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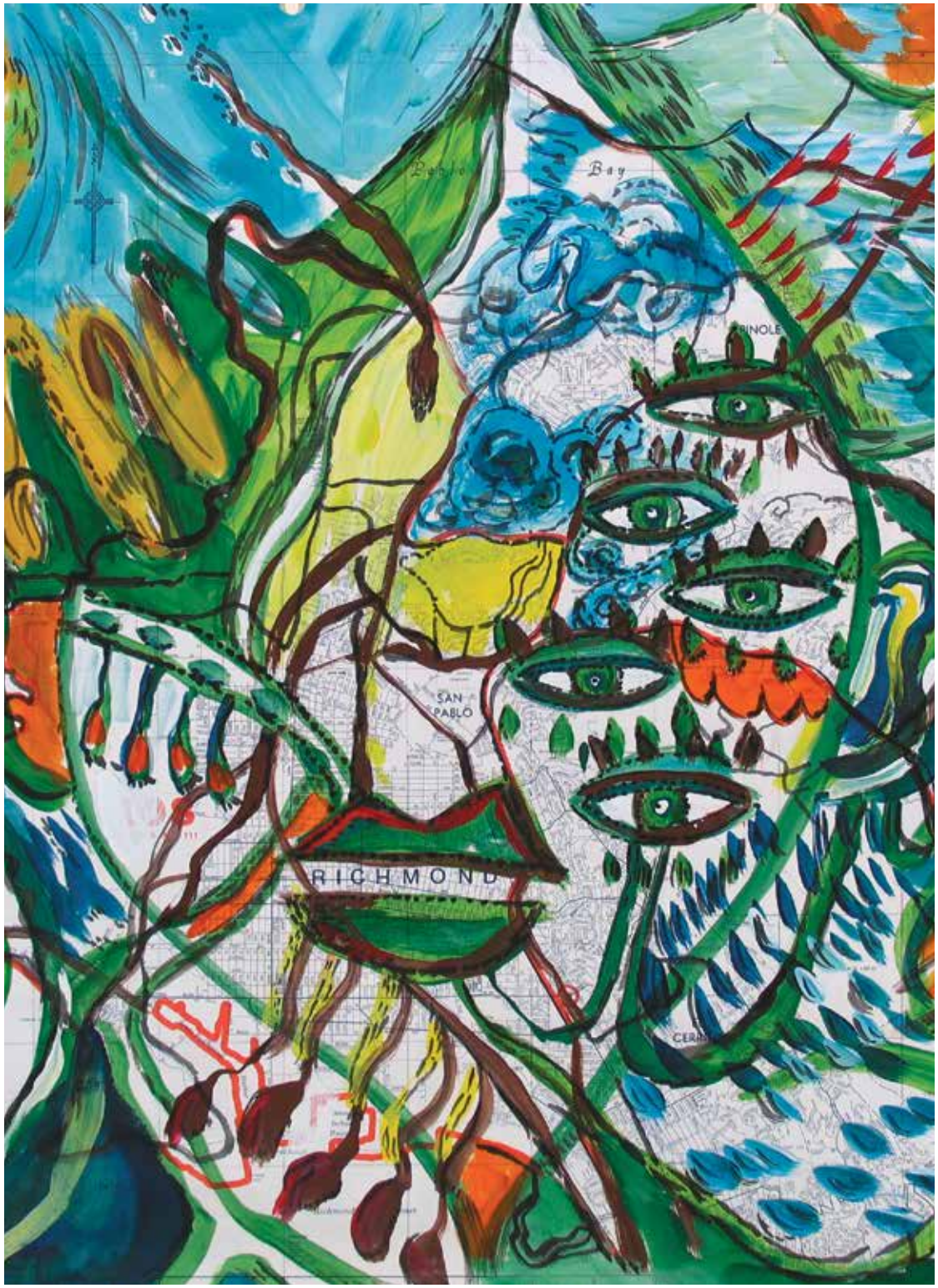
Energy and Climate Change

Richmond General Plan 2030



Community Vision

Richmond, California in 2030

The City of Richmond plays a pivotal role in developing climate policy at a local level that, in turn, influences regional, state and national objectives. The City relies on clean energy sources, waste reduction practices, sustainable buildings and innovative land use planning to reduce energy and climate impacts. These progressive measures have resulted in broad community benefits including dramatic reductions in fossil fuel use, cost savings, emission reductions, water conservation and an improved quality of life. City officials and community members value and protect natural resources and continue to work together to reduce the impacts of a changing climate. A renewed focus on education and local and regional partnerships further supports sustainable practices that will nurture human health and environmental quality for future generations.

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Energy and Climate Change

It is increasingly evident that there are dramatic relationships between greenhouse gas emissions and local transportation and land use patterns. Richmond has many opportunities to build higher-density, mixed-use projects around existing public transit infrastructure, schools, parks and neighborhoods. Energy efficiency and sustainability can be further enhanced by incorporating green materials and construction practices into buildings and streetscape improvements. Sustainable development concepts such as natural resource conservation, transit-oriented development, multimodal transportation access and the encouragement of green building are integrated throughout this General Plan.

The Energy and Climate Change Element:

- Describes potential climate change impacts, energy use and greenhouse gas emissions;
- Highlights key findings and recommendations based on an existing conditions analysis;
- Defines goals for energy and climate change;
- Identifies policies and implementing actions to address energy and climate change needs;
- Provides a summary table identifying lead responsibilities for each implementing action; and
- Reviews the existing regulatory framework that guides energy and climate change planning efforts.

Purpose of the Element

This element examines how the City's land use and transportation network will affect energy consumption and determines what measures can be implemented to reduce greenhouse gas emissions. The element provides policy direction for protecting energy resources and responding to climate change. Broadly framed goals address energy conservation, renewable energy generation and use, sustainable business development, and responsible community revitalization. More specifically, policies and implementing actions are designed to: provide leadership to manage climate change; promote clean and efficient transportation options; encourage sustainable and efficient energy systems; promote sustainable development; support community revitalization; and build climate-resilient communities.

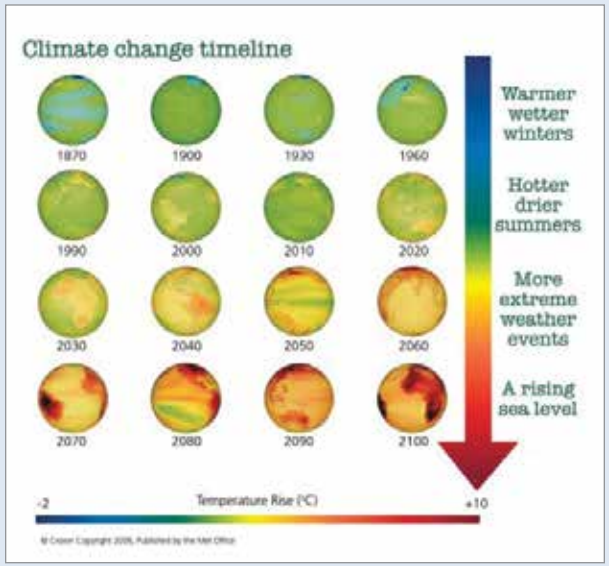
Legal Requirement

Growing concern over environmental degradation, climate change and the stability of energy supplies provide the impetus for public policy on energy

Transit-oriented projects like MetroWalk in Downtown Richmond reduce automobile use and greenhouse gas emissions.

efficiency and emissions. Recently approved legislation by the State of California (AB 32 and SB 375) and new air emissions standards adopted by the California Air Resources Board lay the foundation for local policy development on energy and climate change in Richmond. As one of the first General Plan elements in the country dedicated to this topic, Richmond's energy and Climate Change Element positions the City for sustainable, physical and economic development now and in the future.[1]

What is Climate Change?



A balance of naturally occurring gases dispersed in the atmosphere determines the Earth's climate by trapping solar radiation. This phenomenon is known as the "greenhouse effect." Modern human activity, most notably the burning of fossil fuels for transportation and electricity generation, introduces large amounts of carbon dioxide and other gases into the atmosphere. Reductions in the planet's forested regions where greenhouse gases are stored is also a major contributor to the increasing greenhouse effect. Collectively, these gases intensify the natural greenhouse effect, causing global average surface temperature to rise, which in turn affects global climate patterns.

In response to the threat of climate change, communities worldwide are voluntarily reducing greenhouse gas emissions. The Kyoto Protocol, an international effort to coordinate mandated reductions went into effect in February 2005 with 161 countries participating. While there are a growing number of nations committed to the Kyoto Protocol, as of 2010, the United States is the only major industrialized country that has not signed the Protocol.

The Intergovernmental Panel on Climate Change (IPCC) is a scientific intergovernmental body established by the World Meteorological Organization (WMO) and by the United Nations Environmental Programme (UNEP). IPCC provides decision-makers with an objective source of information about climate change. IPCC has called the evidence of the impacts of greenhouse gas emissions (GHG) on the world's climate "unequivocal."

Richmond Today

Fossil fuels are the primary source of energy in America today. The transportation sector is the single largest consumer of fossil fuels, followed by buildings, which use large amounts of energy for lighting, heating and cooling. Studies show that greenhouse gas emissions from fossil fuels and other human activities contribute significantly to global warming. In addition to growing global, national and local concern over potential impacts of fossil fuel use and their impacts on overall environmental health, there is also widespread uncertainty about the availability and cost of energy.

As the cost of fuel increases, alternatives to private automobiles will become more economically viable. The market for renewable energy is growing each year. Wind power grew 30% annually between 1990 and 2002 and the solar energy industry has grown steadily 40% per year between 2002 to 2006.[2] In 2006, the solar industry was estimated to be valued at $15 billion worldwide.[3] Federal, state and local agencies are increasingly looking to renewable energy sources as more affordable, reliable and sustainable solutions.

