



# Sustainability

## Chapter 1

---

**City of Fremont**  
**General Plan**

Adopted December 2011



*This page intentionally left blank.*

## Introduction

Sustainability is generally defined as the ability to meet the needs of the current generation without compromising the ability of future generations to meet their needs. In practical terms, a sustainable approach reduces resource consumption, avoids pollution, develops in harmony with the environment, and helps people live healthier lives. This chapter highlights the importance of sustainability principles to the City's future and provides a guide to sustainability in the elements of the General Plan.

Fremont was in large part planned and developed during a time when the automobile was the dominant form of transportation, fossil fuels were inexpensive, roads were less congested, and climate change was not a concern. As a result, the City's infrastructure is oriented to cars, with wide streets, expansive parking areas, and free right turns.

The City's housing development pattern is also suburban in character. The majority of residents live in low- or medium-density single family homes or townhouses, and few residential neighborhoods are within easy walking distance of basic services. Between now and 2035, much of Fremont is likely to remain suburban in character, but in specific locations near train or BART stations and along bus corridors, uses will intensify and become more urban.

The General Plan vision as distilled from extensive community input, supported by the City Council, and articulated throughout the Plan, is that...

*"Fremont will serve as a national model of how an auto-oriented suburb can evolve into a sustainable, strategically urban, modern city."*

Issues related to sustainability cut across topical areas. For example, policies in the Land Use Element that support infill development and higher densities around transit hubs, policies in the Parks and Recreation Element that establish new categories of parkland that include bike trails and urban plazas, and policies in the Mobility Element that put greater emphasis on the needs of pedestrians and cyclists all promote the vision of a sustainable community. Accordingly, this chapter serves as an index or guide to sustainability policies embedded throughout the rest of the General Plan. These policies are marked throughout the plan with a "sustainability icon."



Suburban development pattern



One of the many reasons to emphasize sustainability



Sustainability Icon

## GENERAL PLAN POLICIES RELATED TO REDUCING GREENHOUSE GAS EMISSIONS

- Mobility policies de-emphasizing automobiles and emphasizing other modes
- Land Use policies related to Transit Oriented Development
- Public Facility policies to collaborate with the School District to reduce greenhouse gas emissions
- Public Facility policies related to "greening" the vehicle fleet
- Public Facility and Conservation policies on Green Buildings and energy conservation
- Community Character policies related to light colored roofs and pavement
- Housing Element policies promoting in-fill housing development
- Parks and Recreation Element policies supporting linear parks

## Responding to Climate Change

Since the last comprehensive update of Fremont's General Plan in 1991, scientific consensus has emerged that human activities are generating gases such as carbon dioxide and methane more quickly than the earth's natural systems can absorb them. These gases create a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. Models predict that this "greenhouse effect" will lead to anywhere from a 2-10 degree Fahrenheit temperature increase over the next 100 years.

For Fremont, changes in the earth's temperature will have impacts that could include:

- Warmer weather associated with increased heat waves
- Wetter weather with an increase in annual rainfall of 20% to 30%, leading to more serious storm events
- Rising sea and Bay levels that will threaten coastal infrastructure, ecosystems, and water supplies, potentially inundating development near the shoreline—or requiring costly shoreline protection structures
- Decrease in the Sierra snow pack that will affect fresh water availability
- Increase in insect-borne diseases

## Reducing Emissions

In 2006, the State of California passed Assembly Bill 32, the landmark legislation committing California to reduce greenhouse gas emissions to 1990 levels by the year 2020. State regulations intended to achieve this goal are under development.

The City has taken a number of steps to reduce emissions consistent with AB 32. A baseline inventory of Fremont's emissions was completed in December, 2008. The inventory indicated that community emissions for 2005 (the base year that was evaluated) totaled approximately 1.7 million metric tons of CO<sub>2</sub>e, of which 62% was generated by transportation, including vehicles traversing Fremont on Interstates 680 and 880. The commercial/industrial sectors generated 23% of emissions, while the residential sector generated 15%. Fremont's municipal government operations generated about 7,400 metric tons of CO<sub>2</sub>e, or less than one half of one percent of the total community emissions.

Based on the inventory, input from the community, the recommendations of a Council-appointed Green Task Force, and staff analysis, an emission reduction goal of 25% below 2005 levels by 2020 was adopted in 2008. This goal, which is more aggressive than the target in AB 32, is restated as a General Plan goal in the Conservation Element.

