water pipes in Redwood City

These infrastructure systems represent the vital support network upon which we rely to maintain our daily activities. To preserve high levels of service in Redwood City, ongoing maintenance, improvement, and replacement is required; and new development must ensure that new needs are met without burdening the current users.

Imagine Redwood City in 2030

Redwood City’s unseen infrastructure keeps the city running smoothly. Our water storage and distribution system is safe and well-maintained. Our recycled water service area is expansive, and we are a leader in the region in facilitating recycled water use. Wastewater has been minimized with conservation, as we continue to meet public health and wastewater treatment needs. Redwood City facilitates alternative and renewable energies, which have become a primary portion of our energy portfolio. Our utility lines run underground, preserving community aesthetics while supporting our businesses’ and residences’ communications and function.

Water Storage and Distribution

As described in the Water Supply Chapter of the Natural Resources Element, Redwood City obtains all of its potable water from the San Francisco Public Utilities Commission (SFPUC) through the Hetch Hetchy regional water system. The supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo counties. These facilities include Calaveras Reservoir in southern Alameda County and San Andreas, Crystal Springs, and Pilarcitos Reservoirs on the Peninsula (Figure BE-30). In the event of an interruption to the water delivery system, these holding reservoirs can serve as an emergency water supply. The regional

Redwood City’s water system is maintained and routinely monitored by the Public Works Services Department.

water system includes over 280 miles of pipelines, 60 miles of tunnels, five pumping stations, and two water treatment plants.

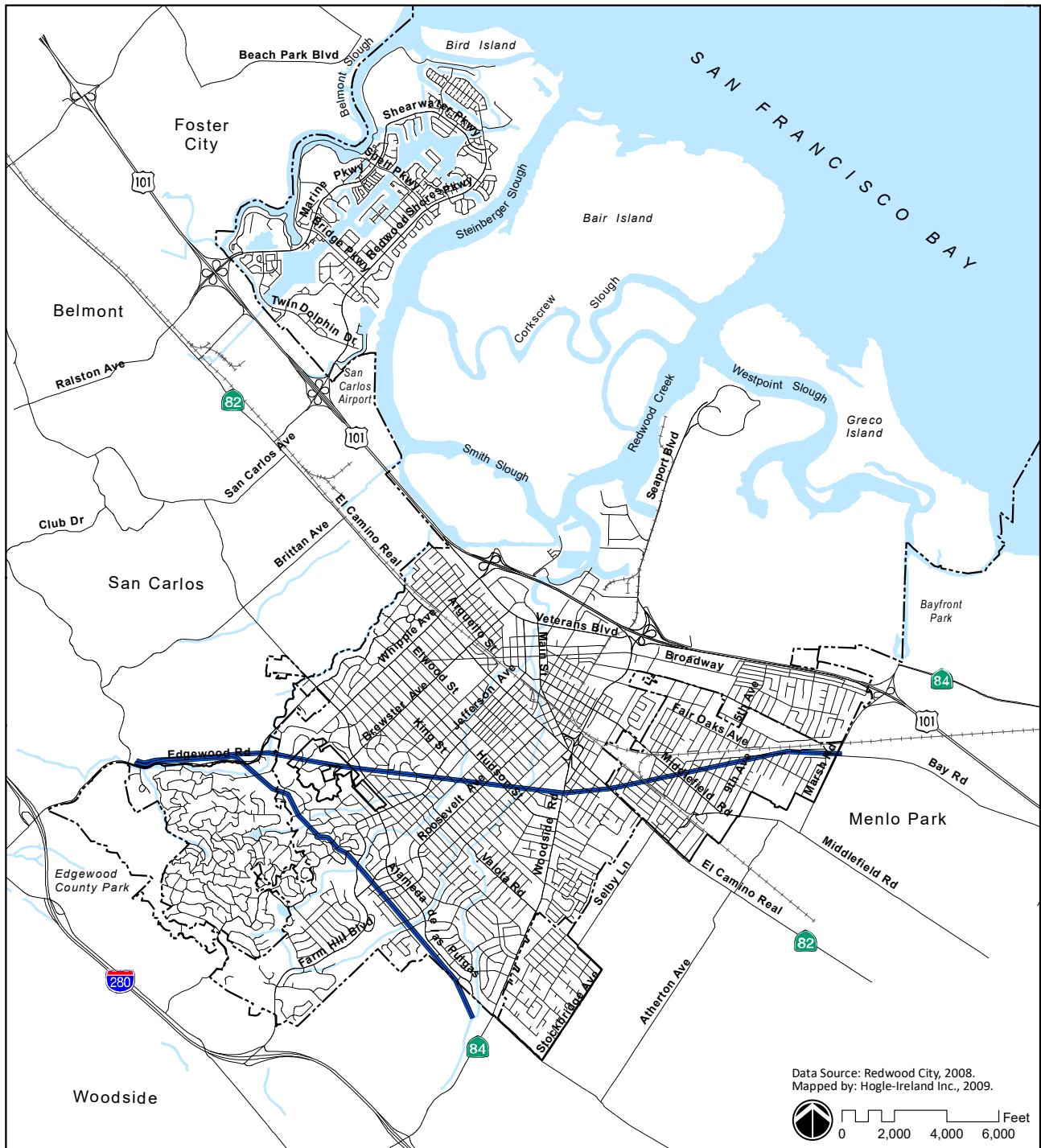


Source: Redwood City 2007 Annual Water Quality Report; SFPUC.

Figure BE-30: San Francisco Regional Water System

Water from the regional system is delivered to Redwood City through the four Bay Division Pipelines (BDPLs) which run underground through the city. In Redwood City, BDPLs No. 1 and No. 2 are located in SFPUC right-of-way that runs diagonally through the city from southeast to northwest, and then parallels Edgewood Road before entering Pulgas Portal. BDPLs No. 3 and No. 4 run roughly parallel to Alameda de las Pulgas and Fernside Street. Figure BE-31 shows the alignment of both pipeline corridors through Redwood City.

