SECTION 4: CLIMATE ACTION STRATEGIES

The CAP strategy will be implemented through policies, regulations, programs, and cooperation with other agencies. The City has already adopted specific plans and development plans that are consistent with the goals, policies, and strategies of the CAP. Development that is consistent with an approved Development Plan or Specific Plan meeting the CAP criteria shall also be deemed consistent with the CAP. Development outside of Plan areas that requires no discretionary approvals shall comply with all applicable regulations and will be encouraged to take voluntary measures to reduce greenhouse gas emissions. Projects that require a discretionary approval shall be reviewed to ensure that design features and operational measures are included that reduce greenhouse gas emissions by at least 15 percent.

4.1 - Development Scenarios

1. Projects developed within a CAP compliant Development Plan or Specific Plan that meet all applicable design criteria and mitigation measures will be deemed consistent with the CAP.
2. Projects developed outside a CAP compliant Development Plan or Specific Plan but not requiring a discretionary approval shall comply with all applicable regulations. No consistency determination is required, but the City will keep track of building permit data to take credit for voluntary measures implemented by the projects.
3. Projects developed outside a CAP compliant Specific Plan area and requiring a discretionary land use approval will be reviewed to ensure all feasible CAP measures for the type of project are implemented.
4. Projects that amend a CAP compliant Specific Plan will be required to demonstrate that they will achieve the maximum technological feasible and cost-effective reductions to greenhouse gases such that the project will not result in a significant impact in achieving CAP targets.

4.2 - Land Use and Transportation Strategies

As described in the previous section, the City's emission inventory is dominated by motor vehicle emissions. The City has control over the emissions from its government fleet vehicles through its purchasing decisions, but no control over the emissions from other vehicles that operate and pass through the City. However, the City's authority over land use provides opportunities to influence the amount people drive and their choice of travel mode. In planning circles, this has been called the land use, transportation, air quality connection. The General Plan 2030 includes numerous policies that promote development that encourage walking, bicycling, transit use, carpooling, and transportation demand management (TDM). (See Appendix C for a list of applicable policies.) As projects are

developed that are consistent with these policies, the emissions associated with the projects can be substantially lower than emissions under a business as usual scenario.

General Plan Connections

The CAP strategy builds on the City of San Ramon General Plan 2030. The City has included the Air Quality and Greenhouse Gas Element as part of the General Plan 2030 to provide a bridge that inter-connects with other General Plan Elements. Air quality is impacted by many aspects of our built environment and the lifestyle choices we make.

City Center Aerial View Illustration

This connection is based on the idea that the design, density, and pattern of land uses impact the amount people drive and the options available for using less polluting and energy-consuming modes of transportation such as carpooling, walking, bicycling, and transit. The City Center project incorporates these ideas with its dense, walkable, mixed-use design, and access to a complete array of transportation options. Policies in the following elements have connections to air quality and greenhouse gas emissions:

- The policies of the Land Use Element with connections to air quality and greenhouse gas emissions are those supporting compact development, density near transit, pedestrian orientation, and design supportive of walking and bicycling.
- The Traffic and Circulation Element lays out the policies for developing the transportation system in a way that is consistent with and accommodates the growth planned in the Land Use Element. Traffic and Circulation Element policies with air quality benefits include those that promote the development of a multi-modal transportation system and complete streets, and that prevent excessive traffic congestion. More specifically, policies encourage designs that provide direct pedestrian connections, complete sidewalks, safe and comfortable bicycle paths, and routes connecting frequently accessed destinations with residences to help increase use of transit, walking, and bicycling.
- The Economic Development Element encourages Transportation Demand Management and transit as means to solve workforce transportation issues that affect economic development, but it also impacts air quality and the traffic circulation system.

- The Housing Element provides policies and programs that support energy conservation in new and renovated housing and in affordable housing that allow people to live closer to work.
- The Growth Management Element, Open Space and Conservation Element and the Public Facilities and Utilities Element contain policies that promote reduced emissions through compact development, energy savings related to water conservation, and reclaimed water use.

The General Plan policies that support each CAP strategy are provided as part of the CAP descriptions and are identified by their corresponding policy number. Table 6 provides the General Plan chapter number and title to help identify the source of the policy.

Table 6: General Plan 2030 Chapter Titles

Chapter Number	Element Title
1	Introduction
2	Economic Development
3	Growth Management
4	Land Use
5	Traffic and Circulation
6	Parks and Recreation
7	Public Utilities
8	Open Space and Conservation
9	Safety
10	Noise
11	Housing
12	Air Quality

This section is divided into four strategy categories with more detailed strategies under each category. A brief description is provided for each category, and each strategy is followed by existing City actions, and the General Plan policies that support the strategy. Finally, information regarding potential emission reductions is provided for each strategy. The emission reduction estimates are from a summary of potential mitigation measures for projects and plans included as an appendix to the California Air Pollution Control Officers Association (CAPCOA) document, CEQA and Climate Change. A copy of the mitigation measure list is provided as Appendix B of the CAP. The CAPCOA appendix includes a table of measures with emission reductions and the source of the estimate for each measure. The CAPCOA measures are identified as Measure D-1, Measure D-2, Measure T-1, and so on, to reference the source of the estimate. CAPCOA issued a new document

in August 2010, Quantifying Greenhouse Gas Mitigation Measures, which provides additional and refined quantification methods and documentation. The methods and ranges of effectiveness presented in the document are similar to those found in Appendix B and are used in this section to identify ranges of effectiveness. Project-level analyses that quantify greenhouse gas emission reductions should consider the methodologies presented in the CAPCOA document and utilize those in which data are available to allow their use. In addition, a new modeling tool is under development by the South Coast Air Quality Management District that will incorporate many of the quantification methodologies, which may also be utilized to assist in local greenhouse gas analysis at the project level.

Land Use Strategies

The City currently has four primary growth areas that will be the focus of development over the next 20 years. The City, through existing and proposed Specific Plans and development approvals, has adopted standards to guide development in these areas. The plans set the stage for growth to be mixed use and transit- and pedestrian-oriented, which will lower vehicle miles traveled and greenhouse gas emissions.

City Center Conceptual Illustration
Source: City of San Ramon

The City Center project, approved in 2007, will have residential and a pedestrian-oriented retail area with a "downtown feel." The City Center project will create a unique neighborhood atmosphere, as it will blend community gathering, living, shopping, working, and dining experiences. The project's public plazas and pedestrian-friendly streetscapes will provide for a new kind of retail experience in San Ramon. The City Center project includes a new transit center that will provide additional multi-modal transportation options.

The Dougherty Valley Village Center, approved in 2003, is also a pedestrian-oriented retail area where vehicular and transit linkages converge. It will include retail and office space that is adjacent to current civic uses such as the Dougherty Valley Community Center and Library, Diablo Valley College (San Ramon campus), and high-density residential. The retail experience here is expected to be a synergy of mixed-uses with areas that provide for small and large seasonal outdoor events such as jazz festivals.

The North Camino Ramon Specific Plan (NCRSP), which is currently being developed, will offer additional retail opportunities to meet the needs of San Ramon's residents and business community. Complementing the City Center project, the NCRSP would provide

opportunities for neighborhood and regional retail and vertical and horizontal mixed-use development in proximity to new and existing jobs. Preparation of the NCRSP includes a comprehensive fiscal analysis to ensure the plan's viability and success.

The Crow Canyon Specific Plan (CCSP) provides a vision for an area of San Ramon that is currently underutilized, but has the potential to develop into an active, mixed-use district for the community. The purpose of the Plan is to guide the evolution of this 128-acre office and service commercial area in a way that will encourage coordinated development that is responsive to citywide and regional objectives, as well as to local and neighborhood considerations. The goal is to create a new pedestrian-oriented, mixed-use community that includes concentrated commercial and residential uses, while maintaining viable limited/light industrial and service commercial uses.

Other development will occur in subdivisions and commercial developments that have already been approved and are partially built out. Those projects will comply with mitigation measures that were adopted at the time of approval, development agreements, and applicable regulations. These projects will be encouraged to provide energy efficiency above requirements and to include measures that reduce vehicle trips and miles traveled.

The General Plan 2030 buildout is expected to accommodate the following growth between 2008 and 2030:

- Population Increase: 25,618 people
- Jobs: 18,657
- Housing Units: 9,559 dwelling units
- Non-Residential Development: 5,057,600 square feet

This new growth represents City's best opportunity for reducing average vehicle miles traveled per person in the community. As the City is developed and redeveloped, it will not only provide benefits to the people living in the new development, but it will produce synergistic effects on the existing development. The following describes the City's strategy as supported by the General Plan and Specific Plans that will guide how this growth occurs over the next 20 years.