The following discussion describes potential impacts of climate change, reviews energy generation and use in Richmond and presents findings from a citywide inventory of Richmond's greenhouse gas emissions.[4]

The Richmond Advantage

Richmond has inherent advantages as it prepares for climate change:

- **Climate:** Richmond's moderate climate means lower heating and cooling demands;
- **Street Network:** The grid street network in the City's older neighborhoods supports walking and biking;
- **Transportation:** Residents have convenient access to numerous transportation alternatives;
- **Location:** Nearby Bay Area employment centers minimize overall commutes; and
- **Infill Potential:** A number of vacant and underutilized parcels provide opportunities to develop walkable, mixed-use environments to meet resident's needs.

Potential Impacts of Climate Change

The Intergovernmental Panel on Climate Change findings confirm that human activities are the primary cause of climate change.[5] Climate impacts can be difficult to observe in part because changes occur slowly over many years.

Globally, scientists expect changing temperatures to result in: disruption of ecosystems; more frequent and damaging storms accompanied by flooding and land slides; increases in the number and severity of heat waves; extended water shortages as a result of reduced snow pack; increased likelihood of wildfires; and disturbance of wildlife habitats and agricultural activities.

Local impacts are not definitive, but Richmond could experience: changes to local and regional weather patterns; rising bay water level; changes in salinity and tidal patterns of San Francisco and San Pablo bays; coastal erosion; water restrictions; vegetation changes; and disrupted species migration patterns and extinctions.

The San Francisco Bay Conservation and Development Commission has identified several portions of Richmond's shoreline which may be affected by sea level rise. A changing climate could affect or alter natural bayland habitats, infrastructure and other structural uses located along Richmond's shores, and human health may be affected by heat waves, diminished air quality and vector borne disease.

The City of Richmond is taking steps to reduce greenhouse gas emissions and mitigate the potential effects of climate change, both through its municipal operations and by encouraging residents, industry, businesses and developers to reduce their energy consumption. In January 2007, Richmond signed the *U.S. Conference of Mayors Climate Protection Agreement*, committing the City to reduce greenhouse gas emissions to meet or surpass the Kyoto Protocol targets agreed to by most of the world's industrialized countries. The City Council subsequently initiated a citywide greenhouse gas emissions inventory as a means of establishing a baseline for greenhouse gas emissions, identifying existing sources of energy use and providing a foundation for developing relevant energy and climate change policies.

Energy Generation and Use

Most fuels used in transportation are from non-renewable resources. In the Bay Area, buildings are most often heated by natural gas and illuminated by electricity produced by a fuel mix that includes natural gas, nuclear energy, hydroelectric power and renewable energy sources. Pacific Gas & Electric Company, an investor-owned utility, is the primary supplier of energy for buildings in Richmond. The burning or combustion of these fossil fuels creates gases that are released into the atmosphere. Of these gases, carbon dioxide (CO2) is the most common and is the gas most responsible for exacerbating the greenhouse effect.

Greenhouse Gas Emissions

In 2008, the International Council for Local Environmental Initiatives, an organization specializing in evaluating climate impacts in cities, was commissioned to conduct a comprehensive citywide inventory of Richmond's existing and projected greenhouse gas emissions (GHG).[4] The inventory quantifies the amount of energy consumption and corresponding GHG emissions for major carbon dioxide equivalent (CO2e) producers. The results of this inventory are presented in the following sections.

Citywide Emissions

The GHG emissions inventory shows that in 2005, Richmond's industries, businesses and residents generated over 5.8 million metric tons of carbon dioxide equivalent (CO2e). The commercial/industrial sector was the largest source of community emissions (88%), with emissions stemming from electricity production and use, natural gas use and a range of industrial processes monitored by the Bay Area Air Quality Management District (BAAQMD). Transportation-related emissions comprise nearly 10% of community emissions, much of which is due to the movement of goods. Methane generated by the now-closed West Contra Costa Sanitary Landfill and other waste-related emissions constituted just over one percent of emissions. Residential properties are responsible for slightly more than two percent of the City's greenhouse gas emissions.

Table 8.1 shows that Richmond's residential and transportation sectors contribute a smaller proportion of overall GHG emissions compared to Contra Costa County as a whole. The County's residential sector is responsible for 13% of total emissions, with transportation accounting for 37%. The emissions generated by the County's waste sector is roughly the same as Richmond's.

Several major facilities in the City are regulated directly by BAAQMD and emit nearly four million metric tons of CO2e per year. Excluding emissions from these facilities, Richmond generates only 1.9 million metric tons of CO2e per year. Efforts to curb emissions related to those major commercial and industrial operations must be addressed at a regional level since the City of Richmond does not have the legal authority to limit or reduce their emissions.

Residential GHG Emissions

Greenhouse gas emissions from Richmond residences account for a small percentage of the City's total emissions due to the presence of heavy industry, which emits proportionally more GHG emissions than other cities. In 2005, Richmond residents produced approximately 126,000 metric tons of CO2e, primarily from the use of natural gas, which residents rely on as a fuel for home heating, water heating and cooking. Electricity use was responsible for 30% of total 2005 residential emissions.

Commercial/Industrial GHG Emissions

The vast majority of Richmond's GHG emissions are generated by the City's commercial/industrial sector. In 2005, Richmond's substantial industrial base and other commercial businesses generated over 5.1 million metric tons of CO2e. Approximately two-thirds of these were point source emissions generated by a handful of businesses directly monitored by BAAQMD. Approximately one-third of emissions were generated by the combustion of natural gas, most likely in large industrial processes, including on-site generation of electricity and the operation of boilers. Electricity use accounted for a very small percentage of emissions in this sector.

Transportation Greenhouse Gas Emissions

Transportation is the second largest source of greenhouse gas emissions in Richmond. Greenhouse gases emitted from vehicle use within Richmond constituted half a million metric tons of CO2e in 2005. Nearly 60% of these emissions can be attributed to trips on Interstates 80 and 580 and other regional transportation routes that pass through Richmond.

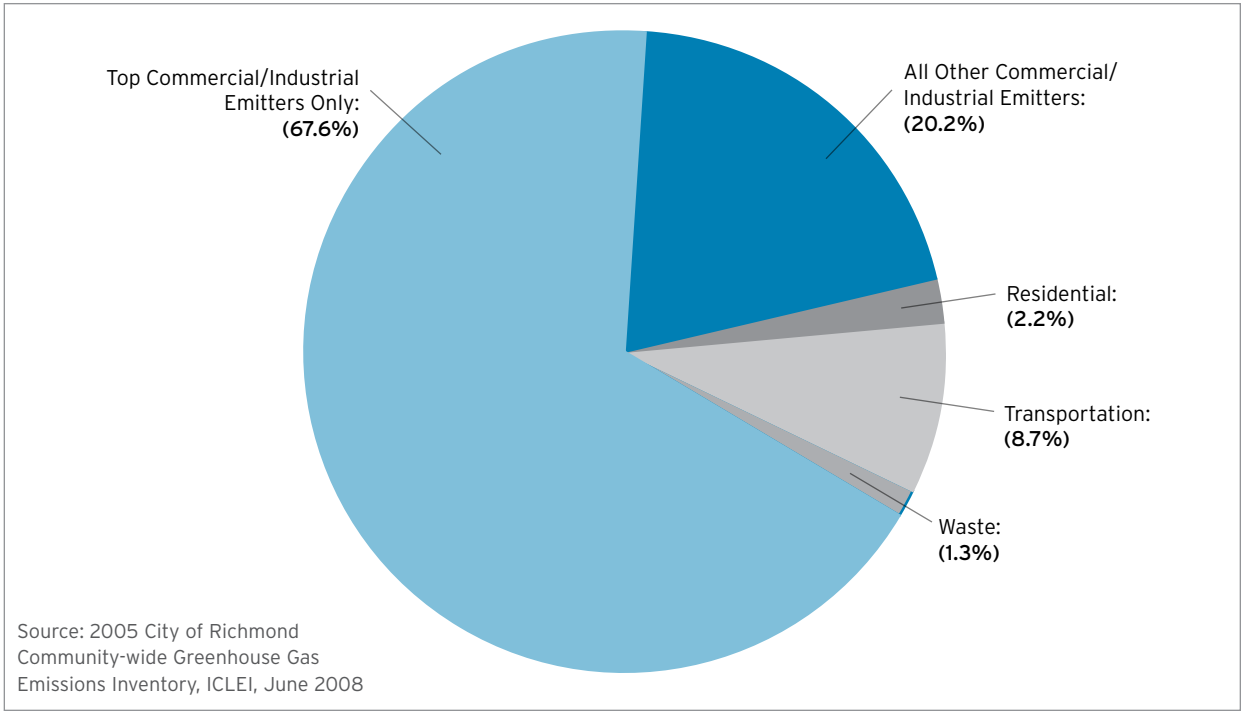
Waste GHG Emissions

Although the West Contra Costa County Sanitary Landfill is now closed, buried wastes will continue to decompose and emit greenhouse gases such as methane for many years. Approximately one percent of Richmond's 2005 emissions were generated by the decomposition of solid wastes at this site.

Projected GHG Emissions

The 2020 emissions forecast completed as part of the greenhouse gas emissions inventory suggests that with no interventions, emissions will grow significantly in the commercial/industrial and transportation sectors over the next decade. Based on anticipated trends in energy use, driving habits and population growth, this increase is forecast to be approximately 30%, or an additional 1.8 million metric tons of CO2e. The bulk of this increase is projected to come from the commercial/industrial sector (32%), although transportation emissions are also expected to increase substantially. Residential and waste emissions are expected to grow at a much slower pace.

Figure 8.1: **Citywide GHG Emissions by Sector**



Source: 2005 City of Richmond Community-wide Greenhouse Gas Emissions Inventory, ICLEI, June 2008

Table 8.1: **City-County Emissions Comparison**

Sector	City of Richmond Emissions (metric tons of CO2e)	Contra Costa County Emissions (metric tons of CO2e)
Residential	126,118 (2%)	1,587,655 (13%)
Commercial/Industrial	5,141,572 (88%)	6,030,798 (49%)
Transportation	506,842 (9%)	4,542,073 (37%)
Waste	78,488 (1%)	175,378 (1%)
Total	2,399,414 (100%)	12,335,904 (100%)

Source: City of Richmond Community-wide Greenhouse Gas Emissions Analysis, ICLEI, June 2008; Contra Costa County Greenhouse Gas Emissions Inventory Report, June 2008.