In 2002, the SFPUC approved a \$4.4 billion Capital Improvement Program known as the Water System Improvement Program (WSIP), to repair and upgrade the Hetch Hetchy water system. The WSIP includes the repair, replacement, and seismic upgrades of the system's deteriorating pipelines, tunnels, reservoirs, pump stations, storage tanks, and dams. The program is scheduled for completion in 2015. As part of the WSIP, a fifth Bay Division Pipeline (BDPL No. 5) will be constructed adjacent to BDPLs No. 1 and No. 2. Construction of the portion of pipeline through Redwood City is tentatively scheduled to begin sometime in 2010.



Legend

- Bay Division Pipelines
- Freeway/Highway
- Major Roads
- Railroad
- Waterways

Figure BE-31: Bay Division Pipeline Alignments

The Local Water System

Redwood City's water system is operated by the Redwood City Public Works Services Department - Water Services Division. The system's service area is approximately 14 square miles and includes Redwood City's incorporated area, portions of San Carlos and Woodside and some adjacent unincorporated areas including the Emerald Hills area, Cañada College, and portions of the Fair Oaks area. Redwood City draws its water from the regional water system pipelines at 13 metered connections. Redwood City's water distribution system is comprised of 262 miles of distribution mains, 10 pump stations, 2,385 fire hydrants, and 26 pressure reducing valve stations. Discussion of Redwood City's water supply is covered in detail in the Natural Resources Element, Water Supply Chapter.

Water Storage and Pumping Facilities

Redwood City has 12 water storage facilities that vary in size from 100,000 gallons to four million gallons (MG) with a combined storage capacity of 21.24 MG. Ten storage facilities are located in the higher elevations of Redwood City, and two are located in Redwood Shores. Ten pump stations are located throughout the distribution system, four of which have permanent stand-by generators. Two portable generators are available for emergency use.



Water tank in Redwood City

Redwood City continues to refine and improve its water system maintenance and operation procedures to ensure reliability. The City's maintenance practices help reduce water loss from leaks in the distribution system, which contributes to the amount of available potable water in the city. Redwood City makes every effort to reduce water leaks and retain precious drinking water supplies. The City strives to keep "unaccounted for" water significantly below the industry standard of 10 percent. Unaccounted for water includes water used for fire suppression, distribution main flushing, storage tank cleaning, under-reported meters, and system leaks. When system leaks are detected, they are repaired immediately.

Water Quality

Monitoring the quality of the regional water supply in the transmission system is the responsibility of the SFPUC, while Redwood City is responsible for monitoring water quality in its water distribution system. Redwood City conducts weekly water testing at various sampling points throughout the system. The City's water quality monitoring program assesses the general physical quality of the water as well as levels of

contaminants including bacteria, chlorine, asbestos, lead, and copper. The water consistently meets or exceeds primary and secondary drinking water standards. Distribution pipelines are regularly flushed to remove deposits, sediments, encrustations, and other materials. Flushing is suspended during water shortages to conserve water. Backflow, or the reverse flow of water from end users' systems back into the city's drinking water distribution system, may contain pollutants that are harmful to human health. Therefore, the City administers a Cross Connection Control Program that prevents backflow from occurring. The City uses certified staff and contractors to annually test backflow prevention devices.

Emergency Water Storage

Redwood City recently improved its storage and distribution system to ensure that emergency water supply is available if the regional water system fails. Redwood City's 17 pressure zones are now connected to storage tanks so that water can be pumped from one zone to another if the regional water supply is disrupted. Redwood City reviews the emergency storage system and proposes new or rebuilt storage tanks as needed.

Future Local Water System Improvements

Through the Water System Capital Improvement Program (CIP), the City annually replaces aging and undersized pipes, rehabilitates storage water tanks and reservoirs, rebuilds pump stations and pressure reducing valve stations, installs emergency generators, performs system seismic improvements, and conducts master and emergency planning efforts.



Redwood City's water distribution system is a complex system consisting of many pipe sizes and different materials. The ages of the pipes vary