Increased Development Density

Increased density and more compact development place people closer to destinations that can be accessed by walking or bicycling, and they increase the potential for high-quality transit service.

Strategy LU-1 Increase the average development density by 10 percent by 2020.

Existing City Measures

The City expects that residential density from new development will increase as the percentage of multi-family development increases over time. The existing housing stock as of 2008 consisted of 62 percent single-family detached, 11 percent single-family attached, and 26 percent multi-family housing units. The 2020 General Plan Housing Element indicated that sites are available to accommodate 3,987 single-family homes compared with 5,772 multi-family homes. Buildout of these units consistent with densities allowed by the General Plan would increase the percentage of multi-family units in San Ramon by 10 percent to 36 percent. The Housing Opportunity Site Analysis in the Housing Element indicates that most of the single-family sites would be developed at a density of 6.7 dwelling units per acre or greater with very limited large-lot development. The multi-family housing would be developed at densities of 16.9 to 45.0 dwelling units per acre. With increasing emphasis on more compact, single-family development and increased amounts of multi-family development, a 10-percent increase in density seems feasible. The General Plan 2030 and the Specific Plans described earlier also emphasize increasing non-residential densities through higher floor area ratios (building multistory structures), use of structured parking, and mixed-use development.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-10	Continue to refine development standards that allow for better utilization of sites already developed for employment uses (e.g., through height and/or floor area ratio increases in combination with structured parking).
4.6-I-21	Promote incentives that will provide for density and FAR bonuses for mixed-use development that includes amenities for public benefit, such as workforce housing, pedestrian-oriented facilities (outdoor seating, plazas, weather protection, transit waiting areas), historic preservation, cultural facilities, public art and water features, and open space preservation.
8.5-I-2	Encourage developers to explore Transfer of Development Rights (TDRs) in conjunction with project review to cluster residential development and preserve open space, ridgelines, and creek corridors.
11.1-I-8	Encourage construction of second dwelling units within single-family residential neighborhoods

Emission Reduction Potential: Studies on the impact of density indicate that a doubling residential density across a metropolitan area may lower vehicle miles traveled by 5 to 12 percent (CAPCOA Measure D-4 [see Appendix B]).

Mixed Use Development

Mixed-use development is defined as development that combines housing, commercial, retail, civic and office uses, placing these key community elements and destinations close to one another, that is, within a short walk, bike ride, or transit stop. Benefits of mixed-use development include increased pedestrian activity and social interaction by bringing key destinations closer together (NHDES 2008).

Strategy LU-2 Encourage mixed use development in new development and redevelopment areas.

Existing City Measures

The City Center Project and draft North Camino Ramon Specific Plan areas encourage mixed-use development with areas devoted to residential over commercial businesses and to high-density residential within walking distance of jobs and commercial services. The plans encourage vertical mixed use (projects with residential over commercial uses) and horizontal mixed uses (projects with residential uses adjacent or within a short walking distance of commercial uses).

Vertical Mixed Use
Source: City of San Ramon

The City Center project is located within a Priority Development Area (PDA) as defined by the FOCUS program. The FOCUS program is an incentive-based effort to encourage more housing and to improve communities adjacent to transit. PDAs are locally identified, infill development opportunity areas within existing communities. They are generally areas of at least 100 acres where there is local commitment to developing more housing along with amenities and services to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit. FOCUS is an initiative of four regional agencies: the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), the Bay Conservation and Development Commission (BCDC), and the Metropolitan Transportation Commission (MTC)—in partnership with congestion management agencies, transit providers, and local governments throughout the Bay Area. FOCUS is supported in part by a Regional Blueprint Planning Grant from the State of California.

In addition, the North Camino Ramon Specific Plan is a potential PDA. Once the Specific Plan is approved, the North Camino Ramon project area will become eligible to pursue Planned PDA status. A Planned PDA can then pursue additional grant and funding opportunities associated with the FOCUS program.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-14	Encourage retail development in mixed-use areas to accommodate local and regional demand.
2.3-I-15	Implement the approved City Center project into a cultural, recreational, and vibrant mixed-use lifestyle center.
2.3-I-18	Prepare and develop the North Camino Ramon Specific Plan (NCRSP) area into a fiscally balanced, transit-oriented mixed-use area that provides for neighborhood and regional retail opportunities lacking in San Ramon and vertical and horizontal mixed-use development in proximity to new and existing jobs.
4.6-I-18	Allow for a mix of complementary office uses and commercial service businesses in commercial service areas that is balanced and encourages economic vitality.
4.6-I-19	Promote the revitalization and infill development in existing retail shopping centers, which are identified as mixed-use centers on the General Plan Diagram, to provide opportunities for housing and other compatible non-retail uses.
4.6-I-20	Continue to refine design standards for mixed-use development that will result in a high quality pedestrian-scaled environment, with one-to-four story buildings, integrated parking, street front windows and entries, and public and private open space or as provided under a separate Specific Plan process.
4.6-I-21	Promote incentives that will provide for density and FAR bonuses for mixed-use development that includes amenities for public benefit, such as workforce housing, pedestrian-oriented facilities (outdoor seating, plazas, weather protection, transit waiting areas), historic preservation, cultural facilities, public art and water features, and open space preservation.
4.6-I-22	Allow for the revitalization and intensification of infill sites within the Bishop Ranch Business Park, consistent with FAR limitations
4.6-I-23	Permit a diverse mix of complementary uses within Bishop Ranch to better meet the daily needs of workers and to reduce the need to travel by automobile. Complementary uses shall be consistent with site zoning, compatible with the primary use and shall not adversely affect the traffic-carrying capacity of adjacent streets.
5.6-I-7	Encourage new development to include a mix of uses and Complete Streets concepts that will allow people to walk and bike between destinations and reduce the amount of automobile vehicle miles traveled.
7.3-I-4	Encourage the development of a variety of housing and recreational opportunities for senior citizens close to City services and facilities, including transportation.
7.3-I-5	Encourage the location of appropriate childcare facilities in residential areas and ensure that such operations are compatible with their surroundings.
11.1-I-7	Offer financial and regulatory incentives to promote a combination of residential, retail, and office uses in areas designated for mixed-use development.
11.4-I-2	Promote a combination of residential, retail, and office uses in areas designated for mixed use.

Emission Reduction Potential: Mixed-use development can provide reductions ranging from 3 to 9 percent, depending on the mix of uses within the project and the associated pedestrian environment. Mixed-use development that is also infill can reduce emissions by 3 to 30 percent (CAPCOA Measures D-9, D-10, and D-12 [see Appendix B]).

Transit Oriented Development

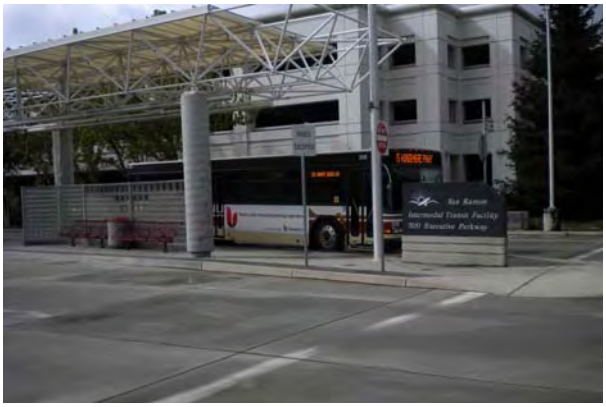
Transit Oriented Development (TOD) refers to residential and commercial centers designed to maximize access by transit and nonmotorized transportation, and with other features to encourage transit ridership. A typical TOD has a rail or bus station at its center, surrounded by relatively high-density development, with progressively lower density spreading outwards one-quarter to one-half mile, which represents pedestrian scale distances (Victoria Transport Policy Institute 2010).

Multi-Modal Transit Center
Source: City of San Ramon

Strategy LU-3 Increase transit orientation in new development and redevelopment areas near current and planned transit facilities.

Existing City Measures

The City is considering relocating the existing transit center to the NCRSP and has included a multimodal transit center in the plans for the City Center project site. This will provide for a transit-oriented environment serving the major new development areas and jobs centers in the City. The City Center project and the NCRSP are transit-oriented. Although the existing transit system relies on buses to provide connections to the BART system and the Altamont Commuter Express, over the long term, there may be opportunities to provide other forms of transit to the City. The General Plan 2030 includes a policy to encourage the use of the Interstate 680 corridor for future connections to BART or for a light rail line.