Key Findings and Recommendations

Reducing greenhouse gas emissions, sustaining healthy ecological systems and adapting to climate disruption are fundamental challenges facing communities around the world. An adequate and timely response to climate change will require collective action and sustained effort from public and private sectors. Local and regional initiatives should be coordinated to protect environmental and human health.

Since residents, businesses and City officials are committed to environmental responsibility in planning for Richmond's future, the City can assume a strong leadership role in responding and adjusting to the potential impacts of climate change. Greenhouse gas emissions in the City are primarily generated by motor vehicles and large-scale commercial and industrial operations. The City is home to a seaport, large oil refinery and railroad terminus. Richmond is also traversed by Interstates 80 and 580; both freeways experience substantial congestion during peak commute hours. Therefore, reduction measures must involve residents, local businesses and neighboring jurisdictions.

Richmond has a number of favorable characteristics that provide substantial advantages in addressing energy and climate change, including its moderate climate, proximity to major employment centers, a range of public transportation, and traditional, small-lot neighborhood development pattern that supports local schools and pedestrian connectivity. In addition, vacant and underutilized land in Central Richmond provide opportunities for higher-density, mixed-use infill development that can help moderate future emissions by facilitating convenient access to employment, transportation and essential human services.

The following key findings and recommendations are derived from the existing conditions analysis:

Finding 1: Richmond can provide leadership in the development of a coordinated response to climate change.

The City will seek opportunities to develop cross-jurisdictional solutions based upon state and federal emission reduction targets. Richmond can play an active role in these efforts by:

- Collaborating and partnering with relevant agencies and organizations to advocate for substantive action on climate change;
- Raising awareness among Richmond residents and businesses about key climate change challenges and solutions; and
- Actively regulating land uses to reduce greenhouse gas emissions.

Finding 2: While Richmond is served by a range of multimodal circulation options, opportunities exist to make use of climate-friendly fuel technologies and active modes of travel.

Bioswales were constructed around Civic Center to remove sediment from surface runoff water.

Richmond has an extensive system of local and regional transit. Yet, private automobiles remain the primary mode of travel in the City. Public transit, pedestrian and bicycle facilities can be improved to ensure that transit and active modes of travel become more viable options. Climate-friendly vehicles can also make a significant contribution to emissions reduction. The City can promote climate-friendly and efficient circulation options by:

- Encouraging acquisition of equipment and fuel types that reduce energy use and carbon emissions;
- Supporting the availability of climate-friendly fuels within the City;
- Expanding public transit service to improve mobility and reduce reliance on the private automobile;
- Promoting walking and bicycling as a safe and convenient mode of transportation;

Bike racks and showers are provided throughout Richmond's Civic Center to encourage biking to work.

Having amenities such as bike racks, bike lockers and showers help make bicycling a more viable commuting option.

Solar panels atop buildings at Civic Center take advantage of Richmond's abundant sunshine to generate renewable energy.

- Supporting safe routes to schools and improving bicycle, pedestrian and transit access;
- Encouraging efficient and clean regional and long-distance passenger rail service and public transit connections to stations;
- Reducing reliance on private automobiles as a primary mode of transportation to decrease emissions from vehicle trips; and
- Promoting a green goods movement system.

Finding 3: Richmond must develop renewable, efficient and sustainable energy systems, and reduce waste to minimize its carbon footprint and achieve its climate action goals.

The cost of fossil fuel-based energy will continue to increase. Renewable energy is harnessed from naturally occurring sources such as the sun, wind, tides and geothermal heat. Maximizing use of these naturally occurring sources of energy will require substantial public and private investment and the cooperation of multiple agencies.

Solid waste and wastewater processing contributes significantly to the City's greenhouse gas emissions. The City will develop programs and strategies to reduce waste and greenhouse gas emissions that result from the treatment or decomposition of that waste. Waste at the recently closed West Contra Costa County Landfill will continue to decompose and emit greenhouse gases for years into the future; efforts are underway to capture these emissions and direct them into the natural gas distribution network. Future emissions can be reduced by processing waste using new technologies. Sustainable and efficient energy systems can be realized by:

- Promoting the generation, transmission and use of energy from renewable sources;
- Promoting conservation and energy-efficient buildings and infrastructure;
- Reducing use of materials that must be processed in landfills;
- Conserving and recycling water and reducing wastewater discharge; and
- Ensuring that City facilities and related activities set a precedent for the use of green technologies, practices and standards.

Finding 4: Integrating sustainable development practices and strengthening the existing urban fabric will enhance Richmond's ability to reduce greenhouse gas emissions while accommodating future growth.

There is a close link between levels of energy consumption and land development patterns. Land use policies that encourage goods and services to be located within convenient walking distance of residential neighborhoods can decrease reliance on private automobiles. This in turn has the positive

Restaurants and other food providers in Richmond are required to use only paper, compostable, or aluminum to-go boxes, cups, plates, bowls, trays, and cutlery.

benefit of decreased daily energy use. The existing pattern of development and street network in Richmond provides an opportunity to promote sustainable development prototypes such as infill and mixed-use. Furthermore, green practices can also be applied in the areas of waste, energy infrastructure, wastewater and water treatment. Sustainable development patterns require:

- Promoting mixed-use and infill development in the Downtown and other major activity centers, along key commercial corridors and on vacant and underutilized parcels;
- Promoting walkability in neighborhoods by improving streetscape design and locating housing close to local-serving uses and public spaces;
- Prioritizing the use of green and sustainable development standards and practices in planning, design, construction and renovation of buildings and infrastructure;
- Promoting the integration of neighborhood commercial uses in residential areas; and
- Supporting urban agriculture and making locally grown food accessible to all residents.

Finding 5: Industries and businesses in Richmond should be encouraged to adopt green and sustainable practices and build capacity in the emerging green economy.

The majority of the City's greenhouse gas emissions are generated by its commercial and industrial sector. The City will work with the industrial community to develop programs aimed at reducing the impacts of industrial emissions on human and environmental health.

Building an economy based upon green industries will provide social, environmental and economic benefits to the local community. Green businesses and industries can support community revitalization and economic development by:

- Generating new jobs in the green business sector; and
- Encouraging existing businesses and industries to adopt environmentally and socially responsible practices to minimize their emissions and impact on the community.

Finding 6: Restoring and protecting the natural environment will help to mitigate impacts of climate change.

Climate change may have impacts on human and environmental health. A healthy natural environment will help enable the community to respond to future climate change-related events. Richmond can address these challenges by:

- Restoring and expanding ecological systems to support the natural functions of soil, water, tree

Urban agriculture serves multiple community goals including reducing energy use, increasing access to fresh fruits and vegetables and building lasting community relationships.

Many of Richmond's businesses are certified under the County's Green Business Program and implement a variety of measures to reduce waste and save energy, water, and other materials.

Richmond will continue to support mitigation efforts and adopt long-term sustainable practices to reduce impacts on the environment.

canopies, creeks, open space and other natural resources; and

- Conserving and protecting wetlands, uplands and natural resources.

Finding 7: Preparing for potential climate change is as critical as reducing greenhouse gas impacts and planning for long-term sustainability.

Communities must reduce greenhouse gas emissions to reduce or even reverse the impacts of climate change. Communities must also prepare for potential impacts to human and environmental health in the short and medium term. Action at the local level to adapt to future impacts will require adequate planning for changing weather patterns and sea level fluctuations.

Goals

GOAL EC1 Leadership in Managing Climate Change

Take steps to address climate change and to manage its effects. This entails not only pursuing ground-breaking programs and innovative strategies, but educating residents and businesses about these actions and actively monitoring results to ensure progress in critical areas. Partner with other jurisdictions and organizations to develop effective regional solutions and regulation at regional, state and federal levels. Collaborate with residents, businesses, public agencies and neighboring jurisdictions, in order to meet or exceed state requirements for reductions in greenhouse gas emissions.

GOAL EC2 Clean and Efficient Transportation Options

Expand the City's green transportation network by encouraging the use of climate-friendly technology, planning growth around multiple modes of travel and reducing automobile reliance. In addition to promoting improved public transit, partner with private developers to undertake citywide improvements that make active modes of travel, such as walking and bicycling, more comfortable and preferable options.

GOAL EC3 Sustainable and Efficient Energy Systems

Reduce the City's consumption of energy by encouraging energy conservation, and supporting the consumption of energy produced by climate-friendly technologies. Reduce the City's overall waste stream by reducing the City's consumption of goods and materials, and by adopting a zero-waste philosophy.

GOAL EC4 Sustainable Development

Reduce energy consumption by promoting sustainable land uses and development patterns. Pursue infill development opportunities and encourage the construction of higher-density, mixed-use projects around existing public transit infrastructure, schools, parks, neighborhood-serving retail and other critical services. Incorporate ecologically sustainable practices and materials into new development, building retrofits and streetscape improvements.

GOAL EC5 Community Revitalization and Economic Development

Transform Richmond into a healthy community where green industries and businesses can flourish. Support sustainable businesses and practices that provide both community and environmental benefits while stimulating job and revenue growth.

GOAL EC6 Climate-Resilient Communities

While the impacts of climate change on local communities are uncertain, to the extent possible, prepare to respond to and protect residents and businesses from increased risks of natural disasters such as flooding or drought.

Policies and Implementing Actions

A range of policies and implementing actions are outlined below in relation to each of the goals. These policies mandate, encourage or allow certain actions to be pursued throughout the duration of the General Plan. Together they serve as strategic directions for City staff and partners, highlighting where time and resources should be focused.

Each policy may either be correlated with a number of actions, or simply a single key implementing action. Conversely, some actions may support a range of policies. The policies and implementing actions are organized in two parts. First, all goal-related policies are described and each policy description is followed by a list of its associated implementing actions. Then, implementing actions are described in greater detail in the following section.