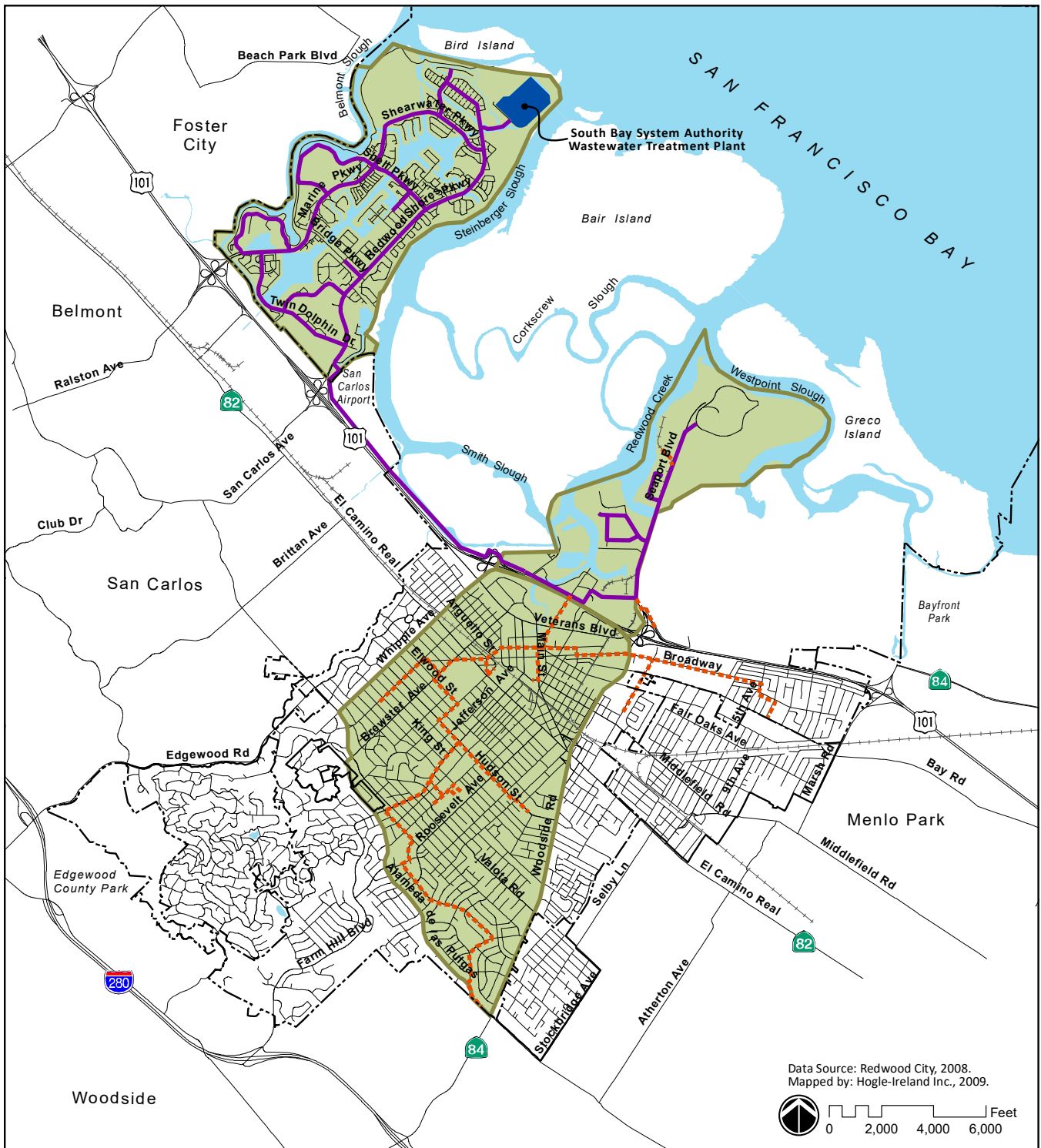
throughout the system with some being as old, or older, than 100 years. The annual Water System CIP is aimed at replacing these pipes with polyvinyl chloride (PVC) pipes, taking into consideration the current pipeline technologies and appropriate sizes of pipes needed for future uses.

Future improvements proposed for Redwood City's water system include new storage tanks in Friendly Acres and the bayfront area. The proposed tanks will provide additional capacity and water pressure for those areas susceptible to low service pressure during prolonged interruptions due to scheduled or emergency maintenance and repairs. The tanks would also provide additional water for emergency responses and supply capacity. As sufficient funding becomes available, these tanks will be constructed.

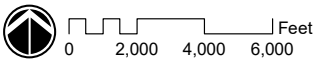
Recycled Water

In order to diversify its water supply portfolio and reduce its reliance on water supplies from the regional water system, Redwood City teamed with the South Bayside System Authority to initiate a pilot water recycling project in 2000. The South Bayside System Authority (SBSA) is a sub-regional wastewater treatment facility, of which the City is a joint powers authority part owner. The pilot project successfully demonstrated the feasibility of producing recycled water that met health requirements and goals for distribution. Subsequent to the successful pilot project, the recycled water system in Redwood City has continued to expand. The recycled water system requires both a recycled water treatment facility and a separate system of pipes to distribute recycled water to customers.

In 2006, the recycled water treatment facility at the SBSA plant was completed. The facility, located in Redwood Shores (see Figure BE-32), is permitted by the San Francisco Bay Regional Water Quality Control Board (RWQCB) and the California Department of Health Services (DHS) to produce recycled water that meets the State's stringent environmental health requirements for unrestricted uses. SBSA is responsible for treating the wastewater for recycling, while Redwood City is responsible for distributing the recycled water. In 2009, the recycled water distribution system also included pipelines in Redwood Shores, the bayfront area, and the Port of Redwood City. Pipelines are proposed to reach much of the rest of Redwood City.



Data Source: Redwood City, 2008.
 Mapped by: Hogle-Ireland Inc., 2009.



Legend

- | | |
|--|---|
| Recycled Water Service Area | Base Map Features |
| Recycled Water Service Area | City Boundary |
| Wastewater Treatment Plant | Sphere of Influence |
| Recycled Water Backbone Pipe System | Railroad |
| Existing Pipes (2009) | |
| Proposed Pipes | |

Note: Proposed facilities are subject to change as a result of further study and future conditions.

Figure BE-32: Recycled Water Facilities

Within the timeframe of the City's General Plan (2030), the recycled water system is expected to provide nearly 2,000 af/yr to Redwood City customers, more than offsetting the city's water annual deficit of approximately 800 af/yr from the regional water system.



Recycled water pipes are also known as “purple pipes.” Purple is the standard color of pipe adopted by the international utility industry to distribute treated recycled water.

Phase 1 of the system, including Redwood Shores, is currently operating, with the Seaport area expected to come online in early 2010. The water recycling system also has sufficient capacity available to supply recycled water to adjacent communities. Recycled water can be used for a variety of applications including landscape irrigation, industrial processes, firefighting, and dust control. In 2008, Redwood City adopted a Recycled Water Use Ordinance that requires the use of recycled water in internal separate plumbing for urinals, internal cooling towers and external landscaping on new apartments, townhouses and condominiums, and on industrial, commercial, and governmental projects. It also requires the use of recycled water for external landscaping on existing and remodeled commercial and industrial buildings.