The City is developing a more specific Climate Action Plan (CAP) in conjunction with the updated General Plan. Policies and implementation measures in the Conservation Element call for updates of the City’s emissions inventory and the CAP every five years to monitor progress and to allow for changes in strategies as necessary.

There are many proposed General Plan policies that will help the community meet its reduction targets; but the CAP will go a step beyond the General Plan in its level of specificity.

## Adapting to Climate Change

As of the preparation of this General Plan, local, regional and state agencies were just beginning to formulate approaches to the complex question of how to deal with a likely rise in sea and Bay levels in the future. Sea level rise is one example of the effects of climate change. Others include more frequent and extreme meteorologic events, such as drought and wildfire, and increasing coastal storm surges.

In September 2009, the City joined the Bay Area Climate Change Compact, a regional approach to reducing emissions and to adapting to the effects of climate change. The Compact includes commitments (which have been incorporated into the General Plan) to coordinate planning with other Bay Area cities and the Bay Conservation and Development Commission (BCDC), and also to prepare a separate adaptation plan in the future. Typical adaptation strategies might include enhanced flood protection or more stringent building requirements in areas that might be affected by sea-level rise.

### GENERAL PLAN POLICIES RELATED TO CLIMATE CHANGE ADAPTATION

- **Safety Policy 10-3.6:** evaluate impacts of sea level rise on proposed development in areas of the City subject to flooding
- **Safety Implementation Measure 10-3.6.D:** participate in regional planning efforts related to climate change adaptation.



Traffic is the largest producer of GHG emissions

**GENERAL PLAN  
POLICIES RELATED  
TO TRANSIT  
ORIENTED  
DEVELOPMENT**

- Land Use Policies 2-1.7 through 2-1.11 promoting Transit-Oriented Development
- Housing Element Goals 3.02-C and 3.03-D encouraging higher intensity of housing and a variety of housing types near transit
- Mobility Element Goal 3-1 to develop complete streets that serve multiple modes of transportation and Goal 3-2 to reduce the number of vehicle miles traveled in Fremont



BART Train

## Transit Oriented Development

For many years, the traditional model for Bay Area growth was to expand outward at low densities. Looking forward, this pattern of development is no longer sustainable. It is inefficient, consuming large amounts of land that might otherwise stay in open space or agriculture, while housing relatively few people. It also necessitates use of an automobile, which contributes to air pollution and consumption of non-renewable fossil fuels. Fremont will become a more sustainable community in the future by encouraging land use patterns that minimize the need to drive, providing a mix of services and amenities in close proximity, and giving individuals a range of transportation options including walking, cycling, and public transit.

The General Plan establishes a new “Transit-Oriented-Development (TOD) Overlay” in the Land Use Element that provides for higher intensity uses near Fremont BART, the future Irvington BART, and the Centerville Train Station. The new Warm Springs/South Fremont BART Station, which is designated as a Special Study Area in the General Plan because of the need for more specific planning there, is also envisioned as a higher intensity, TOD Area in the future. Sections of key corridors such as Fremont Boulevard are also envisioned for higher intensity development. The City's Downtown Community Plan in the City Center is a catalyst plan for TOD and a walkable urban neighborhood. The Housing Element reiterates that the focus for housing the City's future population growth will be in areas served by transit.

## Transportation Options

Public transit options in Fremont include the BART system, the Altamont Commuter Express (ACE) train, AC Transit, and Valley Transportation Authority (VTA). East Bay Paratransit and Fremont Paratransit serve the community's older adults and persons with disabilities.

While Fremont is relatively well served with commute service, local transit service is less frequent. Fremont's population densities are lower in most locations than the minimum needed to support regular bus lines. The General Plan supports the viability of public transit by planning for higher density housing in key locations near existing transit hubs and corridors, and also by planning for infrastructure improvements that will make buses and future streetcar lines an attractive alternative to driving.

In addition to public transit, the General Plan recognizes the importance of pedestrian and bicycle travel. These modes of travel are pollution-free while at the same time relieving pressure on roadways, improving the health of community members, and contributing to the vibrancy of neighborhoods and districts. The General Plan enhances the City's pedestrian and bicycling infrastructure through mechanisms such as linear parks that will make walking and cycling attractive alternatives to driving.