Bus at Multi-Model Transit Center
Source: Michael Brandman Associates

General Plan Policies

Policy Number	General Plan Policy
2.3-I-18	Prepare and develop the North Camino Ramon Specific Plan (NCRSP) area into a fiscally balanced, transit-oriented mixed-use area that provides for neighborhood and regional retail opportunities lacking in San Ramon and vertical and horizontal mixed-use development in proximity to new and existing jobs.
3.4-I-6	Locate future transit uses, such as light rail or BART, in the I-680 right-of-way.
5.6-I-4	Preserve options for future public transit and alternative transportation uses when designing improvements for roadways such as Bollinger Canyon Road Corridor within Dougherty Valley.
5.6-I-16	Explore opportunities for the location or relocation of a transit center to North Camino Ramon Specific Plan Area to better geographically balance the public transit needs for the City.
5.6-I-19	Encourage infill and Transit Oriented Development (TOD) concepts as a vehicle miles traveled reduction strategy for existing and proposed development.

Emission Reduction Potential: Transit Oriented Development can reduce emissions by 1 to 40 percent. Factors influencing the effectiveness include the type of transit serving the site, the frequency of service, the development density of the site, and the pedestrian connections and environment (CAPCOA Measure D-2 [see Appendix B]).

Pedestrian Oriented Development

Encouraging people to walk, rather than drive, to local destinations requires the integration of safe, human-scale pedestrian access throughout sites. In subdivisions, pedestrian opportunities may be provided in the form of sidewalks throughout a development or walkways linking new development with existing destinations. Within commercial developments, pedestrians should be separated from vehicular traffic through the use of walkways and landscaped buffers that promote a sense of safety and visual appeal that encourage people to walk. Pedestrian circulation should consider not only movement within a site or development, but also access to adjoining development. Increased use of pedestrian walkways between adjoining developments improves traffic safety by allowing people to walk instead of driving to nearby land uses, thereby reducing

Pedestrian-Oriented Commercial Development
Source: Michael Brandman Associates

the number of vehicles turning into and out of streets and commercial driveways along public roads (NHDES 2008).

Strategy LU-4 Increase pedestrian orientation in new development and redevelopment areas.

Existing City Measures

The City Center and North Camino Ramon projects are both pedestrian-oriented designs. The City Center project reflects the City's desire for a downtown and was supported under the previous General Plan 2020, Zoning Ordinance, and Economic Development Strategic Plan. The approved project consists of 2,076,884 square feet of pedestrian/bicycle friendly, mixed use, transit-oriented development.

The NCRSP will create a long-range plan that embodies the smart growth principles for a live-work, transit-oriented, pedestrian and bicycle friendly neighborhood with a sense of identity and will meet the future needs of San Ramon residents.

In 2006, the City adopted the Crow Canyon Specific Plan as a tool to build on previous enhancement efforts and create a new vision for the 128-acre office and service commercial area. The Crow Canyon Specific Plan vision is to create a new pedestrian-oriented, mixed-use community with concentrated commercial and residential uses, while maintaining viable light industrial and service commercial uses wishing to remain.

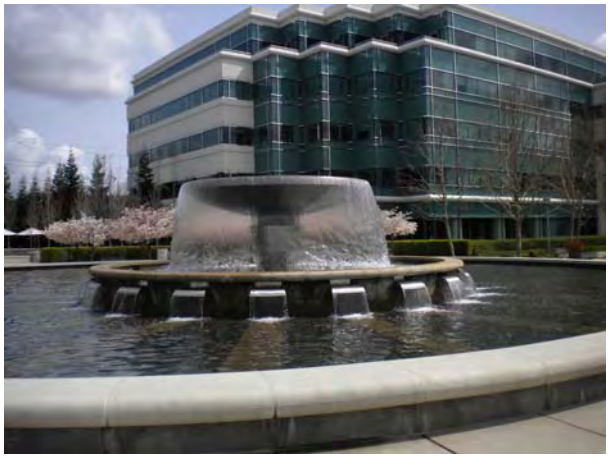
General Plan Policies

Policy Number	General Plan Policy
2.3-I-18	Prepare and develop the North Camino Ramon Specific Plan (NCRSP) area into a fiscally balanced, transit-oriented mixed-use area that provides for neighborhood and regional retail opportunities lacking in San Ramon and vertical and horizontal mixed-use development in proximity to new and existing jobs.
3.4-I-6	Locate future transit uses, such as light rail or BART, in the I-680 right-of-way.
4.8-I-5	Encourage the linkage and integration of new development with existing neighborhoods by means of Complete Streets networks, open space areas, parks, and pathways as a means of enhancing pedestrian and bicycle connections.
5.6-I-17	Encourage "Park Once" concepts as a vehicle miles traveled reduction strategy for mixed-use, commercial, and public facilities through the integration of common design features and shared parking concepts including but not limited to Parking Benefit Districts.
5.6-I-19	Encourage infill and Transit Oriented Development (TOD) concepts as a vehicle miles traveled reduction strategy for existing and proposed development.

Emission Reduction Potential: Pedestrian Oriented Development can reduce emissions by 0.4 to 1.0 percent. Factors influencing walking for making trips include completeness of sidewalks and pedestrian paths, the safety of the walking route from passing traffic, and providing visual interest along the route. Distance to potential walking destinations is the most important factor. Most people will not choose to walk distances greater than one-half mile (CAPCOA Measure D-2 [see Appendix B]).

Jobs/Housing Balance and Affordable Housing

Areas with an ideal jobs/housing balance have adequate employment opportunities at all income levels for the residents of the community and adequate housing opportunities to allow employees to live in the same community where they work. Areas with high housing costs can result in employees making long commutes to access more affordable housing.



High Density Employment Center
Source: Michael Brandman Associates

Providing a housing mix that includes units that meet the State's definition of affordable housing will allow more workers in the community to live near to where they work.

Strategy LU-5 Provide additional workforce housing opportunities in the City to improve the jobs housing balance and to reduce commute distances.

Existing City Measures

The City of San Ramon is a major regional employment center with 40,112 jobs in the planning area in 2009. The planning area population in 2009 was 66,413. The City's largest jobs center, Bishop Ranch, provides employment for about 30,000 people. The jobs/housing ratio was estimated at 1.24 jobs per employed resident in 2009. The significant residential growth provided by the General Plan 2030 and relatively flat jobs growth is expected to result in a nearly balanced ratio of 1.05 by 2030. Affordable housing is an issue in San Ramon as is the case with most of the Bay Area. The City growth areas include opportunities for more multi-family and mixed use development that will provide better affordability.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-6	Encourage housing for San Ramon's resident workforce to improve the match between local employment and local workers.
3.1-I-3	Provide a variety of diverse housing options to accommodate the local employment base, including public service employees.
3.1-I-4	Allocate the number of new housing units according to the City's ability to provide public services and housing needs through the use of adopted performance standards. Refer to Table 3.2-1.
3.1-I-5	Use growth management policies to encourage the construction of workforce housing necessary to meet local housing needs.
3.6-G-1	Promote the opportunity to both work and live in San Ramon through implementation of the Housing Element.
3.6-I-1	Develop and implement housing programs that emphasize the availability of housing for people who work in local jobs.
3.6-I-2	Evaluate the impact of proposed General Plan Amendments on the availability of job and housing opportunities.
3.6-I-3	Prepare a biennial report on the implementation of actions outlined in the Housing Element, for submittal to Contra Costa Transportation Authority as part of the biennial Growth Management Program Compliance Checklist. The report will demonstrate reasonable progress by illustrating how San Ramon has adequately planned to meet the existing and projected housing needs through the adoption of land use plans and regulatory systems which provide opportunities for, and do not unduly constrain, housing development.
4.6-I-10	Provide a wide range of housing opportunities for current and future residents
11.1-G-1	Provide a diversity of housing types and affordability levels within San Ramon to meet the needs of community residents.
11.1-I-3	Facilitate the development of affordable housing throughout the community through use of financial and/or regulatory incentives, where feasible.
11.1-I-4	Negotiate with developers to ensure a portion of future residential development is affordable to extremely low, very low, low, and moderate income households.
11.1-I-5	Maintain a variety of housing types that complements the employment opportunities within the community and encourages a jobs/housing balance.
11.1-I-18	Require commercial development to contribute to the supply of workforce housing through new construction, partnerships with non-profit affordable housing providers, or payment of linkage fees; exempt mixed use development projects from this policy as they are already subject to the 25 percent affordable housing requirement.