Wastewater Collection and Treatment

Wastewater is the water that drains from our showers, sinks, and toilets into the sewers. In Redwood City, wastewater is collected and conveyed through a sewer pipeline system operated and maintained by the City to the South Bayside System Authority (SBSA), which treats and disposes of the city's sewage. The city's system is comprised of 192 miles of sewer mains and 31 sewer lift stations. Redwood City also has agreements with the County of San Mateo and the town of Woodside that permit these jurisdictions to convey wastewater through the city system to the SBSA treatment plant in Redwood Shores. SBSA is managed by a Joint Powers Authority (JPA) made up of Redwood City, San Carlos, Belmont and the West Bay Sanitary District. The JPA entities own the SBSA, with Redwood City's ownership at approximately 47 percent. SBSA is responsible for operation of four pump stations (one of which is in Redwood City), the force main, and the wastewater treatment plant. After treatment, the wastewater (called effluent) is discharged through an outfall into San Francisco Bay, as permitted by the San Francisco Regional Water Quality Control Board (RWQCB).

The treatment plant's operating capacity is 29 million gallons per day of average dry weather flow. Between June and October 2008, the average dry weather flow was 15.8 million gallons per day, or 54 percent of the operating capacity. Wet weather condition is significantly different given rain and groundwater infiltration into the collection system. Even though the plant is operating well below capacity for dry weather flow, Redwood City is aware of wet weather condition capacity issues. While Redwood

City has wet weather condition problems, it is considered to be among the industry's average.

Redwood City's sewer system is monitored to detect pipeline conditions. Condition assessment of the sewer pipeline is conducted using closed circuit television to determine the defects in the sewer pipelines. Typical problems can include pipeline cracks and improperly sealed joints that can cause groundwater infiltration during periods of wet weather. Excessive groundwater infiltration into sewer pipelines can overtax the capacity of the sewer system and treatment plant. Tree roots can intrude into pipelines causing blockage. Accumulations of fats, oils, and grease can coagulate and also block sewage flow.

Redwood City has a CIP developed for the wastewater system. Every year, the wastewater projects are reviewed, prioritized, and implemented to provide a safe and reliable system. Improvement projects ranging from rehabilitation of existing pump stations and replacement of aging sewer infrastructure are conducted yearly. In August 2008, Redwood City completed an evaluation of the sewer capacity analysis that provided a list of improvements that are required to sustain the growth to year 2030.

Storm Drainage and Flood Control

Storm drainage and flood control is discussed in detail in the Public Safety Element.

Energy

Redwood City's electric service is provided by Pacific Gas and Electric Company (PG&E), which has supplied much of Northern California with gas and electricity since the early 20th century. PG&E obtains electricity from different generation sources, including hydroelectric, fossil fuels, nuclear, wind, and geothermal. The generated electricity from these sources is transmitted through a grid, a complex network of high-voltage transmission lines, switching facilities, and substations. Most of the electric utility lines (as well as cable TV and telephone lines) are routed along city streets or other publically-owned rights-of-way to reach Redwood City users.

Constructing new high-voltage transmission lines to improve capacity and reliability is expensive and can be particularly difficult in developed urbanized areas. In order to reduce the need to construct new transmission lines, PG&E has increased electric transmission capacity on some of its existing lines, replacing older electric cables with higher

For more information regarding energy use, see the Public Safety Element, Atmosphere and Climate Chapter.

capacity cables. Some transmission line circuits have also been upgraded to higher voltages. As of 2008, no new major transmission lines in Redwood City are planned.

Like electricity, natural gas is supplied by PG&E. Natural gas is conveyed through a network of pipelines that connect gas fields located hundreds of miles away to Redwood City. Three main natural gas pipelines run the length of the Peninsula, terminating in San Francisco. One pipeline parallels U.S. 101 and two parallel pipelines run adjacent to Interstate 280. A cross-connection between these pipelines runs through San Carlos. A regulator station draws the gas from this pipeline to supply Redwood City. A lateral network of smaller diameter pipelines distributes the gas for local use to individual customers.

Renewable Energy and Conservation

Global climate change is an increasingly acknowledged environmental problem. There is scientific consensus that it is caused by greenhouse gases being released into the atmosphere faster than the earth's natural systems can re-absorb them. Besides a small portion of emissions resulting from waste decomposition, soil disruption, or the release of industrial chemicals, energy use (in buildings, transportation, or elsewhere) is the primary source of greenhouse gas emissions in most U.S. cities, including Redwood City. Both decreased energy consumption and increased renewable energy production are key components to reducing greenhouse gas emissions, and one without the other is unlikely to achieve a sustainable energy economy.



Solar panels in Redwood City

PG&E's energy supply mix dictates Redwood City's energy supply mix. PG&E has a relatively low-emission energy production portfolio, though much of its contracted renewable energy capacity has not yet come on line. Redwood City does not have direct control over how PG&E produces energy, but the City actively and publicly encourages the company to make its energy portfolio increasingly less emissions-intensive.

Due to the relatively sunny climate, solar energy is a viable source of energy in Redwood City. Solar energy is defined as the amount of energy that can be produced from solar sources like photovoltaic panels and passive water-heating solar panels. While solar power installed in Redwood City is increasing, (between 1999 and 2009, Redwood City has installed a total of 555,877 watts of solar capacity and an average of 61,764 watts of solar energy capacity per year) solar only provides about one out of every million units of energy used in the city.

Undergrounding of Utilities

The proliferation of overhead utility lines and poles has long been cited as a source of urban visual pollution. Since the 1960s, most new development in Redwood City has included underground electric and telephone service, largely due to technical advances that reduced the cost of undergrounding utility lines. However, undergrounding existing overhead utilities can be complicated and expensive. Existing City codes require new building projects to underground overhead utilities that are located within their property or on their frontage, although exceptions may be made for affordable housing, other public-benefit projects, and when undergrounding is deemed impractical for one property frontage due to the complexity of the overhead system. Undergrounding overhead utilities also occurs in conjunction with major street improvements.