GOAL EC1
Leadership in Managing Climate Change

Policy EC1.1 ***Leadership and Advocacy***

Take a leadership role in advocating for local, regional and national solutions to climate change at all levels of government and with the private sector. The success of climate change initiatives depends on collaborative approaches. Richmond will take the initiative to forge new partnerships, develop innovative solutions and continue to support and promote regional, national and international efforts that support climate change protection and sustainability such as the Ahwahnee Principles for Climate Change, the United States of America Mayors for Climate Protection Agreement and the Urban Environmental Accords, among others.

Policy EC1.2 ***Public Awareness and Support***

Provide incentives to encourage residents and businesses to reduce their carbon footprint by raising their awareness about the impacts of climate change and by building support for climate change initiatives in Richmond and the greater region.

GOAL EC1
Leadership in Managing Climate Change

Action EC1.A ***Climate Action Plan***

Develop a climate action plan for reducing greenhouse gas emissions to meet or exceed state reduction targets. Components of the plan should include: a comprehensive greenhouse gas emissions inventory and forecast; emissions reduction target(s); assessment of the City's vulnerability to climate change; climate change resiliency goals; broader sustainability assessment; sustainability targets; strategies and measures to address climate change mitigation, sustainability and adaptation; financing and implementation approaches; a public education and information program; and a program for monitoring and reporting results.

Richmond's baseline greenhouse gas emissions inventory and forecast will provide a benchmark for planning and monitoring progress in achieving mandated targets. Incorporate public education programs to raise community awareness.

The climate action plan should include mitigation strategies for addressing the sources of greenhouse gas emissions in the community. Adaptation strategies will focus on potential local impacts of climate change such as sea level rise, increased risk of flooding, diminished water supplies and public health. Broader sustainability measures may include the preservation of local water quality, air quality, open space and biodiversity.

The climate action plan should also include information on the financing and implementation of each strategy or measure to ensure timely and well-informed action. The plan will be subject to the monitoring and reporting program to ensure the City achieves its greenhouse gas reduction, protection and adaptation targets.

Update the plan periodically in accordance with evolving state and federal policy and regulatory frameworks, as well as advancements in scientific research and data on climate change.

See also: HW10.A; CN5.E

Action EC1.B ***Public Awareness and Education Program***

Develop a program to educate and inform residents and businesses about key climate change challenges and potential solutions. Develop and disseminate information on topics such as waste reduction, recycling, green buildings and landscaping, and renewable energy generation. Utilize a range of tools including fact sheets, website newsletters, advertising and workshops to reach potential audiences. The program should be reviewed and evaluated periodically for effectiveness. The public awareness and education program should be incorporated into the climate action plan.

GOAL EC1
Leadership in Managing Climate Change

Action EC1.C ***Safe and Convenient Public Transit Options***

Continue to collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak and major employers in Richmond that provide shuttle service to explore the potential for expanding transit in the evenings and late nights, and for people with special needs. Also explore the potential to enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to restore service levels and to maintain and enhance service within the City and region. Prioritize strategies and improvements that address affordability, access and safety. Also prioritize transit and street improvements that increase mobility for low-income, youth, seniors, disabled, and other vulnerable residents to ensure equitable access. Expand outreach and information programs to promote transit use.

See also CR1.B, HW4.C

GOAL EC2
Clean and Efficient Transportation Options

Policy EC2.1 ***Climate-Friendly Vehicles and Equipment***

Encourage the use of available climate-friendlier vehicles and equipment to reduce energy use and carbon emissions and support the use of low-emission or renewable fuel vehicles by residents and businesses, public agencies and City government.

See also: HW10.8

Policy EC2.2 ***Climate-Friendly Fuel***

Support production and distribution of climate-friendlier fuels (when and if any are identified) and identify appropriate locations for fuel storage and distribution.

Policy EC2.3 ***Expanded and Affordable Public Transit***

Coordinate with regional transportation agencies and support enhanced and expanded public transit to improve mobility options for residents and visitors. Public transit provides an environmentally-friendly, cost-effective and equitable mode of travel for residents and visitors. Encouraging transit-supportive development patterns can further maximize the efficiency of these systems and help reduce air pollution and greenhouse gas emissions within Richmond.

Public transit service should connect major destinations in Richmond including education institutions, community facilities, regional open space areas and major commercial corridors to serve a greater number of riders and reduce commuter vehicle miles. All housing units and employment centers in Richmond should have access to a local and regional public transit stop. Ensure that all transit stations and routes to and from these stations are safe. As many residents and visitors rely on regional passenger rail and air travel, support efforts to create efficient public transit connections to train stations and regional airports.

Support efforts to expand service at night and on weekends and to make transit affordable and accessible to people of all abilities, seniors, youth and low-income households.

See also: CR1.4; HW4.1

GOAL EC2
Clean and Efficient Transportation Options

Policy EC2.4 ***Safe and Convenient Walking and Bicycling***

Promote walking and bicycling as a safe and convenient mode of transportation. Improve pedestrian and bicycle amenities to serve the recreation and travel needs of residents and visitors in all parts of Richmond. Where feasible, the City will: connect major destinations such as parks, open spaces, civic facilities, employment centers, retail and recreation areas with pedestrian and bicycle infrastructure; promote shared roadways in residential streets; require new development and redevelopment projects to provide pedestrian and bicycle amenities, streetscape improvements and linkages to planned and completed City and regional multi-use trails; and develop safe routes to schools and out-of-school programs that allow access by bicycle and pedestrian paths or reliable and safe transit.

Explore innovative solutions such as bicycle-sharing programs and encourage businesses, schools and residential developments to provide secure bicycle parking to ensure that these ecologically-friendly, low-impact transportation modes are available to all community members, thereby reducing emissions from vehicles within the City, improving environmental quality and enhancing mobility and connectivity.

See also: CR1.5; HW4.3

Policy EC2.5 ***Regional Passenger Rail***

Support efforts by transit agencies to provide regional and long-distance passenger rail service. Supporting the regional passenger and rail services that serves Richmond residents and businesses will improve connections to other cities, regions and states while reducing vehicle emissions. Support Amtrak and the State of California's Capitol Corridor service for short-distance travel between Richmond and nearby destinations such as Fairfield, Martinez, Berkeley, Emeryville and Oakland.

Policy EC2.6 ***Private Automobile Use***

Work toward creation of an urban landscape that will reduce reliance on private automobiles through land use planning and by providing amenities and infrastructure that encourage safe and convenient use of public transit, walking and bicycling.

Policy EC2.7 ***Climate-Friendly Goods Movement***

Promote the safe and efficient movement of goods by truck, rail and ship to support port operations and industrial uses. Develop strategies and programs to provide adequate infrastructure improvements and maintenance to support industrial operations in Richmond while minimizing impacts on neighborhoods and sensitive uses. Encourage the use of climate-friendly fuel and vehicles in the movement of goods, and encourage carriers to upgrade their fleets.

GOAL EC2
Clean and Efficient Transportation Options

Action EC2.A ***Climate-Friendly Fuel Using Vehicles***

Support the use of highly efficient climate-friendly fuel using vehicles, adequate alternative refueling stations and the use of waste for producing fuel where feasible or rational.

See also: CR5.C; CN4.C

Action EC2.B ***City Vehicles Transition***

Increase the share of climate-friendly vehicles and use of climate-friendly fuels in the City and consider including bicycles in a corporate fleet where feasible.

See also: CR5.D; HW10.I

Action EC2.C ***Safe and Convenient Public Transit Options***

Continue to collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak and major employers in Richmond that provide shuttle service to explore the potential for expanding transit in the evenings and late nights, and for people with special needs. Also explore the potential to enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to re-establish, maintain and enhance service within the City and region. Explore strategies to address affordability, access and safety. Expand outreach and information programs to promote transit use.

See also: CR1.B

Action EC2.D ***Transit Incentives Program***

Work with transit partners to develop an incentives program to expand transit use among residents and employees in Richmond. Target potential new riders as well as high-need population groups such as families, youth, seniors and people with disabilities. Explore the potential for supporting fare-free transit zones in major commercial areas, free or very low-cost bus passes for target groups, a streetcar system connecting the Downtown with the planned ferry terminal in the Southern Shoreline Area and online tools for providing real time information to transit riders.

GOAL EC2
Clean and Efficient Transportation Options

Action EC2.E ***Bicycle and Pedestrian Plans***

Develop and implement citywide bicycle and pedestrian plans to make Richmond a more pedestrian and bicycle-friendly City. Identify gaps in the network, major travel routes and priority safety improvements. Designate a network of multi-use trails and off-street paths. Include connections to open space amenities such as Point Isabel, San Francisco Bay Trail, Point San Pablo, Point Pinole and the Richmond Greenway.

Update design guidelines and standards for bicycle and pedestrian facilities and amenities that meet local, state and federal standards. Include a uniform citywide signage plan and comply with all Americans with Disabilities Act (ADA) requirements.

Explore the potential to designate pedestrian priority areas or districts. Include strong connections to the downtown, recreation destinations, commercial and mixed-use streets, transit stations and schools. Address pedestrian and bicycle connections in parking lots.

Collaborate with Contra Costa County and other jurisdictions to ensure links to the regional trail network including the San Francisco Bay Trail and coordination with the County Bicycle and Pedestrian Plan. Coordinate efforts with ongoing bicycle and pedestrian community initiatives.

See also: CR1.C; HW4.D

Action EC2.F ***Promote Bicycle Use***

Encourage safe and convenient bicycle use by residents, employees and visitors. Consider strategies that expand bicycling as a viable mode of transportation for people of all ages and abilities. Encourage businesses to provide bicycle amenities such as secured bicycle parking, showers and lockers for employees who bike to work.