Emission Reduction Potential: The reduction from jobs housing balance improvements occur when people live closer to their jobs, reducing the trip length and miles traveled each day for their commute. Estimating the benefit from jobs housing balance is complicated by factors such as housing type preferences, spouse employment location, and job skills mismatches. The regional traffic model accounts for VMT reductions related to jobs

location. Affordable housing provides a reduction of 0.4 percent to 6.0 percent (CAPCOA Measure D-7 [see Appendix B]).

Compact Development

Compact development is a general term for growth patterns that increase density, are contiguous to existing development, and are efficiently served by public infrastructure. Policies that promote infill, redevelopment, mixed use, and higher overall densities promote compact development. Policies that discourage development on hillsides, natural open space areas, and farmland also encourage more compact development.

Strategy LU-6 Promote compact development by protecting open space and hillsides and encouraging infill and redevelopment of underutilized parcels in urbanized areas.

Existing City Measures

The City General Plan 2030 provides strong protections for open space areas adjacent to the community and does much to foster increased density, infill, mixed use. The City is fortunate to have outstanding open space resources that provide logical limits to urban development to the west of the City. San Ramon has preserved steep hillsides and ridges in the area. West of the City, undeveloped land, including peaks rising 1,400 feet above the valley floor, form an impressive backdrop for San Ramon. Several specific plans throughout the City (Westside, Dougherty Valley, and Northwest) reflect the importance of open space protection in the City by setting aside a significant amount of their respective plan areas as open space. There are more than 3,500 acres of open space within the City limits, including portions of Dougherty Valley, set aside as a condition of development approval, much of which is located on the open ridges and hills that ring the valley.

Bishop Ranch Park
Source: East Bay Regional Parks District

The General Plan 2030 reduces the area where growth will be allowed and focuses on infill and mixed-use development in new growth areas.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-17	Pursue alternative funding sources to secure and maintain open space and park facilities in San Ramon.
3.1-G-1	Manage the City's growth in a way that balances existing and planned transportation facilities, protection of open space and ridgelines, provision of diverse housing options, and the preservation of high quality community facilities and services.
3.1-I-2	Work with Contra Costa County and appropriate agencies to preserve, protect and enhance open space and ridgelines within the City's Planning Area, and to establish contiguous open space areas along the edges of San Ramon.
3.1-I-7	Allow urban development only within the City's Urban Growth Boundary (see Implementing Policies 4.6-I-1 through 4.6-I-5) and only in accord with a plan for full urban services (police, fire, parks, water, sanitation, streets and storm drainage) to which all providers are committed.
8.3-G-1	Acquire, preserve, and maintain open space and its natural resources for future generations.
8.3-G-2	Strengthen the City's partnership with East Bay Regional Parks District, Contra Costa County, other jurisdictions and private organizations to expand the ridgeline and hillside open space system in the City's Planning Area.
8.3-I-13	Develop viewshed criteria to determine how to manage views of the natural hillsides surrounding San Ramon.
8.3-I-14	Develop and adopt regulations for the protection and preservation of hillsides, creeks, and ridgelines.
8.4-G-1	Expand the ridgeline and hillside open space system in the City's Planning Area by joint efforts with East Bay Regional Parks District, Contra Costa County and nonprofit trustee agencies.
8.4-I-1	Confer with appropriate agencies and organizations in the creation of an institutional framework and financing mechanisms necessary to acquire additional ridgeline areas and agricultural lands, and to preserve, restore, and manage important open space.
8.4-I-2	Encourage developers to explore Transfer of Development Rights (TDRs) in conjunction with project review to cluster residential development and preserve open space, ridgelines, and creek corridors.
8.4-I-6	Use open space in new development to create buffers that delineate the edge of urban areas.
8.4-I-10	Continue planning and managing ridgelines, agricultural lands, and open space acquired by the City or other Open Space areas through the Geologic Hazard Abatement District(s) and the Dougherty Valley Open Space Management Plan.
8.4-I-11	Provide incentives for clustering of allowable residential use on infill open space sites to avoid unnecessary grading and site development inconsistent with Plan policies for open space and resource conservation.

Policy Number	General Plan Policy
11.4-I-1	Utilize the Urban Growth Boundary as a tool to focus the provision of diverse housing options within proximity to the local employment base, community services, and public transportation opportunities.

Emission Reduction Potential: Compact development provides emission reductions by reducing travel distances and promoting higher density development that generates fewer vehicle trips. Increasing density can result in emission reductions of 1 to 12 percent (CAPCOA Measure D4).

4.3 - Transportation Infrastructure and Facilities

Transit Facilities

Transit facilities include items such as bus stops, lighting, bus turnouts, multimodal transfer centers, and information kiosks. These facilities increase the convenience of using transit and minimize impacts on traffic flow from buses re-entering the roadway.

Strategy T-1 Provide transit facilities and services that improve transit mode share.

Existing City Measures

The City requires new developments to provide transit facilities at strategic locations. The City works in cooperation with transit providers to identify the best locations and the appropriate support facilities to maximize transit use. The City has an existing multi-modal transit center and has proposed a new regional transit facility in the City Center area. The San Ramon Transit Center, located along the Iron Horse Trail at the corner of Executive Parkway and Camino Ramon, provides commuters with 54 parking spaces to meet a carpool, vanpool, or bus. Bike lockers are available to lease on a monthly basis, and bike racks are available on a first-come first-serve basis.

General Plan Policies

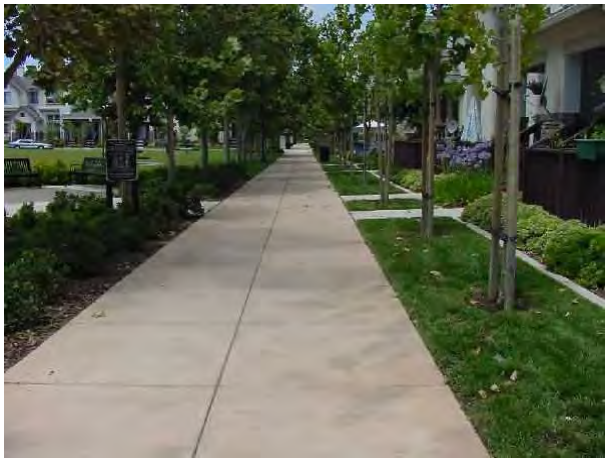
Policy Number	General Plan Policy
3.3.I-7	Support regional and local neighborhood transit options to reduce the use of the automobile and maintain acceptable traffic levels of service.
3.4-I-3	Cooperate with regional and local service providers and other jurisdictions to promote local and regional public transit service.
3.4-I-4	Support local feeder transit service to and from current and future regional transit lines.
3.4-I-5	Preserve options for future transit use when designing improvements for roadways.

Policy Number	General Plan Policy
3.4-I-6	Locate future transit uses, such as light rail or BART, in the I-680 right-of-way.
5.6-I-1	Cooperate with regional and local service providers and other jurisdictions to promote local and regional public transit service in San Ramon as part of a multimodal and Complete Streets strategy.
5.6-I-3	Encourage additional local bus or other public transportation service providers to and from regional transit lines. Bus service or other public transportation services should be included under the Initial Level of Development as part of the Dougherty Valley area. The City shall consistently strive to improve the transit service to and from San Ramon including the annexed areas of Dougherty Valley.
5.6-I-4	Preserve options for future public transit and alternative transportation uses when designing improvements for roadways such as Bollinger Canyon Road Corridor within Dougherty Valley.
5.6-I-5	Support future transit uses within the I-680 corridor right-of-way.
5.6-I-9	Encourage employers and commercial complexes to emphasize public transit services or private alternatives to the single-occupant vehicle.
5.6-I-10	Work with transit providers to situate transit stops at convenient and safe locations.
5.6-I-11	Promote increased transit ridership through the use of Transportation Management Associations and other employer-based transit programs, equip buses with bike racks, and making transit information readily accessible.
5.6-I-15	Work with local transit providers to increase and expand weekend transit service.
5.6-I-16	Explore opportunities for the location or relocation of a transit center to North Camino Ramon Specific Plan Area to better geographically balance the public transit needs for the City.