Even with population growth that adds to traffic congestion, with likely state and federal policy changes that will make driving more expensive, and with improved alternatives to driving, the automobile will undoubtedly remain an important mode of transportation. What is certain to change is how the cars of the future are powered. The General Plan contains a variety of policies—ranging from conversion of the City fleet to more fuel-efficient technologies to promoting the installation of a network of solar-powered plug-in stations for refueling electric vehicles—that support and promote anticipated growth in the use of alternatively-fueled cars.

### GENERAL PLAN POLICIES RELATED TO TRANSPORTATION OPTIONS

- Mobility policies de-emphasizing automobiles, emphasizing multi-modal mobility
- Land Use Policies 2-1.7 through 2-1.11 promoting TOD, and Policies 2-3.8 promoting higher intensities near transit
- Community Character Policy 4-4.1 promoting complete streets concepts
- Public Facilities policies to provide infrastructure for electric vehicles
- Park and Recreation policies supporting linear parks



Bike-to-Work Day

**GENERAL PLAN  
POLICIES RELATED  
TO GREEN  
BUILDINGS**

- Conservation policies to adopt residential Green Building requirements
- Conservation policies supporting green roofs, on-site power generation, pre-wiring of new homes for solar, and a variety of other green building practices
- Public Facilities policies regarding green City buildings and sustainability in City operations



Fire Station #2 is LEED Silver

## Green Buildings

Green buildings are sited, designed, constructed, and operated to enhance the well being of their occupants and to minimize negative impacts on the community and the natural environment. The most widely used benchmark for sustainable building in the commercial and institutional sectors is the Leadership in Energy and Environmental Design (LEED) rating system, established by the US Green Building Council. For residential construction, the commonly-accepted standard in Northern California is the Green Point Rated system developed by Build it Green. Green buildings typically minimize energy and water usage, utilize recyclable materials, limit use of non-renewable resources, and minimize use of toxic materials in construction and operation.

In 2006, the City adopted a requirement that civic buildings larger than 10,000 sq. ft. must qualify for a LEED Silver rating. As part of the 2011 Building Code update, the City adopted the statewide green building code (“CalGreen”), and also adopted “Tier 1” standards for residential development that went above and beyond the baseline requirements. The General Plan calls for Fremont to evaluate establishing green building standards for non-residential development, and also to continually implement and strengthen green building standards over time.

In addition, as technology and building practices evolve, many of the City’s longstanding requirements may become obsolete or even become impediments to green builders. As on-site wind turbines, grey water systems, rooftop gardens, and other sustainable building methods become more commonplace, it will be imperative that the City’s regulatory structure allows and encourages these practices.

## Waste Reduction and Recycling

Waste reduction and recycling reduce consumption and disposal, thereby conserving natural resources and landfill capacity and avoiding production of greenhouse gases in the landfill. In the 1991 General Plan, the City established a goal of recycling/diverting 50% of solid waste to comply with State legislation AB939. The City reached this goal, and in 1999, the City Council increased the goal to diverting/recycling 75% of solid waste generated in the community, consistent with the countywide goal established by Alameda County Measure D. Since adoption of the 75% goal, the City has continued to make progress, reaching 71% diversion in 2009.

The City has increased recycling and waste diversion by implementing new and expanded programs. These include adding food waste and additional plastics to the residential recycling collection program and implementing a commercial food waste recycling program. In addition, the single-stream recycling program has improved the convenience of the recycling program and increased the amount of material collected. The City continues to add new options for diversion and recycling, including batteries, fluorescent bulbs and e-waste. The City is part of a State Recycled Market Development Zone.

### GENERAL PLAN POLICIES RELATED TO WASTE REDUCTION AND RECYCLING

- Public Facilities policies regarding increasing waste diversion and recycling and moving towards zero waste



Recycling and Composting bins

**GENERAL PLAN  
POLICIES RELATED  
TO MUNICIPAL  
ENERGY  
EFFICIENCY**

- Public Facilities policies related to converting the vehicle fleet and providing infrastructure for plug-ins and other vehicles
- Public Facilities policies to continue retrofitting City buildings, installing high-efficiency street lights, and working with PG&E to reduce energy consumption in City operations



Parking Lot Solar Array

## Energy Conservation and Renewable Energy

Energy conservation and use of renewable energy sources are tangible steps many cities including Fremont have taken to reduce fossil fuel consumption, improve air quality, and reduce greenhouse gas emissions.