Action EC2.G ***Safe Routes to School Program***

Work with students, parents, transit providers, the West Contra Costa Unified School District, and other educational institutions to develop a Safe Routes to School Program. Identify and prioritize improvements necessary to make alternative modes of getting to and from school safer and more appealing. Also explore opportunities to create “walking school bus” programs where parents and other responsible adults can share the responsibility of escorting children to and from school by foot or bicycle.

See also: EH1.F; CR2.B; HW4.F

Action EC2.H ***Car and Bicycleshares***

Encourage car and bicycle sharing. Collaborate with service providers to identify potential sites for locating carshares.

GOAL EC2
Clean and Efficient Transportation Options

Action EC2.I ***Carpool, Rideshare and Shuttle Services***

Support transportation agency efforts to provide alternative commuting modes including carpooling, ridesharing, van and shuttle bus service for large employers or retail destinations.

Action EC2.J ***Port Emissions Reduction Plan***

Collaborate with the Port, local industry, regulatory agencies, residents and community organizations to develop a comprehensive emissions reduction plan for ship-operated emissions. Include strategies to reduce emissions from trucks, ships, locomotives and equipment. Enforce existing laws and strengthen regulations to protect human and environmental health and access available funds for clean air projects. Explore use of low-emission vehicles, short-sea shipping service, "cold ironing" and other strategies to reduce emissions. Consider the San Pedro Bay Ports Clean Air Action Plan, developed by the ports of Los Angeles and Long Beach as a model.

See also: HW9.D

Action EC2.K ***Engine Replacement and Retrofitting***

Work with the Bay Area Air Quality Management District to develop a program to fund diesel engine retrofitting or replacement in existing automobiles, trucks, rail, ships and equipment. Regularly identify feasible technologies that can be applied for retrofitting polluting vehicles. Collaborate with key stakeholders to develop and implement the program.

See also: HW9.C

GOAL EC3
Sustainable and Efficient Energy Systems

Policy EC3.1 ***Renewable Energy***

Promote the generation, transmission and use of a range of renewable energy sources such as solar, wind power and waste energy to meet current and future demand and encourage new development and redevelopment projects to generate a portion of their energy needs through renewable sources.

See also: HW10.4

Policy EC3.2 ***Energy Efficiency and Conservation***

Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment. Collaborate with partner agencies, utilities and businesses to support a range of energy efficiency, conservation and waste reduction measures including: development and retrofitting of green buildings and infrastructure; installation of energy-efficient appliances and equipment in homes and offices; and heightened awareness of energy and conservation issues. Collaborate with local workforce development programs to train and employ Richmond residents in these other green jobs sectors.

See also: HW10.5

Policy EC3.3 ***Solid Waste Reduction and Recycling***

Promote waste reduction and recycling to minimize materials that are processed in landfills. Encourage residents and businesses to reduce waste and minimize consumption of goods that require higher energy use for shipping and packaging. Encourage composting to reduce food and yard waste and provide mulch for gardening. Reducing waste and selecting minimum-impact products will conserve land and energy resources. Develop a comprehensive recycling and composting program for all city-owned facilities.

See also: HW10.6; CN5.3

GOAL EC3
Sustainable and Efficient Energy Systems

Policy EC3.4 ***Water Conservation and Reuse***

Promote water conservation and recycled water use. Reduce energy consumed for treatment and transportation of water and discharge of wastewater by: encouraging installation of low-flow fixtures; using native planting for landscaping in all City-owned and operated facilities; promoting best practices and technologies for water conservation; considering water use in evaluating and approving development projects; supporting the use of graywater and water catchment systems in residential, commercial and industrial uses; and encouraging new development and redevelopment projects to meet a portion of their water needs through the use of recycled water.

See also: HW10.7

Policy EC3.5 ***City Government Operation***

Promote climate-friendly standards, practices, technologies and products in all City facilities and operations. Lead by example and set a precedent in the community to reduce greenhouse gas emissions by incorporating best practices and available technologies. Create favorable conditions for community-wide implementation of climate-friendly practices by supporting innovations and creative solutions.

GOAL EC3
Sustainable and Efficient Energy Systems

Action EC3.A ***Community Choice Aggregation***

Partner in community choice aggregation. Collaborate with neighboring jurisdictions to support local efforts to expand the generation and use of energy from renewable sources while increasing revenue for the City. Encourage large warehouse and retail operators to add solar panels to the roofs of their buildings and maximize generation of renewable energy.

Action EC3.B ***Renewable Energy***

Encourage and support the generation, transmission and use of locally distributed renewable energy. Advocate at the regional and state level for upgrades to the existing power grid so that it can support renewable energy production and transmission.

See also: CN5.A; HW10.D

Action EC3.C ***Energy Demand Reduction***

Work with energy providers to develop strategies that will reduce energy demand and promote energy conservation. Collaborate with neighboring jurisdictions to share best practices and implement regional programs to help residents and businesses meet regional demand reduction targets. Explore establishing special assessments on property tax bills which would enable building owners to finance energy efficiency retrofits and improvements over an extended period of time.

Action EC3.D ***Solid Waste Reduction and Recycling***

Work with joint power authority or solid waste facility franchise holder to expand recycling programs and reduce the generation of solid wastes. Potential measures could include: providing recycling containers in parks and public spaces; establishing computer reuse and recycling programs; expanding or enhancing recycling and green waste services for all residents and businesses; and providing locations for household hazardous wastes to be recycled. The City shall also encourage reuse depots and timber harvesting of removed urban trees. Work with solid waste franchise holder to expand the types of materials recycled and reused. Programs should also include outreach and education efforts.

See also: CN5.D; HW10.E

GOAL EC3
Sustainable and Efficient Energy Systems

Action EC3.E ***Construction and Demolition Ordinance***

Develop an ordinance covering all construction and demolition activities that meets and exceeds minimal state building code diversion for beneficial reuse standards. Encourage preservation and readaptation of existing structures over replacement and deconstruction and reuse of building materials over demolition.

See also: CN5.F; HW10.F

Action EC3.F ***Water Conservation***

Implement water conservation efforts for households, businesses, industries and public infrastructure. Include measures such as the following:

- Require low-flow appliances and fixtures in all new development in accordance with EBMUD Water Service Regulations (Section 31).
- Work with water providers and water conservation agencies to create an incentives program that encourages retrofitting existing development with low-flow water fixtures;
- Require new development and landscaped public areas to utilize state-of-the-art irrigation systems that reduce water consumption including graywater systems and rainwater catchment;
- Encourage use of drought-tolerant and native vegetation;
- Require new plantings be grouped by hydrozones of water needs listed in the WUCOL III developed by the Department of Water Resources and the University of California Cooperative Extension (or successor document); and
- Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design including graywater systems.

See also: CN3.E; HW10.G

GOAL EC3
Sustainable and Efficient Energy Systems

Action EC3.G ***Water Recycling***

Support efforts by the regional water provider to increase water recycling by residents, businesses and developers. Require water recycling and rainwater catchment in new development as appropriate to recycle water. Evaluate the use of recycled water in new and existing buildings and landscapes.

See also: CN3.B; HW10.H.

Action EC3.H ***Cogeneration and Reuse of Waste***

Identify strategies to recover methane to cogenerate electricity and reuse of wastewater and biosolids generated at local wastewater treatment plants.

See also: CN3.A; CF1.C

GOAL EC4
Sustainable Development

Policy EC4.1 ***Mixed-Use and Infill Development***

Promote mixed-use infill development on vacant and underutilized parcels along commercial corridors, in the Downtown area, at the planned ferry terminal and in the Hilltop area. Support local-serving mixed-use in residential areas to provide needed services and amenities close to where people live and work. Protect existing affordable housing and develop strategies to prevent the displacement of renters and low-income residents. Require property owners to comply with and pay for state and federal requirements for site remediation as a condition for approving development on contaminated sites.

Policy EC4.2 ***Compact Walkable Neighborhoods and Livable Streets***

Promote safe and walkable neighborhoods and inter-connected streets through the design of streetscapes, public gathering places and all types of physical development. Provide pedestrian amenities such as sidewalks and street trees, transit and bike improvements, lighting and landscaping and appropriate traffic calming measures to ensure a safe pedestrian environment.

Support uses and public space improvements that generate street-level activity, create eyes-on-the-street, provide opportunities for community interaction and encourage a sense of collective ownership of common areas. Encourage mixed-use development that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and create incentives to remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used.

See also: LU2.2

Policy EC4.3 ***Green Buildings and Landscaping***

Require energy and resource efficient buildings and landscaping in all public and private development projects. Encourage the use of green and sustainable development standards and practices in planning, design, construction and renovation of facilities; promote the use of green streets that incorporate extensive landscaping, pervious surfaces and native planting; encourage new development and redevelopment projects to be LEED-certified green buildings; and promote ecologically-sensitive approaches to landscaping. Adopting green standards and practices will improve the quality of the built environment, reduce environmental impacts and support economic development goals for creating a green economy.

See also: HW10.2

GOAL EC4
Sustainable Development

Policy EC4.4 ***Green Infrastructure***

Develop green infrastructure standards that relies on natural processes for stormwater drainage, groundwater recharge and flood management. Green approaches for infrastructure development are environmentally and fiscally efficient and provide long-term benefits to the community by reducing energy consumption and maintenance and capital improvement costs.

See also: HW10.3

Policy EC4.5 ***Local Food System (Urban Agriculture)***

Collaborate with local urban agriculture advocates to identify sites with urban agriculture potential. Support local agriculture on vacant land identified for urban agriculture development. Production and processing of food locally can reduce overall energy consumption, improve access to fresh fruits and vegetables in the community, especially in existing food deserts, and support the local economy by keeping jobs and revenue in Richmond. Support farmers' markets, fresh food stands and community gardens to supplement the availability of healthy food in the City.

See also: HW2.2

GOAL EC4
Sustainable Development

Action EC4.A ***Downtown Specific Plan***

Develop a specific plan to guide capital investment, redevelopment and revitalization of the Downtown as the heart of Richmond. Incorporate key concepts from existing plans, such as the City Center Specific Plan and the Macdonald Avenue Revitalization Plan, into the specific plan. Include Macdonald Avenue, the Civic Center and the BART station in the planning area. Incorporate development standards and urban design guidelines in the specific plan.