Emission Reduction Potential: Transit support facilities can reduce emissions by 1 to 2 percent by increasing walking and bicycling (CAPCOA Measure T-7).

Pedestrian Connections

Pedestrian connections can be improved through the construction of sidewalks and pedestrian paths connecting frequently accessed destinations such as schools and shopping areas with housing and restaurant and commercial services with office developments. Another example is the removal of barriers to walking, such as the construction of pedestrian bridges over busy streets. Enhancing the pedestrian experience by providing adequate width for side-by-side walking, shade, and visual interest should be a part of all pedestrian projects.



Pedestrian Connection with Housing, Park, and Commercial
Source: Michael Brandman Associates

Strategy T-2 Provide pedestrian connections in new and existing development to improve pedestrian mobility and accessibility.

Existing City Measures

The City's current development standards require projects to include pedestrian improvements. The City Center and North Camino Ramon projects are designed with the pedestrian in mind. As part of roadway improvement projects, the City can identify pedestrian routes located along roads that can be upgraded to include sidewalks on both sides where they are not currently present.

Policy Number	General Plan Policy
5.7-I-9	Require roadway improvement projects to minimize both temporary and permanent reductions in bicycle and pedestrian mobility and/or accessibility.
5.7-I-10	Work with neighboring jurisdictions to ensure that continuity in bicycle and pedestrian networks is provided at jurisdictional boundaries.
5.7-I-11	Work with Caltrans and other appropriate agencies to improve bicycle and pedestrian mobility and safety at freeway crossings.
5.7-I-12	Promote educational efforts about traffic laws and safe practices for all modes of transportation.
5.3-G-1	Encourage transportation facilities that consider the users' safety and allow for all modes of travel based on local conditions and needs of the community.
5.3-I-1	Develop Complete Streets Guidelines that establish local review and assessment criteria and encourage development of a multimodal transportation network to meet community needs.
5.3-I-2	Implement Complete Streets principles, as appropriate, for new roadway design and significant roadway rehabilitation.
5.3-I-4	Encourage Complete Streets concepts as a vehicle-miles-traveled (VMT) and greenhouse gas reduction strategy.

Emission Reduction Potential: Areas with good pedestrian connection and access can reduce emissions by 1 to 10 percent by increasing walking and bicycling (CAPCOA Measure T-5).

Bicycle Infrastructure

Bicycle facilities that provide clearly marked lanes on roadways or separate bike paths and trails can increase the safety of cyclists and encourage increased use of this mode of travel. The City has an extensive system of bike paths, lanes, and trails. Incomplete bicycle networks, narrow choke points on roadways, and freeway interchanges create barriers to cycling.

Cyclists have a wide range of abilities and travel at different speeds. Some prefer off-road paths and trails completely separated from traffic and may travel at relatively slow speeds. The Tri-Valley area is also home to many cyclists that are capable of traveling at fast speeds and are comfortable riding with traffic. On-road bike lanes often provide the fastest, most direct route and experience fewer conflicts with pedestrians and family riders.

Strategy T-3 Provide a safe and well-connected system of bicycle paths, lanes, and trails to increase bicycle use.

Existing City Measures

Bicycle and Pedestrian Path
Source: City of San Ramon

The General Plan 2030 includes numerous policies supporting and improving on the City's bicycle infrastructure of all types to serve cyclists of all abilities. Bicycling and walking are key elements of San Ramon's circulation system. The City has an extensive network of bikeways, sidewalks, and trails that enhance neighborhood accessibility and help to reduce reliance on the automobiles. The City's local bicycle and pedestrian network is a key component of the Countywide Bicycle and Pedestrian Plan. In June 2009, CCTA released a draft revision to the 2003 Countywide Bicycle and Pedestrian Plan for public comment. The Draft Plan builds on local plans and, once adopted, will create a countywide policy document for the management of bicycle and pedestrian circulation.

In 2007, the City of San Ramon—in coordination with Contra Costa County, CCTA, the Town of Danville, and East Bay Regional Park District—developed the San Ramon Valley Iron Horse Trail Bicycle Pedestrian Corridor Concept Plan. The Plan studied the feasibility of constructing bicycle/pedestrian overcrossings along the Iron Horse Trail as an alternative to the at-grade crossings at Sycamore Valley, Crow Canyon, and Bollinger Canyon Roads. The primary goal in the implementation of these overcrossings would be to:

- Improve pedestrian and bicyclist safety
- Improve traffic flow on trails and streets
- Facilitate alternative means of transportation
- Increase recreational opportunities
- Facilitate healthier lifestyles
- Cultivate appreciation of the natural world

The Corridor Concept Plan established the basic scope and feasibility and is the first step in the process of evaluating and implementing pedestrian overcrossings at the proposed San Ramon locations. To move these projects forward, it will be necessary to secure additional funding for development of improvement plans and ultimately construction of the projects.

The Iron Horse Trail provides access to Central Park, the Bishop Ranch Business Park, Iron Horse Middle School, Montevideo Elementary School, Walt Disney Elementary School California High School, and residential neighborhoods. The trail will be linked to the City Center project and is anticipated to serve as an important corridor within the North Camino Ramon Specific Plan. The San Ramon Valley Iron Horse Trail Bicycle and Pedestrian Corridor Concept Plan includes overcrossing proposals to improve movement along the Iron Horse Trail, minimize delays and improve safety for cyclists and pedestrians at major arterials. Future development proposals along the trail corridor should identify connection points and amenities (benches, landscaping, signage, etc.) as appropriate.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-13	Encourage and facilitate non-motorized means of transportation to business areas.
3.4-I-7	Improve and expand the bicycle routing system in San Ramon.
5.7-G-1	Encourage bicycling and walking as alternatives to driving consistent with Complete Streets concepts.
5.7-I-1	Establish a network of on- and off-street bicycle routes to encourage their safe use for commute, recreational, and other trips. Improve and expand bicycle routes for commuters in San Ramon.
5.7-I-2	Develop bicycle routes that provide access to regional employment centers, shopping centers, public facilities, transit centers, schools and parks.
5.7-I-3	Continue to emphasize the Iron Horse Trail as a major north-south route for non-motorized transportation by improving connectivity and enhancing amenities for bicyclists and pedestrians.
5.7-I-5	Continue to promote and implement through the development review process, continuous circulation facilities within Bishop Ranch Business Park, commercial districts, and residential neighborhoods to enhance connectivity and promote pedestrian and bicycle modes of transportation consistent with Complete Streets concepts.
5.7-I-7	Adopt a local or regional Bicycle Master Plan that considers sources of statewide funding for bicycle programming.
5.7-I-8	Implement the San Ramon Valley Iron Horse Trail Corridor Concept Plan by refining the design alternatives and pursue funding through grants, public/private partnerships and other funding sources as appropriate.
5.7-I-9	Require roadway improvement projects to minimize both temporary and permanent reductions in bicycle and pedestrian mobility and/or accessibility.

Policy Number	General Plan Policy
5.7-I-10	Work with neighboring jurisdictions to ensure that continuity in bicycle and pedestrian networks is provided at jurisdictional boundaries.
5.7-I-11	Work with Caltrans and other appropriate agencies to improve bicycle and pedestrian mobility and safety at freeway crossings.
5.7-I-12	Promote educational efforts about traffic laws and safe practices for all modes of transportation.

Emission Reduction Potential: Cities with the best bicycling conditions have achieved bicycle mode shares of 10 to 25 percent. More typically, cities achieve mode shares of 1 to 2 percent. The Bay Area had a bicycling mode share for all trips of 1.5 percent in 2000. Contra Costa County had a bicycling mode share of less than 1 percent in 2000 (MTC 2005). A doubling of bicycling to 2 percent should be feasible, especially in new pedestrian- and bicycle-oriented areas of the City.

Traffic Calming

Traffic calming refers to various design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway. Traffic calming policies and/or projects can range from educational efforts such as increased signage to minor modifications of an individual street to a more comprehensive redesign of a road network. Traffic calming changes streetscape design to give greater emphasis to pedestrians, cyclists, and residents. Infrastructure projects often involve reallocating road space to increase the portion of right-of-way devoted to bicycle lanes, sidewalks, and greenspace. Some features, such as wider sidewalks and improved crosswalks, support universal design objectives (making transportation systems accommodate people with disabilities and other special needs). Street reclaiming emphasizes action by neighborhood residents to change the way their streets are perceived and used to better accommodate nonmotorized activities (Victoria Transport Policy Institute 2010).