Electric and gas service in Fremont are provided by Pacific Gas & Electric Company (PG&E). PG&E is a leader in its use of renewable, non-polluting energy sources. Therefore, the energy used by the City of Fremont and by its residents is on average much less polluting than an equivalent amount of energy used by a city and its residents in other regions of the country, where a greater percentage of power comes from combustion of hydrocarbons (coal, natural gas, etc.)

It is important to note that while the General Plan contains policies and actions related to energy conservation and renewable energy, it is the City's intent that the Climate Action Plan will contain more specific, detailed measures for achieving relevant greenhouse gas reduction goals.

### Municipal Conservation

The City of Fremont participates in the PG&E Energy Watch program aimed at reducing energy consumption by local government agencies. In 2007, Energy Watch staff performed energy audits and prepared a Facility Energy Assessment Report. Based on this report, the City used 15.36 million kWh of electricity from December 2005 to November 2006, at a cost of \$2.1 million. Over 7 million kWh—almost half of the City's electricity use—was for streetlights. Natural gas consumption during the same period was 227,000 therms at a cost of \$300,000.

Between 2007-2009, the City performed several energy efficiency retrofits, including lighting retrofits, installation of cool roofs, window film, and reducing the number of computer servers in use. Energy consumption in these buildings was reduced by as much as 30%.

The City also has an ongoing program to reduce fuel consumption in the vehicle fleet. As of 2009, the City maintained about 20 natural gas vehicles in its fleet and had begun purchasing gasoline-electric hybrids as replacement vehicles where practicable.

In 2009, the City received almost \$2 million in federal stimulus funds for energy efficiency projects. The majority of this funding was used for con-

version to more efficient streetlights; replacement of the Fremont Main Library roof with a reflective roof; and for purchase of more efficient equipment and vehicles.

The General Plan includes policies to promote continued energy efficiency retrofits in City buildings and on streetlights, as well as policies to reduce municipal car trips and improve the efficiency of the City's fleet.

## Community Conservation

Energy conservation is one of the key strategies for achieving greenhouse gas emission reductions. Because more than 99% of Fremont's greenhouse gas emissions come from non-municipal sources, enhancing community-wide energy conservation will be a critical strategy for reaching the City's adopted goals.

Currently, the City collaborates with PG&E on several programs to provide energy audits to residents and businesses. The General Plan includes policies to continue these efforts. The Plan also includes support for innovative financing to assist property owners in conducting retrofits of their buildings to conserve energy.

Consistent with recommendations from the Green Task Force, the General Plan includes a policy for the City to take a leadership role in facilitating partnerships with the many institutions in Fremont that can help the community reach its greenhouse gas reduction goals.

In its regulatory capacity, the City administers the State Title 24 program, which ensures that new construction and renovation conforms to State energy efficiency standards. Over the life of this General Plan, it is likely that Title 24 requirements will be modified to increase energy efficiency requirements. This will likely occur as part of the State's code updates to CalGreen, the State's Green Building code.

## Renewable Energy Usage

Renewable, locally-generated energy will grow in importance during the life of this General Plan. Accordingly, the General Plan includes policies promoting the development and use of renewable energy in both municipal and community-wide applications.

### GENERAL PLAN POLICIES RELATED TO ENERGY CONSERVATION

- Conservation policies regarding green buildings standards, promoting building retrofits, and supporting innovative financing mechanisms for energy conservation
- Conservation policy to evaluate the feasibility of a Residential Energy Conservation Ordinance
- Mobility policies promoting public solar plug-in hybrid fueling stations, improved public transit, and promoting walking and cycling as alternatives to driving
- Public Facilities policy to continue to partner with PG&E on conservation programs for the community at-large

**GENERAL PLAN  
POLICIES RELATED  
TO STORMWATER**

Conservation policies regarding compliance with NPDES, Bay-Friendly Landscape, Low Impact Development, and other relevant stormwater quality regulations and guidelines



Landscape based stormwater treatment

# Water Quality and Conservation/Recycling

## Stormwater

Although stormwater runoff is part of the natural hydrologic cycle, human activities can alter natural drainage patterns, introduce pollutants, and increase erosion, thereby degrading natural habitats. Uncontrolled runoff can also cause flooding.

The Federal Clean Water Act requires municipal agencies to obtain National Pollutant Discharge Elimination System (NPDES) permits to manage stormwater runoff. In an effort to reduce pollutant loading to streams and the Bay, the City of Fremont's Environmental Services Division operates an Urban Runoff Program to fulfill NPDES permit requirements. The regional municipal stormwater permit calls for stormwater treatment, site design and source control measures on projects that create large amounts of impervious surfaces or may impact streams. The permit also institutes a variety of treatment requirements for Low Impact Development (LID) that emphasize landscape-based systems and minimize impervious surfaces.