Each year, PG&E places approximately 30 miles of overhead electric facilities underground within its service area. This work is done under provisions of the company's Rule 20A, an electric tariff filed with the California Public Utilities Commission. The costs for undergrounding under Rule 20A are recovered through electric rates after the project is completed.

In recent years as part of roadway reconstruction, Redwood City has worked with PG&E, AT&T, and other cable companies in undergrounding utilities on portions of Chestnut Street, Roosevelt Avenue, James Avenue, and parts of the Downtown core.



Above-ground utility lines and poles in a Redwood City neighborhood

Unlike local electric distribution lines and telephone cables, undergrounding high-voltage transmission lines is an expensive undertaking because of more stringent insulation requirements. In general, undergrounding high voltage lines occurs in developed urban areas that lack sufficient right-of-way space for overhead high-voltage

lines. In Redwood City, portions of some existing high-voltage transmission lines could potentially be placed underground. An example is the bayfront area that is traversed by two parallel double-circuit transmission lines supported on steel towers. Placing these lines underground would improve the attractiveness of the area.

Communications and Information Technology

An effective communications system is essential to the efficient operation of business, government, and for individual convenience. Improvements in communications and information technologies during the latter half of the 20th century such as satellites, the Internet, and the widespread use of personal computers and cellular telephones has radically changed how daily affairs are conducted. These newer technologies require an infrastructure with sufficient capacity to provide fast and reliable communications. Expanding access to and capabilities of technology assists Redwood City in achieving goals of livability and economic growth.

Miles of telephone lines, television cables, Internet fiber-optic networks, and wireless technology connect us together and provide us with access to a wealth of information. Existing telephone lines have been the most common means of transmission infrastructure for Internet communications in the past, but this is being supplanted by fiber optic cable technology. Unlike conventional telephone lines, fiber optic cables are thinner, lighter, and have a greater bandwidth for more capacity. Fiber optic cables can be routed underground or placed on existing overhead utility lines. In recent years PG&E has installed fiber optic cables on its towers in some of its existing electric transmission line corridors. At least three underground fiber optic communications lines run along the Caltrain right-of-way through Redwood City. In addition, Redwood City recently completed the installation of a new fiber optic network, connecting different public facilities in the city for video, voice, and data communication.

However, these networks are not without their visual impacts. For example, poorly-sited telephone antennas can contribute to visual pollution. Using existing structures for installing communications antennas rather than freestanding towers can reduce visual impacts. At the same time, efforts must be made to make these installations as uncluttered and unobtrusive as possible. This can include camouflaging equipment and integrating equipment into a building's architecture. In addition to their visual impacts, these installations can also emit low

levels of noise from the control equipment. Although this may not be a problem in commercial and industrial areas, it can create potential problems in residential and mixed-use areas. Consequently, residential installations must not exceed ambient noise levels within existing residential neighborhoods (refer to the Noise Chapter of the Public Safety Element).

Wireless Internet communications, known as “wireless fidelity” or simply Wi-Fi, have become one of the most common means of accessing the Internet. The major advantage of wireless infrastructure is its flexibility, where one can access resources while in the field, or easily collaborate with people without having to travel. All of the public libraries in San Mateo County, including those in Redwood City, currently have wireless Internet access. Redwood City supports efforts to develop Wi-Fi accessibility in public spaces.

Wireless Silicon Valley is a program to develop a large-scale wireless network covering approximately 1,500 square miles that would include most of the Peninsula, and portions of Santa Clara, Santa Cruz, and Alameda counties. Redwood City is one of 39 cities participating in this program. The project is sponsored by Joint Venture, an organization made up of business, government, labor, and education representatives. Joint Venture was established to identify and resolve issues or problems impeding Silicon Valley competitiveness. The wireless network would provide free or low-cost Internet access to residents and businesses in Redwood City.

Solid Waste and Recycling

Minimizing the volume of trash that enters landfills conserves resources and protects the environment from the negative impacts associated with waste disposal. As landfill space diminishes, reuse and recycling become ever more necessary to reduce demand on non-renewable resources. Using recycled products also lowers energy consumption, as manufacturing new products from recycled materials often uses significantly less energy than manufacturing from raw materials. Reducing the amount of waste going to landfills also helps curb global warming, as waste in landfills decomposes anaerobically and produces methane – which has around 23 times more greenhouse gas effect than CO₂. In Redwood City’s 2005 Community Greenhouse Gas Emissions inventory, waste accounted for 6 percent of total greenhouse gas emissions. Waste reduction and recycling is also a proven tool for raising awareness about other elements of environmental sustainability.



Recycling and trash ready for pickup on a residential street in Redwood City

In addition to using disposed material for recycling, organic solid waste such as food scraps, fallen leaves, grass clippings and plant and tree trimmings can be used for compost. Construction and building demolition debris produces large quantities of solid waste, much of which can be recycled or processed for reuse. One of the basic principles of “Green Building,” which is discussed in the Built Environment and Natural Resources Elements, is to use recycled and re-used materials in new construction.

Redwood City is one of 12 member agencies that make up the South Bayside Waste Management Authority (SBWMA). The SBWMA, a Joint Powers Authority that was created in 1982, facilitates and manages recycling and other waste management programs. The SBWMA contracts with private companies to collect, haul, and dispose of solid waste. Pursuant to SBWMA contracts, solid waste generated in Redwood City is hauled to Ox Mountain landfill near Half Moon Bay, Hillside landfill in Colma, or to other landfills further away if necessary.

Redwood City’s Port Industrial Center area provides opportunities for new recycling and salvage operations. The recycling and salvage operations uses are consistent with surrounding heavy industrial uses; ready access to rail and Port vessels can reduce transportation costs associated with moving recycled and salvaged materials.