Traffic calming can result in lower air pollutant emissions, when measures smooth traffic flow or reduce queuing and associated engine idling and accelerations. Traffic calming measures that enhance safety for pedestrians and bicyclists can encourage greater use of these modes for more trips and can reduce motor vehicle emissions

Strategy T-4 Use traffic calming measures to improve traffic flow, pedestrian orientation, and bicycle use.

Existing City Measures

The City currently operates several programs that help to calm traffic. The Residential Traffic Calming (RTC) Program is the most extensive program. The objectives for the San Ramon RTC Program are:

1. Single point of contact for residents concerned about traffic calming issues
2. Increase awareness on the part of residents and drivers about their obligation to be good neighbors when driving through residential neighborhoods
3. Enhance pedestrian, bicycle, and vehicle traffic safety on neighborhood streets
4. Increase quality of life for residents, including reduced traffic noise, decreased air pollution, etc.

General Plan Policies

Policy Number	General Plan Policy
5.1-I-6	Implement the following transportation programs: the Transportation Demand Management Program (TDM Program), Street Smarts Traffic Safety Program, the Residential Traffic Calming Program, the Safe Routes to School Program, TRAFFIX Program and the Engineering Services Department's Traffic Engineering component.
5.1-I-7	Implement a School Traffic Calming Program to address access and safety issues on streets adjacent to schools in San Ramon.
5.5-I-1	Implement residential traffic calming measures, as warranted, and police enforcement to mitigate speeding and other traffic impacts in residential areas of the City.

Emission Reduction Potential: Traffic calming can reduce emissions by 1 to 10 percent by increasing walking and bicycling (CAPCOA Measure T-8).

Electric Vehicles and Low Emission Vehicles

Electric vehicles and alternative fueled vehicles produce less greenhouse gas emissions than their gasoline and diesel powered counterparts. The City can encourage their use through its example and by providing supportive infrastructure such as battery charging stations.

Neighborhood electric vehicles (NEV) are street-legal, low-speed (25 to 30 miles per hour) passenger vehicles that can operate on local streets. Developments designed with EV

accessibility in mind may have separate travel lanes for EVs similar to bike lanes or have low speed limits that allow the NEV to drive with other vehicle traffic.

Strategy T-5 Increase the use of low and zero emission vehicles.

Existing City Measures

Alternative Fuel Vehicles for Municipal Operations: San Ramon has been adding alternative fuel vehicles to its fleet since 1999. The San Ramon Public Services Department utilizes a fleet of 16 compressed natural gas (CNG)-powered pick-up trucks to assist in maintaining public parks, streets, drainage, signals, lights, facilities, and landscaping. These trucks are fueled by CNG stations located at the Public Services Corporation yard. The Public Services Department also utilizes six electric-powered golf carts/gem cars for park maintenance operations. The department is investigating other alternative fuels, such as biodiesel, and it purchased a gas/electric hybrid pickup truck in 2009.

In addition, of the 14 vehicles that the City's franchised garbage hauler uses to collect residential and commercial garbage, recyclables, and yard trimmings in San Ramon are CNG-powered. The franchise agreement allows the City to require that the hauler utilize additional alternative fuel collection vehicles as its older diesel vehicles are gradually replaced.

Natural gas vehicle fuel provides lower emissions than gasoline and diesel, including a 25-percent reduction in greenhouse gases (EPA 2003).

Areas of the City with speed limits below 25 miles per hour could be candidates for neighborhood electric vehicle (NEV) use. Additional research is needed to determine if actions by the City are warranted to promote the use of NEVs.

General Plan Policies

Policy Number	General Plan Policy
12.6-I-2	City fleet vehicle operators shall be encouraged to develop and maintain a fiscally sound inventory and priority schedule to replace or convert existing conventional fuel vehicles with clean fuel vehicles as new vehicles are purchased and existing vehicles are retired from service.

Emission Reduction Potential: Electric vehicles produce about 77 percent less greenhouse gas emissions per mile than a similar gasoline powered vehicle, including emissions associated with the electrical power generation. NEV accessibility can reduce emissions by 0.5 to 1.5 percent by encouraging the use of these vehicles for short neighborhood trips (CAPCOA Measure D-6).

Transportation Demand Management

Office complexes with large numbers of employees at a single site can achieve substantial reductions in vehicle trips and greenhouse gas emissions through the use of Transportation Demand Management (TDM) measures. The term "TDM" refers to measures designed to reduce automobile traffic in order to improve air quality and reduce traffic congestion. These measures include public transit, telecommuting, compressed workweeks, carpooling, vanpooling, walking, bicycling, and incentives to increase the use of these alternatives. TDM has become increasingly important in maintaining acceptable traffic levels of service in the Tri-Valley and elsewhere in the Bay Area.

Strategy T-6 Improve the effectiveness of existing Transportation Demand Management Programs and ensure that new developments with large employee concentrations implement TDM Programs.

Existing City Measures

San Ramon has long recognized the need to reduce the use of single-occupant vehicles to achieve improved traffic levels of service and regional air quality. Since 1989, the City's TDM program has demonstrated the ability to maintain one of the lowest drive-alone rates of all Contra Costa County jurisdictions and has a high number of vanpools with a San Ramon destination. The City's TDM Program receives guidance from the Transportation Demand Management Advisory Committee consisting of local business representatives. The committee provides a unique opportunity for the public and private sectors to work together toward the common goal of reducing traffic congestion and improving air quality.

Transportation Management Associations: Privately implemented Transportation Management Associations (TMAs) are an important part of San Ramon's transportation strategy. One award-winning example is the Bishop Ranch TMA. Sunset Development has taken a leadership role in the formation of an award-winning TMA comprised of employers in Bishop Ranch. In addition, Sunset Development has addressed the transit needs of the Bishop Ranch commuters and surrounding area. The Bishop Ranch Transportation Management Association has enhanced traffic flow, reduced traffic, and eased employee commuting. Notable achievements include:

- A 33-percent reduction in daily vehicle traffic to Bishop Ranch and a 40-percent reduction in peak-hour traffic
- More than $2 million in transit passes distributed annually to Bishop Ranch employees
- More than 230,000 annual passenger trips on the Bishop Ranch Express Buses

- Elimination of approximately 11,000 cars annually from the roads through use of the various transportation services available (express buses, carpools, vanpools, trains/light rail, biking, and walking)

The "drive-alone" rate for California is approximately 85 percent. By contrast, the Bishop Ranch tenant drive-alone rate is just 65 percent. This success has been recognized nationally, regionally, and locally, and has been acclaimed as the best transportation program offered by a business park in the United States.

The Bishop Ranch Transportation Center offers services and detailed analysis for Bishop Ranch customers and prospects, including:

- Express buses connecting Bishop Ranch's San Ramon campus with Bay Area public transit
- Employee commute planning
- Employment base review
- Relocation assistance referrals
- Commute shed analysis
- Personalized commute planning assistance
- Free bus passes connecting to the BART rail service worth approximately $1,000 per year per employee
- Incentive programs*
- Access to the Guaranteed Ride Home program ticket sales for Bay Area public transportation*
- Commuter alerts

* Incentive programs (carpool, vanpool, and guaranteed ride home are funded in part by the City of San Ramon/511 Contra Costa, and the Bay Area Air Quality Management District.

The City will use Bishop Ranch as the model for other large developments to follow for their transportation demand management programs.

General Plan Policies

Policy Number	General Plan Policy
2.3-I-12	Promote and encourage public transit, carpool and vanpool opportunities into San Ramon's business areas including Bishop Ranch, Crow Canyon business area, and the San Ramon Valley Boulevard business area.
3.3-G-1	Maintain acceptable traffic level-of-service on City streets and roadways through implementation of Transportation Demand Management (TDM), Growth Management, the Capital Improvement Program, and traffic engineering operational measures.