In addition to the mandatory NPDES requirements for large projects, the City also requires most development projects to comply with Bay-Friendly Landscaping principles. Both the NPDES requirements and the Bay-Friendly principles emphasize the integration of site design and planning techniques that conserve natural systems and hydrologic functions on a site.

## Water Conservation and Use of Reclaimed Water

In California, fresh water is a precious commodity. In Fremont, the Alameda County Water District is charged with ensuring that sufficient water is available to meet the needs of the community, and also that the water is of high quality. ACWD provides water from both local (Alameda Creek watershed, Niles Cone Groundwater Basin, and the Newark Desalination Facility) and imported (Hetch Hetchy and State Water Project systems) sources. Historically, ACWD has been able to secure sufficient water to meet the demands of a growing population. However, in its most recent Integrated Resource Plan (IRP), ACWD has included conservation as a significant component of its future water supply strategy. Not only does conservation reduce the need to secure expensive imported supplies, but it also has significant benefits from a carbon emissions standpoint, since water transport and pumping require substantial amounts of energy.

In addition to conservation, use of reclaimed water, either from treatment plants or from on-site grey water systems, can reduce the need to use fresh water for landscaping and other non-potable uses.

The General Plan includes policies that emphasize the importance of water conservation and use of recycled water both in City operations and in private development.

### GENERAL PLAN POLICIES RELATED TO WATER CONSERVATION/ REUSE

- Conservation policies regarding use of water-efficient landscaping and other water conservation measures
- Conservation policies to promote use of reclaimed water
- Parks and Recreation policies related to use of artificial turf where feasible
- Public Facilities policies to reduce water usage in City facilities

**GENERAL PLAN  
POLICIES RELATED  
TO THE URBAN  
FOREST**

- Community Character policies to expand the urban forest
- Continue to enforce Tree Ordinance
- Community Character policies to encourage/assist residents and community groups to plant and care for trees



Tree canopy

## Urban Forest

A healthy urban forest contributes to a sustainable city. Trees consume carbon dioxide and absorb air and water pollutants. They also provide shade (which reduces energy consumption), absorb runoff, reduce soil erosion, provide habitat for plants and animals, and make walking more pleasant.

The City has approximately 46,000 trees in the right-of-way, and an additional 12,000 to 15,000 in medians and parks. The City generally adds several hundred trees to this inventory each year. Because of its emphasis on tree planting and maintenance, the City has been named a Tree City U.S.A. for fourteen straight years through calendar year 2009.

In addition, there are many thousands of trees in private yards across the city. These make an important contribution to the aesthetics of the city and the character of Fremont neighborhoods, as well as the natural environment.

The General Plan envisions continued expansion of the urban forest in both public and private spaces.

## Public Health and Wellness

In recent years, the rise in chronic disease rates in cities has caused planners and public health professionals to join forces to ensure that planning policy documents like the General Plan support healthy communities. Issues such as promoting walking and cycling and supporting neighborhood access to fresh foods at grocery stores and farmers markets are examples of ways that sustainable planning and public health intersect. The General Plan contains numerous policies supporting public health and wellness.



Farmers Market

## Conclusion

The General Plan lays the groundwork for a more sustainable community. In key locations near transit, land use will intensify and those neighborhoods will feel more urban, with taller buildings, a better mix of transit options, and less land devoted to parking. This selective urbanization will not only help the City meet its greenhouse gas emissions reduction goals, it will also improve quality of life by supporting public transit, encouraging people to walk and cycle, allowing for more open space, and creating attractive public places where people enjoy spending time.

### GENERAL PLAN POLICIES RELATED TO HEALTH

- Policies promoting increased walking and bicycling (see box listing sustainable Mobility policies)
- Recognition of the importance of Fremont's health care facilities both for public health and for their impact on the local economy
- Safety policies promoting crime-preventative design
- Land Use Element policies discouraging fast food drive-through restaurants in pedestrian areas, encouraging farmers markets, and encouraging multi-family developments to include gardens
- Mobility policies promoting safe routes to schools
- Mobility and Land Use policies promoting connectivity between neighborhoods

*This page intentionally left blank.*