See also: LU1.D

Action EC4.B ***Corridor Improvement Plans***

Develop plans for key commercial corridors in the City to guide redevelopment of these areas into mixed-use, pedestrian and transit-oriented corridors and nodes. Collaborate with regional agencies, neighboring jurisdictions and the County to develop the plans. Include development standards and urban design guidelines.

See also: LU1.B; HW7.A

Action EC4.C ***Neighborhood Revitalization***

Encourage, promote and contribute to the revitalization of all neighborhoods. Collaborate with community leaders and organizations, neighborhood councils and neighboring jurisdictions to address community needs. Identify needed improvements and funding mechanisms. Actively work to reduce blight throughout the City and promote the upkeep of vacant lots.

See also: LU2.A; HW7.B; CF4.A

Action EC4.D ***Infill Development Incentives***

Promote infill development throughout the City, especially in the targeted redevelopment areas of Central Richmond and avoid the displacement of existing residents. Promote new development and redevelopment projects to provide community amenities and uses that serve priority community needs and retain the existing urban limit lines.

See also: LU1.A

GOAL EC4
Sustainable Development

Action EC4.E ***Street Design Standards***

Update the City's street design standards so that they support public transit, bicycles and walking on all streets. The updated standards should be consistent with and tailored to street or trail function and adjacent land use type.

Pedestrian-friendly designs should address maximum lane widths, maximum curb radii, sidewalk width, curb ramps and Americans with Disabilities Act (ADA) requirements. Bicycle-friendly design should address lane widths, street and intersection crossings and parking areas. Include guidelines for transit access.

Identify priority thoroughfares for developing green streets in the City to implement a natural systems approach for stormwater management and to expand urban greenery.

Evaluate the feasibility of reducing the number or width of travel lanes on key mixed-use streets that may have excess capacity and using the capacity and/or regained width for wider sidewalks and bicycle lanes.

See also: CR2.D; HW4.N

Action EC4.F ***Green Streets Program***

Expand the green streets program to support a sustainable approach to stormwater drainage, groundwater recharge and landscaping. Incorporate green streets standards and guidelines in all streetscape improvement projects in the City.

See also: CR5.F; HW4.L; CF3.B

GOAL EC4
Sustainable Development

Action EC4.G ***Landscape Design Guidelines***

- Update and implement the City's Landscape Design and Development Guidelines to conform to bay friendly landscape standards.
- Use appropriate tree species and densities in buffer areas.
- Ensure that medians include native plants and trees and are wide enough to support their long-term viability with the least demand for irrigation and maintenance.
- Prioritize the use of locally propagated native drought-tolerant vegetation and discourage the use of invasive non-native species in home landscaping.
- Tree and other plant selections for public landscaping should be made in conformance with the "City of Richmond Urban Forest Management/Master Plan Reforestation Supplement" (Chapter 10.08 of the Richmond Municipal Code).
- Plants should be grouped together as per their water demand listed in the Water Use Classifications for the Landscape Species or "WUCOLS III," or successor document by the University of California Cooperative Extension for the California Department of Water Resource.

See also: CN1.G

Action EC4.H ***Green Building Ordinances***

Require that newly constructed or renovated City-owned and private buildings and structures comply with the City's adopted Green Building Ordinances. Periodically upgrade requirements as mainline construction practices develop and new materials and building products become available with the intent of meeting or exceeding the State's zero net energy goals by the year 2020.

See also: CN5.C; CF3.A; HW10.B

GOAL EC4
Sustainable Development

Action EC4.I ***Sustainable Urban Agriculture Assessment***

Work with non-profits and regulatory agencies to explore the potential for creating, expanding and sustaining local urban agriculture, including community gardens, orchards and farmers' markets. Urban agriculture has the potential to supplement the availability of fresh fruit and vegetables in the community, provide economic opportunities to Richmond residents, lower food costs, reduce overall energy consumption and build social cohesion.

The assessment could explore the feasibility of implementing the following strategies:

- Developing a site inventory and a management plan to administer the use of potential urban agricultural sites;
- Identifying adequate sites to expand the number and frequency of farmer's markets throughout Richmond;
- Promoting urban agriculture as a desirable civic activity that improves the quality of urban life, food security, neighborhood safety and environmental stewardship;
- Supporting the development of appropriate agriculture in residential, industrial, business and open space zones;
- Establishing a community-based support system for urban growers such as tool banks, shared processing facilities, farmers' markets, community supported agriculture ventures, funding streams and technical service providers;
- Offering locally grown food to local schools, hospitals, nursing homes, daycare centers, correction facilities and businesses such as restaurants, while creating economic opportunities for urban growers and related industries;
- Supporting WIC Farmers' Market Nutrition Program and the Senior Farmers' Market Nutrition Program that provide support for buying fresh produce at farmers' markets;
- Creating training programs for unemployed people to work in urban food-related businesses as a source of jobs;
- Working with representatives of community gardening and urban farming organizations to meet needs unique to urban farm enterprises;
- Ensuring long-term land commitment for community gardens, entrepreneurial farms and other urban agriculture ventures;
- Updating building codes to encourage rooftop gardening; and
- Developing school-based programs that integrate nutrition and gardening in order to raise awareness about the connection between healthy food choices and locally grown fresh produce.

GOAL EC5
Community Revitalization and Economic Development

Policy EC5.1 ***Green Businesses and Jobs***

Promote "green" industries to provide goods and services to fill the growing need for clean and sustainable technologies, fuels, vehicles and equipment, while providing jobs and training to Richmond residents. The green economy can stimulate Richmond's overall economic development without undermining its environmental protection goals.

Policy EC5.2 ***Environmentally Progressive Businesses and Industries***

Encourage existing businesses and industries to become increasingly environmentally progressive and continue making positive contributions to the community. Encourage businesses and industries to hire locally and to demonstrate reasons for not hiring local employees. Seek reciprocity in the hiring of Richmond residents in Contra Costa County and other nearby jurisdictions with local hiring ordinances. Encourage businesses and industries to participate in civic life and play a positive role in the community. Together with regulatory agencies, actively work with local industries to ensure compliance with all applicable environmental regulations to limit pollution, decrease harmful impacts from emissions and protect the community from environmental hazards.

Promote and encourage new clean and green industries that provide well-paying jobs, revenue and other community and environmental benefits; support efforts to require existing industries to decrease harmful emissions and impacts; and promote a mix of uses and a range of activities on industrial land to create jobs and revenue while avoiding conflict between industrial and non-industrial uses.

See also: ED2.6; HW6.4; LU3.1

Policy EC5.3 ***Air Quality***

Support regional policies and efforts that improve air quality to protect human and environmental health and minimize disproportionate impacts on sensitive population groups. Work with businesses and industry, residents and regulatory agencies to reduce the impact of direct, indirect and cumulative impacts of stationary and non-stationary sources of pollution such as industry, the Port, railroads, diesel trucks and busy roadways. Fully utilize Richmond's police power to regulate industrial and commercial emissions. Ensure that sensitive uses such as schools, childcare centers, parks and playgrounds, housing and community gathering places are protected from adverse impacts of emissions.

Continue to work with stakeholders to reduce impacts associated with air quality on disadvantaged neighborhoods and continue to participate in regional planning efforts with nearby jurisdictions and the Bay Area Air Quality Management District to meet or exceed air quality standards. Support regional, state and federal efforts to enforce existing pollution control laws and strengthen regulations.

GOAL EC5
Community Revitalization and Economic Development

For Policy EC5.3 on the previous page, see also: CN4.1; HW9.1; ED1.4

Action EC5.A ***Green Business Strategic Plan***

Work with local business support agencies and community stakeholders to develop a strategic plan to retain, attract, and support innovative "green" companies, consistent with City Council Resolution 45-07, which declared Richmond a "Green Economic Development Area." Support this effort by monitoring industry trends, assisting commercial brokers in matching companies with available sites and including a strategic marketing campaign that highlights Richmond's strengths and strategies to prepare the local workforce for emerging green industries. Work with State and local agencies to develop criteria for green business certification for new and existing businesses. Seek opportunities to create incentives for existing businesses to participate in the program.

See also: ED2.D; LU3.A; HW6.A

Action EC5.B ***Workforce Development Strategy***

Continue to support efforts to expand job training opportunities for residents to enter into the workforce, with particular emphasis on green collar and other high-growth employment categories. Encourage the local community colleges, universities, the school district and adult education programs to offer more coursework and training oriented toward emerging industries such as the green industry in addition to traditional trades.

Maintain and enhance partnerships with local workforce development programs and organizations and collaborate with these programs and organizations to ensure that new and existing industries have access to a local, work-ready and talented workforce. Support training and intervention strategies for populations that face barriers to employment including youth, the formerly incarcerated, and residents with limited English proficiency.the formerly incarcerated, and residents with limited English proficiency.

See also: EH2.A; ED3.A; HW6.B

GOAL EC5
Community Revitalization and Economic Development

Action EC5.C ***Air Quality Monitoring and Reporting Program***

Work with the Bay Area Air Quality Management District and other government agencies to establish and identify funding for a citywide air quality monitoring and reporting program. The air quality monitoring and reporting program would assess the cumulative impact of air pollution and toxins on human and environmental health and monitor exposure of sensitive uses such as schools, childcare centers, parks and playgrounds, housing and community gathering places.

Collaborate with the County Health Services Department, the Bay Area Air Quality Management District and state agencies to establish baseline exposures and document health effects associated with monitored baseline exposures and develop provisions to hold businesses and operations financially accountable for their impacts on the environment or community due to air pollution exceeding legal thresholds.

See also: ED1.G; HW9.A; CN4.D

GOAL EC6
Climate-Resilient Communities

Policy EC6.1 ***Habitat and Biological Resource Protection and Restoration***

Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources. Protect these areas and work with the California Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, the East Bay Regional Park District and other regional agencies to identify areas for special protection and establish appropriate protection measures for these areas.