Policy Number	General Plan Policy
3.4-G-1	Utilize Transportation Demand Management (TDM) strategies to reduce total vehicle trips on San Ramon streets, and to contribute to regional air quality improvement and effective growth management.
3.4-I-1	Continue to implement the City's TDM Program to reduce trip generation.
3.4-I-2	Work with 511 Contra Costa, other jurisdictions and agencies to coordinate the City's TDM Program with regional TDM programs and activities.
5.1-I-6	Implement the following transportation programs: the Transportation Demand Management Program (TDM Program), Street Smarts Traffic Safety Program, the Residential Traffic Calming Program, the Safe Routes to School Program, TRAFFIX Program and the Engineering Services Department's Traffic Engineering component.
5.2-I-5	Emphasize regional transportation demand management and trip reduction strategies as alternatives to improvements to existing facilities and the construction of new facilities.
5.3-I-3	Coordinate the implementation of Complete Streets concepts, as appropriate, with ongoing transportation and congestion relief programs such as the TDM Program, Street Smarts Traffic Safety Program, Residential Traffic Calming Program, Safe Routes to School Program and TRAFFIX Program.
5.4-I-7	Minimize congestion on arterials by fully implementing the policies in the Complete Streets, Transportation Demand Management, and Transit section of the Circulation Element.
5.6-G-2	Encourage trip reduction measures in an effort to reduce vehicle miles traveled improve air quality and reduce greenhouse gas emissions.
5.6-I-2	Encourage and assist major employers and commercial complexes to reduce the number of single-occupant vehicles by participating in the City's TDM programs.
5.6-I-6	Work with other jurisdictions and agencies to coordinate the City's TDM programs with regional plans that are aimed at reducing traffic congestion and improving air quality.
5.6-I-8	Support alternative public transportation programs and obtain funding for new TDM projects or programs.
5.6-I-13	Work with the San Ramon Valley Unified School District and other appropriate agencies and organizations to reduce vehicle trips through the provision of transit programs and promoting carpooling, bicycling, and walking.

Emission Reduction Potential: Transportation Demand Management measures are designed to reduce employee trips. Emission reductions range from 1 percent to as high as 28 percent. Locations with the best combination of transit and pedestrian orientation including high-frequency transit service would achieve the highest reduction (CAPCOA Measure T-19).

End of Trip Facility Measures

End of trip facilities include items such as showers and lockers for people who bicycle to work, secure bike parking, onsite services (dry cleaning, cafeterias) to reduce trips for

errands and lunch. These facilities help to increase the effectiveness of transportation demand management programs.

Strategy T-7 Require projects to provide facilities that make travel by bicycle and transit more convenient.

Existing City Measures

Bike racks and lockers are available at the San Ramon Transit Center, the Bollinger Canyon Road and San Ramon Valley Park and Ride lot, and the Sycamore Park and Ride lot in Danville. Bike lockers are covered; secured; and can be rented monthly, quarterly, or yearly. A new parking lot with commuter parking and bike lockers is scheduled to open in the Dougherty Valley in late 2010. Bike racks are available on a first-come, first-served basis.

General Plan Policies

Policy Number	General Plan Policy
5.7-I-4	Require bicycle parking, storage and other support facilities as part of any new office and retail developments and public facilities.

Emission Reduction Potential: End of trip facilities can reduce emissions by 1 to 5 percent. This measure would require implementing multiple items at an employment site or multi-family development to achieve the highest reductions (CAPCOA Measures T-2 and T-3).

Parking Measures

The supply and cost of parking can significantly change people's choice of travel mode. The design of parking facilities can have substantial impact on pedestrian orientation and compact development. Relatively small parking fees can cause significant travel impacts and provide significant reductions in vehicle travel (Victoria Transport Policy Institute 2010). Use of parking structures consumes less land for parking and makes walking distances shorter, thus encouraging walking between uses. Surface parking lots placed behind buildings or in shared civic parking facilities create a more pedestrian-oriented streetscape.

Strategy T-8 Use parking facility designs and parking management to reduce vehicle trips.

Existing City Measures

The Bishop Ranch development includes structured parking in some portions of the complex. The City Center project is intended to make that area more pedestrian-oriented.

Structured parking is one measure proposed for the City Center to improve pedestrian orientation.

Park and Ride Lot
Source: Caltrans

The City has park and ride lots available for area commuters. These lots are available for commuters to meet carpools, vanpools, and buses. The Bollinger Canyon Road/San Ramon Valley Park & Ride provides 100 parking spaces. The Park and Ride lot located at the northeastern corner of I-680/Sycamore Valley Road interchange provides approximately 240 parking spaces, a bus transfer station, and a carpool staging area. A new joint-use, 56-space park and ride lot and dog park in Dougherty Valley is anticipated to be completed in late 2010.

General Plan Policies

Policy Number	General Plan Policy
5.6-I-12	Coordinate with Caltrans and transit providers to identify and implement park and ride lots with convenient access to public transit.
5.6-I-14	Consider the construction of public parking facilities in the City Center, North Camino Ramon Specific Plan, or other commercial areas to serve projected parking demand, while carefully balancing the need for adequate parking against the desire to minimize traffic growth and create a pedestrian/bicycle friendly environment using Complete Streets design concepts.
5.6-I-17	Encourage “Park Once” concepts as a vehicle miles traveled reduction strategy for mixed use, commercial, and public facilities through the integration of common design features and shared parking concepts including but not limited to Parking Benefit Districts.
5.6-I-18	Encourage shared parking facilities and parking reductions for compatible land uses to minimize excessive parking to reduce inefficient use of land, unnecessary pavement and stormwater runoff, and encouraged alternative transportation and reductions in Vehicle miles traveled.

Emission Reduction Potential: Parking measures are highly effective at reducing vehicle trips and increasing average vehicle ridership. Parking measures can achieve reductions from 1 percent to as high as 30 percent, depending on the availability of other transportation options, the distance to transit, the quality of transit, and the cost of parking (CAPCOA Measure T-9).

Strategy T-9 Provide vehicle support infrastructure to encourage use of low and zero emission vehicles

Existing City Measures

Infrastructure that improves the convenience of using low-emission and alternative-fuel vehicles is important for encouraging wider adoption of these technologies. Providing convenient access to electric vehicle charging stations and tire stations for inflating tires to optimal pressures are two examples. The City currently has compressed natural gas (CNG) fueling capability for its fleet.

Electric vehicle charging stations partially funded by 511 Contra Costa have been installed in several Contra Costa County cities to encourage the use of plug-in electric vehicles. San Ramon will consider charging stations in new City projects and where appropriated as part of the design review process.

General Plan Policies

Policy Number	General Plan Policy
5.6-I-8	Support alternative public transportation programs and obtain funding for new TDM projects or programs.
12.6-I-5	Construct infrastructure and facilities that encourages the use of alternative modes of travel, including a safe and comprehensive bicycle and pedestrian system that connects all parts of the City.
12.7-G-1	Minimize air emissions and potential climate change impacts related to energy consumption in government operations and land use activities.

Emission Reduction Potential: Electric vehicles produce about 77 percent fewer greenhouse gas emissions compared with gasoline-powered vehicles accounting for California electricity generation emissions. Charging facilities reduce concern about running out of power on the return trip, thereby encouraging their use. Keeping tires inflated to manufacturers' specifications improves the rolling efficiency of the vehicle and would reduce fuel consumption by about 0.6 percent. CARB has adopted tire inflation regulations that require tires to be checked at each service. Conveniently located tire stations will encourage individuals to keep tires inflated between services (CAPCOA Measure E11 [see Appendix B]).

4.4 - Energy Conservation and Alternative Energy

Energy Efficiency in New Buildings and Facilities

Energy consumption in buildings and facilities is the second largest source of greenhouse gases in the City's emission inventory. Improving energy efficiency in new and existing

buildings and facilities provides one of the most cost-effective strategies for reducing greenhouse gases, because the energy savings can pay for the cost of the upgrades and retrofits over time.

The California Strategic Energy Plan contains the very ambitious goal of making all new homes zero net energy consuming homes by 2020 and all commercial buildings net zero energy consuming by 2030. The State's plan defines net zero energy buildings as buildings that over the course of a year produce as much power as they consume. This is achieved by making the building as energy efficient as possible and providing onsite or nearby renewable power generation with solar panels or wind generators. The plan relies on voluntary and mandatory actions to achieve the goal. The State would strengthen Title 24 energy efficiency standards every few years and would include voluntary tiers that exceed the mandatory requirements. The plan anticipates voluntary participation in constructing buildings that exceed Title 24 by 35 percent better than the 2005 standard by 2012, and by 55 percent better by 2016. The Strategic Energy Plan states that cities and counties can lead by example by embracing energy efficiency in their facilities.

Strategy E-1 Increase the use of energy conservation features, renewable sources of energy and low-emission equipment in new and existing development projects within the City.