In order to reduce the amount of solid waste generated in California, the California Integrated Waste Management Board (CIWMB) was created in 1989 to oversee the reporting of solid waste disposal by cities and counties. The CIWMB required the amount of solid waste sent to landfills be reduced by 50 percent by the year 2000. Redwood City implemented a series of programs for recycling materials that significantly decreased the amount of waste the city sent to landfills. In 2000, Redwood City was diverting 47 percent of its waste from landfills. By 2006, Redwood City diverted 61 percent of its waste from landfills through recycling and reuse. Redwood City continues to look for and implement new programs to minimize waste generation and increase recycling.

In 2005, Redwood City adopted a waste reduction and recycling directive “to make resource conservation an integral part of the physical operation of the waste reduction and recycling programs...” Recyclable household waste is picked up every other week at residential curbsides; also, there are a variety of recyclable material drop-off locations in Redwood City and San Mateo County. Redwood City, along with a number of local organizations, also sponsors residential and commercial recycling information and education programs. To increase recycling in Redwood City, in 2009 the City initiated a new contract with Recology, a solid waste

and recycling management company, to manage the solid waste for all areas of the city. This company focuses on resource recovery and composting, with a goal of Waste Zero. Services in Redwood City residential areas will include:

- Weekly solid waste collection
- Weekly single stream recycling collection
- Weekly organics recycling collection
- Weekly plant materials recycling collection
- Weekly Household Batteries and Cell Phones Recycling Collection

Services for commercial users will include solid waste collection, single stream and source separated recycling collection, organics recycling collection, and plant materials recycling collection. Additional programs are also being considered.

Household Hazardous Waste

A considerable amount of solid waste is made up of hazardous materials. A typical household contains toxic substances such as paint, cleaners, pesticides, batteries, oil, and fluorescent tubes that can pose a hazard if they are disposed improperly. San Mateo County sponsors the Household Hazardous Waste (HHW) Program, which educates the public about toxic household waste dangers and proper disposal. Hazardous waste and materials are addressed in more detail in the Environmental Hazards in Public Safety Element.

Electronic Waste

Electronic waste (E-waste) is becoming an increasingly significant solid waste source in recent years. Continued improvements in electronic technologies have resulted in rapid obsolescence of electronic equipment including personal computers, televisions, stereo equipment, and cell phones, which are being discarded at an increasing rate. In addition to the volume of waste generated, E-waste contains significant amounts of hazardous material such as lead, mercury, and cadmium.

Some computer manufacturers have initiated “buyback” programs for obsolete equipment. In addition, some manufacturers design equipment that can be easily disassembled for recycling. More effort must be made to provide opportunities to encourage manufacturers to participate in curbing the stream of E-waste to avoid potential pollution problems.



Key Infrastructure Considerations

The water storage and distribution, wastewater, energy, communications, and solid waste systems must be maintained to accommodate existing and future development. Over the next 20 years, key infrastructure considerations and concerns will be intricately tied to sustainability. As concerns about global warming and climate change increase, we must carefully plan our infrastructure to accommodate a lower reliance on traditional methods of energy production, water use, and waste management. Our Infrastructure goals, policies, and implementation programs focus on utilizing sustainable practices, maintenance, and educating users to maintain service levels. Furthermore, by improving infrastructure in the Downtown, in other urban centers and corridors, and around transit, we can support infill and intensified development consistent with priorities for smart growth.

Infrastructure Goals, Policies, and Policies

Redwood City recognizes the importance of and is committed to the provision of adequate infrastructure and services to support the needs of residents and businesses and ensure a high quality of life. This vision is reflected in the General Plan as one of the Guiding Principles:

- ***Plan for sustainable open space, water, energy, and air quality within our finite resources.***

GOAL BE-41:

Provide safe and reliable potable and recycled water storage and distribution systems that will meet current and future needs.



Policy BE-41.1:
Sustainability Focus

Improve the level of service, reliability, quality, and life cycle of the city’s potable and recycled water storage and distribution system.

Policy BE-41.2:

Maintain the city’s water system to ensure adequate fire flow.



Policy BE-41.3:
Sustainability Focus

Locate and design new capital-intensive potable and recycled water storage and distribution facilities, particularly storage tanks, in a manner that minimizes visual, cost, and environmental impacts to the surrounding area.

Policy BE-41.4:

Design Redwood City’s water storage and distribution system to induce rapid recovery and to provide a reliable and sufficient emergency water supply in the event of a disaster.

Policy BE-41.5: Continue to make every practical effort to minimize leaks in the water and recycled water distribution system, through regular monitoring and maintenance.



Policy BE-41.6: Support the expansion of the city's Recycled Water Service Area, and actively promote widespread use of recycled water in and around Redwood City.

Sustainability Focus

GOAL BE-42: Provide adequate and reliable wastewater collection and treatment facilities that meet current and future needs.



Policy BE-42.1: Continue to ensure adequate treatment capacity and collection system for Redwood City's wastewater conveyed to at South Bayside System Authority (SBSA) treatment facilities while protecting water quality and public health, and minimizing adverse impacts to the environment.

Sustainability Focus

Policy BE-42.2: Work with South Bayside System Authority (SBSA) member agencies to ensure that the treatment facility has sufficient capacity to meet future wastewater treatment needs.

Policy BE-42.3: Minimize groundwater infiltration and inflow to the wastewater collection system to maintain sufficient peak wet weather capacity and continue to explore other possible options to reduce peak wet weather flow.

GOAL BE-43: Support reliable, high quality, and environmentally sound energy distribution systems to meet current and future needs.



Policy BE-43.1: Require that improvements and maintenance to electric and gas transmission and distribution systems that are made to accommodate new growth be performed in a manner that maintains safety, reliability, and environmental compatibility.

Sustainability Focus

Policy BE-43.2: Support efforts to increase the use of renewable energy and low-emission power sources. Encourage the installation and construction of renewable energy systems and facilities such as wind, solar, hydropower, geothermal, and biomass facilities.

Policy BE-43.3: Accommodate alternative energy infrastructure as new technology evolves.