Protect resources to maximize the efficacy of natural systems and encourage sustainable development practices and conservation measures to ensure a healthy natural environment.

Protect wetlands from direct and indirect impacts of new and existing development and infrastructure. Ensure that direct and indirect impacts to wetland habitats are minimized by environmentally sensitive project siting and design.

Protect marshlands and baylands to ensure they are not polluted or damaged from bay filling and dredging.

Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas. Protect and restore creek corridors and riparian areas by restoring riparian habitat with appropriate vegetation and channel design; removing culverts and hardened channels where appropriate; improving creek access; avoiding future culverting or channelization of creeks; and ensuring appropriate and ongoing maintenance.

At a minimum, require mitigation of impacts to sensitive species ensuring that a project does not contribute to the decline of the affected species populations in the region. Identify mitigations in coordination with the U.S. Fish and Wildlife service, the California Department of Fish and Game and other regulatory agencies.

See also: CN1.1; LU4.3; HW9.7

Policy EC6.2 ***Low-Lying Areas in Richmond***

Protect and manage low-lying areas that are likely to be affected by sea level rise and storm surges. Encourage development patterns, infrastructure and flood management practices that can adapt to potential climate change impacts in these low-lying areas.

GOAL EC6
Climate-Resilient Communities

Policy EC6.3 ***Adapting to Climate Change***

Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Protect neighborhoods, infrastructure and facilities, the shoreline and natural resources from the impacts of climate change. Require new developments to include an evaluation of climate change impacts in the project review process. Shoreline and public access improvements shall be designed to allow future increases in elevation along the shoreline edge to keep up with higher sea level values, when they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases of at least three feet from the existing elevation along the shoreline.

GOAL EC6
Climate-Resilient Communities

Action EC6.A ***Open Space Plan***

Develop and implement an open space plan to enhance public open space in the City. Include strategies for open space in the hills, along creeks and the shore- line, and in the urban core. Collaborate with the East Bay Regional Park district and the National Park Service to manage and maintain facilities and programs at regional and national parks.

See also: CN2.E; HW9.O; LU4.B

Action EC6.B ***Habitat Restoration***

Work with other jurisdictions, public and private property owners to restore sensitive habitat that has been degraded, but has potential for rehabilitation including brownfield and contaminated sites. Seek funding opportunities from state and federal agencies and from nonprofit foundations for restoration and remediation work.

See also: CN1.E; HW9.Q

Action EC6.C ***Urban Creek Restoration***

Where feasible, restore creek corridors in urban areas. Creeks currently diverted in culverts or hardened channels should be restored to their natural state. Adopt regional guidelines for channel creation or modification to ensure that channels meander, have a naturalized side slope and a varied channel bottom elevation. Include improvement standards for soft bottom channels.

See also: CN1.H; PR3.C; HW9.N

Action EC6.D ***Storm Water Drainage***

Provide storm drainage in accordance with best management practices and guidelines. Assess the system's ability to accommodate current and future users, sea level rises, and include all necessary improvements in development plans. Reduce runoff into creeks and the Bay, and address groundwater recharge through the use of pervious materials, retention basins, bio-swales and other methods.

See also: CF1.D

GOAL EC6
Climate-Resilient Communities

Action EC6.E ***Urban Forestry Management Plan***

Continue to implement the urban forest management plan to guide landscaping practices in urban areas of the City, reduce the heat-island effect and contribute to carbon mitigation. Continue the adopt-a-tree program. Coordinate the plan with the "City of Richmond urban Forest Management/Master Plan Reforestation supplement (1997)" and related documents for this purpose. Update the plan to establish the following measures:

- Create guidelines to establish minimum planting standards and require appropriate tree species and planting densities within newly landscaped areas;
- Update the list of trees to be used as a guideline for all tree planting and focus on local native species;
- Identify maintenance and planting standards for street trees, ensuring that the best practices in urban forestry are being utilized including best practices for pruning around above-ground utility lines to ensure the best health and form of street trees;
- Update zoning requirements for street trees in new developments and in parking lots;
- Outline coordination efforts with EBMUD to offer programs or other resources to provide property owners with information on proper tree selection, proper location to reduce heat transfer effects, planting and maintenance; and
- Establish guidelines that require all native tree habitats to be protected and when avoidance is not possible, require mitigation efforts as required by the Public and Private Tree Preservation Ordinance.

See also: CN6.E; HW9.M; CF3.C; PR4.B

Action EC6.F ***Disaster Preparedness and Recovery Plan***

Require that all development and redevelopment projects comply with the City's Disaster Preparedness and Recovery Plan. Regularly review and update the plan and expand public training and information.

See also: SN3.A; HW3.D; CF2.D

GOAL EC6
Climate-Resilient Communities

Action EC6.G ***Adaptive Management Plan***

The City shall develop an Adaptation Strategy that would include preparing an Adaptive Management Plan that outlines an institutional framework, monitoring triggers, and a decision-making process, and creates an entity with taxing authority that would pay for infrastructure improvements necessary to adapt to higher than anticipated levels. Strategies could include, but would not be limited to:

- Construction of a shoreline protection system that is initially built to accommodate a mid-term rise in sea level of 16 inches, with a design that is adaptable to meet higher than anticipated values in the mid-term, as well as for the long-term;
- Construction of a storm drainage system that is initially built to accommodate a mid-term rise in sea levels of 16 inches, with a design that is adaptable to meet higher than anticipated sea level rise values (similar to the first bullet); and
- Construction of buildings and vital transportation infrastructure at elevations that would not be exceeded by flood waters, even if the shoreline protection does not function, for existing conditions and over a longer term as compared to the two above.

Summary of Implementing Actions

The table presented on the following pages is a tool for guiding implementation of the City's Energy and Climate Change Element. Organized by the community's broad goals, the table provides an overview of policies and implementing actions detailed in the previous section. Each action is linked to a designated lead responsible party. Related policies are identified in the final column.

Goal EC1: Leadership in Managing Climate Change

Action		Lead Responsibility	Supporting Policies
EC1.A	Climate Action Plan	City Manager's Office	EC1.1, EC1.2
EC1.B	Public Awareness and Education Program	City Manager's Office	EC1.2
EC1.C	Safe and Convenient Public Transit Options	City Manager's Office	EC1.1, EC1.2

Goal EC2: Clean and Efficient Transportation Options

Action		Lead Responsibility	Supporting Policies
EC2.A	Climate-Friendly Fuel Using Vehicles	City Manager's Office	EC2.2, EC2.7
EC2.B	City Vehicles Transition	Public Works	EC2.1, EC2.2, EC2.7
EC2.C	Safe and Convenient Public Transit Options	Public Works	EC2.3, EC2.5, EC2.6
EC2.D	Transit Incentives Program	City Manager's Office	EC2.3, EC2.5, EC2.6
EC2.E	Bicycle and Pedestrian Plans	Planning and Building Services	EC2.4, EC2.6
EC2.F	Promote Bicycle Use	City Manager's Office	EC2.4, EC2.6
EC2.G	Safe Routes to School Program	Planning and Building Services	EC2.4
EC2.H	Car and Bicycleshares	City Manager's Office	EC2.6
EC2.I	Carpool, Rideshare and Shuttle Services	City Manager's Office	EC2.3, EC2.6
EC2.J	Port Emissions Reduction Plan	Port Operations	EC2.1, EC2.2, EC2.7
EC2.K	Engine Replacement and Retrofitting	Public Works	EC2.1, EC2.7

Goal EC3: Sustainable and Efficient Energy Systems

Action		Lead Responsibility	Supporting Policies
EC3.A	Community Choice Aggregation	City Manager's Office	EC3.1, EC3.2, EC3.5
EC3.B	Renewable Energy	City Manager's Office	EC3.1, EC3.2, EC3.5
EC3.C	Energy Demand Reduction	City Manager's Office	EC3.2, EC3.5
EC3.D	Solid Waste Reduction and Recycling	Engineering	EC3.3
EC3.E	Construction and Demolition Ordinance	Planning and Building Services	EC3.3
EC3.F	Water Conservation	Engineering	EC3.3, EC3.4
EC3.G	Water Recycling	Engineering	EC3.3, EC3.4
EC3.H	Cogeneration and Reuse of Water	Engineering	EC3.3, EC3.4

Goal EC4: Sustainable Development

Action		Lead Responsibility	Supporting Policies
EC4.A	Downtown Specific Plan	City of Richmond as Successor Agency	EC4.1
EC4.B	Corridor Improvement Plans	City of Richmond as Successor Agency	EC4.1
EC4.C	Neighborhood Revitalization	City of Richmond as Successor Agency	EC4.1, EC4.2
EC4.D	Infill Development Incentives	City of Richmond as Successor Agency	EC4.1
EC4.E	Street Design Standards	Planning and Building Services	EC4.2
EC4.F	Green Streets Program	Planning and Building Services	EC4.2, EC4.4
EC4.G	Landscape Design Guidelines	Planning and Building Services	EC4.3
EC4.H	Green Building Ordinances	Planning and Building Services	EC4.3
EC4.I	Sustainable Urban Agriculture Assessment	Planning and Building Services	EC4.5

Goal EC5: Community Revitalization and Economic Development

Action		Lead Responsibility	Supporting Policies
EC5.A	Green Business Strategic Plan	Economic Development Commission	EC5.1
EC5.B	Workforce Development Strategy	Employment and Training	EC5.1, EC5.2
EC5.C	Air Quality Monitoring and Reporting Program	City Manager's Office	EC5.3

Goal EC6: Climate-Resilient Communities

Action		Lead Responsibility	Supporting Policies
EC6.A	Open Space Plan	Planning and Building Services	EC6.1, EC6.3
EC6.B	Habitat Restoration	Engineering	EC6.1, EC6.3
EC6.C	Urban Creek Restoration	Engineering	EC6.1, EC6.2, EC6.3
EC6.D	Storm Water Drainage	Engineering	EC6.1, EC6.2, EC6.3
EC6.E	Urban Forestry Management Plan	Public Works	EC6.1, EC6.3
EC6.F	Disaster Preparedness and Recovery Plan	Fire	EC6.2
EC6.G	Adaptive Management Plan	City Manager's Office	EC6.2, EC6.3

Regulatory Framework

The energy and Climate Change element relates to local, state and federal departments and agencies, laws, policies and programs that contribute to planning for climate change and energy use.

Organizations

In addition to local city planning and public works departments, there are several state and regional departments and agencies that play a role in climate change and energy policy.

California Air Resources Board

Established by California's Legislature in 1967, the California Air Resources Board (CARB) strives to attain and maintain healthy air quality, conduct research related to air pollution and address air quality impacts of motor vehicles in the state. CARB's 11-member board is appointed by the Governor (http://www.arb.ca.gov).

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, water, railroad, rail transit and passenger transportation companies. The Commission is comprised of five Governor-appointed members and staff (http://www.cpuc.ca.gov).

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is committed to achieving clean air to protect the public's health and the environment in the San Francisco Bay Region. The Air District endeavors to attain and maintain air quality standards, increase public awareness and positive air quality choices, and develop and implement protocol and policies for environmental justice. BAAQMD was created by the California Legislature in 1955, making the District the first of its kind in the state. The District's jurisdiction encompasses seven Bay Area counties (Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa) as well as portions of Solano and Sonoma counties (http://www.baaqmd.gov).

East Bay Municipal Utility District

The East Bay Municipal Utility District (EBMUD) is a publicly owned utility that supplies water and provides wastewater treatment for parts of Alameda and Contra Costa counties on the eastern side of San Francisco Bay in northern California. EBMUD has jurisdiction over the water service lines in Richmond (http://www.ebmud.com).

Veolia Water North America

Veolia Water North America operates and maintains Richmond Municipal Sewer District's sewer treatment and collection facilities as well as storm drainage facilities (http://www.veoliawaterna.com).

Plans, Programs, Regulations and Acts

Federal

U.S. Conference of Mayors Climate Protection Agreement

The U.S. Conference of Mayors Climate Protection Agreement, signed in June 2005, is a locally based initiative of mayors from across the country. Under the agreement, participating cities commit to the Kyoto Protocol, strive to reduce greenhouse gas emissions and advocate for legislation and policies and programs to reduce greenhouse gas emissions. As of October 2008, the Agreement has been signed by 884 mayors including the Mayor of Richmond.

State

Assembly Bill 32

California passed Assembly Bill 32 (AB 32), also known as the Global Warming Solutions Act, in 2006. The Bill charged the California Air Resources Board (CARB) with implementing a comprehensive statewide program to reduce greenhouse gas emissions.

In December 2008, the California Air Resources Board adopted a scoping plan that provides a framework to lower the state's greenhouse gas emissions to meet the 2020 limit. Measures in the Scoping Plan will be developed over the next three years and include several vehicle efficiency initiatives such as the low-carbon fuel standard set out in Executive Order S-1-07, which would reduce the carbon intensity of California's transportation fuels by at least 10% by 2020.

Senate Bill 1368

Senate Bill 1368 (SB 1368) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities

by February 1, 2007. It also required the California Energy Commission (CEC) to establish a standard for publicly owned utilities by June 30, 2007. The standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Senate Bill 375

Signed in September 2008, Senate Bill 375 (SB 375) requires regional governing bodies in each of the state's major metropolitan areas to adopt a "sustainable community strategy" as part of their regional transportation plan that will meet the region's target for reducing greenhouse gas emissions. The Bill provides incentives for implementing the sustainable community strategies by allocating federal transportation funds to projects that reduce greenhouse gas emissions, such as housing developments in proximity to schools and employment centers that allow people to reduce automobile use. Projects that conform to the sustainable community strategy and contribute to greenhouse gas emission reduction will be given a more streamlined environmental review process.

Executive Order S-3-05

On June 1, 2005, Governor Schwarzenegger signed Executive Order S-3-05, establishing the following greenhouse gas emissions reductions targets for the state of California:

- 2000 levels by 2010
- 1990 levels by 2020
- 80% below 1990 levels by 2050

California Environmental Quality Act

Passed in 1970, the California Environmental Quality Act (CEQA) requires that public agencies abstain from approving projects with significant adverse environmental impacts if there are feasible alternatives or mitigation measures that can substantially reduce or avoid those impacts. In light of recent climate change research and findings, public agencies are facing increasing pressure to identify and address potential significant impacts due to greenhouse gas emissions.

In August 2007, California Attorney General Jerry Brown announced a settlement with San Bernardino County that requires a California agency to inventory historical (as of 1990), current and projected greenhouse gas emissions, to set a target for reducing greenhouse gas emissions and to develop measures to reduce such emissions. The case provides guidance on how to address climate change in CEQA documents.

Pursuant to Senate Bill 97 (Chapter 185, 2007) the Governor's Office of Planning and Research (OPR) is in the process of developing CEQA guidelines for the mitigation of greenhouse gas emissions. The Resources Agency must certify and adopt the guidelines on or before January 1, 2010.

Assembly Bill 117

Passed in 2002, Assembly Bill 117 (AB 117) allows local governments to aggregate the retail electric customers in their jurisdictions for the purpose of purchasing power. The Bill allows communities to choose their electrical power suppliers and what type of power to buy, and allows them to negotiate how much they pay.

Senate Bill 1078 and 107

Established in 2002 under Senate Bill 1078 (SB1078) and amended by Senate Bill 107 (SB 107), the California Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The program requires electric corporations to increase procurement from eligible renewable energy resources by at least one percent of their retail sales annually, until they reach 20% by 2010. Eligible energy includes hydroelectric facilities that are 30 megawatts or less, geothermal, biomass, solar, wind, biogas, biodiesel, fuel cells, ocean wave, ocean thermal, tidal current and selected municipal solid waste facilities.

The California Solar Initiative

The California Solar Initiative is part of the statewide effort to install 3,000 megawatts of new, grid-connected solar systems by 2016. The program is directed by the CPUC and provides $1.167 billion in rebates and cash incentives on solar systems to customers of PG&E, Southern California Edison and San Diego Gas and Electric Company.

California Long-Term Energy Efficiency Strategic Plan

On September 18, 2008, the CPUC adopted the California Long-Term Energy Efficiency Strategic Plan. The Plan for 2009 to 2020 includes goals and strategies for saving energy and covers government,

utility and private sector actions as they relate to energy use and efficiency.

Energy Action Plan (Status Update 2008)
California's first Energy Action Plan (EAP) emerged in 2003. The EAP status update, completed in 2008, includes policies to enable the state to meet AB 32 greenhouse gas emission reduction targets. The EAP status update builds on the Energy Commission's 2007 Integrated Energy Policy Report (IEPR).

Western Climate Initiative
Launched in February 2007, the Western Climate Initiative (WCI) is a collaboration of the governors of Arizona, California, New Mexico, Oregon and Washington to develop regional strategies to address climate change. In August 2007, the partnership developed a goal to reduce greenhouse gas emissions of 15% below 2005 levels by 2020. WCI partners developed a work plan to guide the process and will complete the design of a market-based mechanism to help achieve that reduction goal. WCI partners include 11 states and provinces in the western region of North America.

Local / Regional

ICLEI's Cities for Climate Protection Campaign
ICLEI, Local Governments for Sustainability, is an international association of local governments and national and regional local government organizations that have made a commitment to sustainable development. ICLEI's Cities for Climate Protection (CCP) Campaign assists cities to adopt policies and implement quantifiable measures to reduce local greenhouse gas emissions, improve air quality and enhance urban livability and sustainability. More than 1,000 local governments, including over 350 in the United States, have joined ICLEI's CCP campaign. By committing the City to locally advancing climate protection, Richmond has joined an international movement of local governments. In addition to Richmond there are approximately 60 jurisdictions (municipal and county) throughout the Bay Area that are CCP participants.

The CCP campaign provides a framework for local communities to identify and reduce greenhouse gas emissions, organized along five milestones:

- Conduct an inventory of local greenhouse gas emissions;
- Establish a greenhouse gas emissions reduction target;
- Develop an action plan for achieving the emissions reduction target;
- Implement the action plan; and
- Monitor and report on progress.

The Greenhouse Gas Emissions Inventory and Analysis Report for the City of Richmond was completed as part of the CCP Campaign.

Ahwahnee Principles
The Ahwahnee Principles for Resource-Efficient Communities were written in 1991 by the Local Government Commission and were adopted by Richmond's City Council in 2001 as a means of promoting responsible community planning. The principles provide a blueprint for elected officials to create compact, mixed-use, walkable, transit-oriented developments in their communities.

Urban Environmental Accords
The Urban Environmental Accords was signed on the occasion of United Nations Environment Programme World Environment Day, June 5, 2008 in San Francisco. The Accords is a set of common rules for cities committed to equality and sustainability within and across their borders. The Accords include seven major themes for actions that lead to sustainable urban centers including: energy, waste reduction, urban design, urban nature, transportation, environmental health and water. The City of Richmond is a signatory of the Accords.

Notes

1. Official California Legislative Information Website. http://www.leginfo.ca.gov/.
2. American Wind Energy Association. "Resources: Wind Industry Statistics." http://www.awea.org/faq/wwt_statistics.html.
3. Godvin, Tara "Solar power boom comes with pains: Polysilicon used for solar cells is in short supply." Associated Press, February 24, 2006, U.S. News section, msnbc. http://www.msnbc.msn.com/id/11412669/.
4. ICLEI – Local Governments for Sustainability. "Energy and Climate Change: 2005 Greenhouse Gas Emissions Inventory." Issues and Opportunities paper prepared as background for the Richmond General Plan. June, 2008.
5. Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007: Synthesis Report, Summary for Policymakers, November 17, 2007.

Cover Artwork

1. Left: Photograph by City of Richmond
2. Right: "Mapping Richmond" by Lauren Ari, Richmond Resident

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