Policy BE-43.4: Ensure that pipeline owners protect and maintain underground high-pressure gas pipelines to ensure maximum safety.

GOAL BE-44: Advocate for access to high-quality established and emerging communications technologies to facilitate efficient and affordable communication for individuals, businesses, education, and government functions.

Policy BE-44.1: Support efforts to develop improved communications technology in a manner that minimizes visual and environmental impacts to the surrounding area, while benefiting government, business, education, and public safety.



Policy BE-44.2: Require new buildings, particularly taller buildings, to be designed with sufficient space to accommodate wireless communications equipment.
Sustainability Focus



Policy BE-44.3: Make efforts to accommodate future communications and information technologies as they develop and to replace or remove redundant or outdated technology and its associated equipment.
Sustainability Focus

GOAL BE-45: Preserve community aesthetics while providing for utility needs.

Policy BE-45.1: Reduce the visual impact of aboveground and overhead utilities, including electric lines, by working with Pacific Gas and Electric Company (PG&E) to maximize opportunities to place utilities underground.

Policy BE-45.2: Continue to require the placement of utilities underground with new development.

Policy BE-45.3: Permit new freestanding telecommunications towers only when there are no feasible alternatives.

Policy BE-45.4: Strengthen requirements for underground utilities in older sections of the city as part of redevelopment projects to address public safety issues and to improve the aesthetic quality of streets and neighborhoods.

GOAL BE-46: Minimize the volume of solid waste that enters regional landfills.



Policy BE-46.1:
Sustainability Focus

Meet or exceed State mandates regarding the diversion of waste from landfills.



Policy BE-46.2:
Sustainability Focus

Encourage recycling, composting, and source reduction by residential and non-residential sources in Redwood City.



Policy BE-46.3:
Sustainability Focus

Promote green building practices with respect to recycling material from building demolition and using recycled building materials in new construction.



Policy BE-46.4:
Sustainability Focus

Support retention and expansion of businesses and industries in Redwood City involved in recycling materials, especially in areas proximate to the Port of Redwood City.



Policy BE-46.5:
Sustainability Focus

Take a leading role in waste reduction by promoting recycling and composting, purchasing post-consumer recycled products for City facilities, using recycled materials in City operations, and reducing the overall amount of solid waste that is produced.



Policy BE-46.6:
Sustainability Focus

Promote recycling by supporting local public and private recycling programs that provide opportunities for businesses and the general public to recycle waste.

Implementation Programs

Procedures, Permits, Agreements, Ordinances

Program BE-123: Funding for Water System Maintenance and Upgrades. As appropriate, allocate increased funding in Redwood City's Capital Improvement Program to upgrade and/or replace pipes, storage tanks, and pump stations in the Redwood City water system; monitor for water losses; and carry out preventive measures to avoid major disruptions or water losses to the water storage and distribution system. Prioritize investment in water supply delivery upgrades in areas where sub-standard size water mains currently exist.

Timeframe: Ongoing

Responsible Party: Community Development; Finance Department

Funding Sources: Water Enterprise Fund



Program BE-124: Wastewater System Maintenance. Continue to provide funding to repair, maintain, and upgrade the city’s wastewater collection system. Annually survey at least 15 miles of sewer pipeline to identify necessary repairs to pipeline cracks and improperly sealed joints that may cause groundwater infiltration. If pipeline deterioration accelerates, increase the rate of pipeline replacement accordingly. Enforce regulations that restrict the discharge of substances such as grease, oil, mud, silt, and pollutants into the sewer system.

Sustainability Focus

Timeframe: Ongoing

Responsible Party: Public Works Services Department;
Community Development

Funding Sources: Sewer Enterprise Fund

Program BE-125: Future Wastewater Collection Agreements. When parties outside of the service area seek wastewater collection and conveyance agreements, analyze capacity and consider potential future impact to the City. Ensure that adequate capacity is available for future development as identified in this General Plan.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: Sewer Enterprise Fund

Program BE-126: Utility Project Review. Review proposed new utility projects to ensure that they are safe, environmentally sound, and compatible with surrounding land uses.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program BE-127: Underground Utilities.

- Review PG&E maintenance procedures to ensure underground high-pressure gas pipelines in Redwood City are protected and maintained. Maintain maps of high-pressure pipelines in Redwood City for review when new development is proposed.
- Consult with PG&E to analyze the feasibility and cost of undergrounding portions of its overhead high-voltage

transmission lines within existing developed areas and areas designated for new development.

- Continue to enforce policies for undergrounding utilities in conjunction with new development and major street and roadway improvements. Explore potential programs and funding alternatives to underground existing overhead utilities in older areas of the city such as through assessment districts or redevelopment.

Timeframe: Ongoing, Mid Range, Short Range

Responsible Party: Community Development

Funding Sources: PG&E, General Fund - Capital Improvement Program, private development and assessment districts

Program BE-128: Telecommunications Infrastructure Review. Review the installation of new communications infrastructure to ensure compatibility with surrounding uses and minimize visual impacts or other adverse impacts. Modify the Zoning Ordinance as necessary to allow for installation of improved telecommunications and wireless infrastructure while minimizing visual, noise, and other impacts of such installations.

Timeframe: Ongoing

Responsible Party: Community Development; City Manager Office/Economic Development

Funding Sources: General Fund

Program BE-129: Expand Public Access to Wireless Internet. Pursue opportunities to expand the public’s access to wireless communication services in public spaces and community gathering places, as identified in the Building Community Element. Encourage private businesses to establish their own local area networks. Support the goals of Joint Venture’s Wireless Silicon Valley project to obtain high quality wireless Internet access to benefit business, government, and education while providing improved communications opportunities for all of Redwood City’s population.

Timeframe: Mid Range

Responsible Party: Community Development; City Manager Office/Economic Development

Funding Sources: General Fund - Capital Improvement Program

Program BE-130: Require Technology Installation in Large-Scale Projects. Establish requirements for the installation of high quality internal telecommunications technologies in new large-scale planned communities and office and commercial developments.

Timeframe: Mid Range

Responsible Party: Community Development

Funding Sources: Development fees, private development



Program BE-131: Green Building Ordinance. As appropriate, amend the Green Building Ordinance to keep pace with new technologies and procedural/process advancements.

Sustainability Focus

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund



Program BE-132: Recycling Collection Facilities in New Development. Revise the Zoning Ordinance to require development projects to incorporate collection facilities for recyclable materials in development projects. The collection facilities may be established as part of trash enclosure areas.

Sustainability Focus

Timeframe: Short Range

Responsible Party: Community Development

Funding Sources: General Fund



Program BE-133: Alternative Energy/Building Performance Initiatives. Consider adopting building efficiency technology and standards to maximize energy performance including but not limited to window glazing and efficiency improvements. Also consider offering or consulting with PG&E to offer financial incentives for retrofitting existing buildings.

Sustainability Focus

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund



Program BE-134: Solar Power Agreements. Consider requiring large development projects and large redevelopment projects to be required to enter into Solar Power Agreements.

Sustainability Focus

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Plans and Studies

Program BE-135: Water Master Plan. Complete a Water Master Plan that includes recommendations to improve the water distribution capacity, develop criteria for replacement strategy, and provide system reliability during a seismic event. Review and implement recommendations and update the Water Master Plan every five years to recognize accomplishments and changes to the water system. Assess parameters and assumptions inherent in Attachment Q. Utilize water demand assumptions from future UWMPs and this General Plan, and adjust Attachment Q as appropriate.

Timeframe: Short Range; Ongoing

Responsible Party: Community Development

Funding Sources: Water Enterprise Fund



Program BE-136: Expand Recycled Water Use.

Sustainability Focus

- Complete construction of the proposed pipes to expand the City’s recycled water services to the majority of Redwood City. Explore opportunities to export recycled water to adjacent communities and/or exchange recycled water for drinking water.
- Conduct a feasibility study to assess costs and impediments to expanding the Recycled Water Service area to include lands southeast of Woodside Road.
- Implement the Recycled Water Use Ordinance to require new development to use recycled water for landscape irrigation and other non-potable uses, where available.

Timeframe: Short Range, Long Range, Ongoing

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund, Grants, Water fund, developer fees

Program BE-137: Sewer Master Plan. Consider completing a Sewer Master Plan that includes recommendations for replacement, maintenance, and improvement of sewer services. If completed, implement recommendations and periodically update the Sewer Master Plan.

Timeframe: Mid Range

Responsible Party: Community Development

Funding Sources: Sewer Enterprise Fund



Program BE-138:

Sustainability Focus

Support Recycling Industries. Ensure the retention of industrial lands near the Port of Redwood City, and encourage the location of recycling and salvage businesses in the area.

Timeframe: Ongoing

Responsible Party: Community Development; City Manager Office/Economic Development

Funding Sources: General Fund

Special Programs/Projects



Program BE-139:

Sustainability Focus

Accommodate Alternative Energy Infrastructure. Analyze current and projected demand for plug-in stations for electric, plug-in hybrid, and other alternative vehicle infrastructure in City parking structures.

Timeframe: Short Range

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund



Program BE-140:

Sustainability Focus

Waste Diversion. Increase efforts to divert waste from landfills. Concentrate on major waste diversion opportunities in the non-residential sector, identifying and consulting with the city's largest non-residential waste generators to reduce their waste generation and rates of waste disposal.

Timeframe: Short Range

Responsible Party: City Manager Office/Economic Development; Public Works Services Department

Funding Sources: General Fund



Program BE-141: Recycling and Composting Education and Incentives.

Sustainability Focus

- Consult with San Mateo County RecycleWorks to provide educational programs to schools, businesses, and the general public on the benefits of recycling and the various recycling opportunities available in San Mateo County. Encourage local school districts to participate in Redwood City and San Mateo County recycling programs. Ensure that all new businesses upon issuance of any City permit or payment of fees are aware of mandate to recycle and are provided information on Green Business Certification. To act as an example of sustainability, review City purchasing procedures to ensure the maximum amount of recycled materials are used in City operations.
- Confirm that the City's contract with its waste services provider incentivizes higher composting and recycling rates and decreases the volume of waste sent to landfill.
- Partner with San Mateo County RecycleWorks to provide information and resources to help increase the number of homes, restaurants, and community members with backyard or indoor composting. Work with RecycleWorks and Recology to develop a bin distribution program for Redwood City.
- Support a range of potential community-oriented recycling and re-use activities, such as citywide e-waste recycling events; block or neighborhood-wide garage sales; and household hazardous materials drop-offs. Encourage local school districts to participate in recycling programs.

Timeframe: Ongoing, Immediate, Short Range, Mid Range

Responsible Party: City Manager Office/Economic Development; Finance Department; Public Works Services Department; Port of Redwood City

Funding Sources: General Fund

Inter-Agency and Other Organizations Consultation

- Program BE-142: Water System Agency Consultation.** Consult with the San Francisco Public Utilities Commission (SFPUC) in carrying out its Water System Improvement Program to upgrade the regional water system storage and delivery infrastructure to improve reliability. Encourage the SFPUC to minimize any adverse environmental impacts and to implement appropriate mitigation

measures that may result from major capital improvements to the regional water system in Redwood City.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Source: General Fund



Program BE-143:

Sustainability Focus

Renewable and Low-Emission Power. Be an active and vocal PG&E customer, encouraging the company to continue introducing new renewable and low-emission power sources into its energy mix. Participate in renewable-purchasing programs PG&E may develop, as appropriate.

Timeframe: Ongoing

Responsible Party: City Manager Office/Economic Development; Community Development

Funding Sources: General Fund