Existing City Measures

The City currently recommends the use of the Green Building Guidelines for all residential projects. The Green Building Guidelines were developed through a partnership among local developers, architects, contractors, green building experts, and staff of the Alameda County Waste Management Authority and Recycling Board with input from Contra Costa County communities. The Guidelines offer:

- Cost-effective suggestions to minimize construction-related waste, create healthier and more durable homes, reduce operating costs for homeowners, and support local manufacturers and suppliers of resource-efficient building materials.
- Methods to reduce the impacts of building in Contra Costa County communities; including solid waste management, water conservation, energy efficiency and resource conservation.

The City enforces Title 24 standards in its role as building official. The City reviews all building plans for compliance and City Building Inspectors ensure that buildings are constructed to code.

San Ramon Municipal Code Title B, Division B6, Chapter XIII and related Construction and Demolition Debris Program Guidelines require building and demolition permit applicants and authorized haulers of construction and demolition debris to re-use, recycle, compost, or otherwise divert from landfill disposal at least 50 percent of the debris generated by covered projects within the City of San Ramon.

The City will be constructing new civic buildings as part of the City Center project. The City has committed to achieving energy efficiency goals as measure by a Leadership in Energy and Environmental Design (LEED) Silver rating for the project. LEED is an internationally recognized green building certification system that rates buildings by a broad array of sustainability measures.

In 2009, San Ramon completed replacing all incandescent traffic signal heads with LED lamps in order to conserve energy and reduce greenhouse gas emissions. In 2009, the City tested four LED streetlights. San Ramon intends to convert all streetlights to LED or other available energy-efficient technology as funding allows. During 2011, the City will convert approximately 600 high-pressure sodium (HPS) streetlight fixtures to LED replacements. San Ramon will also seek to convert all parking lot lighting at city parks and facilities to LED, induction, or other energy-efficient lighting technologies. San Ramon is working with developers in the Dougherty Valley to request that any new streetlights that are installed are fitted with LED lamps.

General Plan Policies

Policy Number	General Plan Policy
11.4-G-1	Promote energy conserving practices in the location, construction, renovation, and maintenance of San Ramon's housing units.
11.4-I-3	Allow minor variations in building setbacks and/or solar orientation during Plan Review to increase energy efficiency of new housing units.
11.4-I-4	Enforce the State's energy conservation standards for new residential construction and renovations to existing structures.
11.4-I-5	Encourage innovative designs to maximize passive energy efficiencies, while retaining compatibility with surrounding neighborhoods.
11.4-I-6	Disseminate information and support efforts by public utilities to encourage home conservation practices.
12.7-I-1	Increase the use of energy conservation features, renewable sources of energy and low-emission equipment in new and existing development projects within the City.
12.7-I-2	Encourage the use of solar-ready roofs into residential and commercial development. New residential development should include proper solar orientation (south-facing roof area sloped at 20° to 55° from the horizontal), clear access on the south sloped roof (no chimneys, heating vents, plumbing vents, etc.), electrical conduit installed for solar electric system wiring, plumbing installed for solar hot water systems, and space provided for a solar hot water storage tank. Roofs for commercial development should be designed to maximize potential area available

Policy Number	General Plan Policy
	for solar panels and provide electrical conduit to support future installation.
12.7-I-3	Promote urban forestry projects that shade buildings homes, streets, pedestrian walkways, and urban core areas to reduce surface and ambient temperatures and reduce energy required for cooling.
12.7-I-6	Support ongoing efforts with the Green Affordable Housing Coalition (GAHC), building industry, water and utility districts and the BAAQMD to promote enhanced energy conservation and sustainable building standards for new construction.
12.7-I-7	Work with local water and energy utilities and the building industry to develop or revise City design standards relating to solar orientation water use, landscaping, use of cool paving surfaces, parking lot shading and such other measures oriented towards reducing energy demand

Emission Reduction Potential: Energy conservation measures reduce emissions proportionately with the percentage improvement in energy efficiency. Buildings that are 20 percent more efficient than required by regulation would achieve a 20-percent reduction in emissions from electrical generation.

Water Conservation and Reuse

Water and energy are integrally tied to California's economy. The Energy Commission estimates that approximately 19 percent of all electricity and 30 percent of non-power plant natural gas (i.e., natural gas not used to generate electricity) used in California is for the conveyance, treatment, distribution, and end use of water. Alternatively, 21 percent of the state's electricity is generated by clean hydropower (CAT Report 2008).

In general, when a unit of water is saved, so too is the energy required to move, treat, deliver, use, and dispose of that unit of water. Strategies for this sector address issues such as water recycling, water end use conservation and efficiency, reducing the energy required for water systems and using renewable energy in that system where practical. Location, elevation, water source, water use sector, water application, quality and energy source, among other factors, are factors that should be considered when addressing the water-energy interface (CAT Report 2008).

East Bay Municipal Utility District (EBMUD) and Dublin San Ramon Services District (DSRSD) provide potable water service to San Ramon. EBMUD generally serves the northern, western, and central portions of San Ramon, while DSRSD serves all of the Dougherty Valley, with the exception of the Gale Ranch Phase 1 Development.

Strategy E-2 Reduce energy use from the transport and treatment of water.

Existing City Measures

EBMUD has a comprehensive Water Conservation Program in place that includes both supply- and demand-side measures, including audits, incentives, optimal management practices, wastewater and landscape regulations, education programs, support activities, metering, and leak detection and pipe replacement. EBMUD also recommends that local cities require water conservation measures as a standard feature in the design and construction of proposed development projects.

In 2006, state legislation (AB 1881, Laird, 2006) required the Department of Water Resources to adopt an updated Model Water Efficient Landscape Ordinance (MWELO). In 2009, the State Department of Water Resources adopted an updated model ordinance, which became effective January 1, 2010. As a result, the City of San Ramon requires new development and remodels of existing landscapes meeting the size criteria of the ordinance to meet the State Model Water Efficient Landscape Ordinance in an effort to conserve landscape water use.

Water reclamation can also significantly reduce water demand and storage requirements. Reclaimed water is used most effectively for irrigating areas such as parks, greenbelts, golf courses, roadway medians, and front yards. The EBMUD and DSRSD have provided an increasing amount of recycled water throughout their service area within San Ramon. Additionally, groundwater has the potential to reduce demand on municipal supplies, although the characteristics of the aquifer and its water table in the San Ramon Planning Area are variable.

San Ramon has been trying to do its part since 1989, when the City began installing a computerized irrigation management system that can be adjusted to water automatically based on weather conditions and can be centrally monitored by Public Services staff. In addition, at least half of the City's parks are on recycled water for irrigation use. Descriptions of initiatives and programs that reduce water are provided below.

Upcoming water conservation changes by the City in response to the recent drought conditions include:

- Reduce watering in landscaping and turf areas by at least 10 percent.
- Defer annual color plantings in parks and medians.
- Reduce washing down of hardscape such as tennis courts and sidewalks.
- Use slow release fertilizers to maintain a steady growth habit.

- Install water savings devices in city facilities such as low-flow showerheads, faucet aerators.
- Reduce frequency of vehicle washing for city vehicles.

General Plan Policies

Policy Number	General Plan Policy
4.8-I-12	Encourage attractive, drought-tolerant landscaping on private property that is suitable for San Ramon's climate.
8.6-G-1	Promote the implementation of water quality and conservation programs and measures by San Ramon employers, residents, and public agencies.
8.6-I-1	Require new development projects to implement indoor water conservation and demand management measures.
8.6-I-2	Require new development projects to implement outdoor water conservation and demand management measures.
8.6-I-3	New development in areas where recycled water service exists or is planned shall be plumbed with "purple pipe" and other measures necessary to accommodate non-potable water service.
8.6-I-4	Require new development to meet the State Model Water Efficient Landscape Ordinance (MWELO).
8.6-I-5	Collaborate with DERWA (Dublin San Ramon Services District and East Bay Municipal Utilities District Recycled Water Authorities) to expand the recycled water distribution system in an efficient and timely manner.
12.7-I-4	Initiate and sustain on-going efforts with local water agencies utility providers and developers to establish and implement voluntary incentive-based programs to encourage the use of energy and water efficient designs and equipment in new and existing development projects within the City.
12.7-I-5	Reduce water use and related energy use by using reclaimed water for landscaping where appropriate financially feasible and allowed by water quality regulations. Require new development areas that will be served with recycled water to be plumbed with a "purple pipe" system to facilitate the future use of recycled water.

Emission Reduction Potential: Water conservation will achieve emission reductions equivalent to the percentage of water pumping and treatment that is avoided. Water recycling consumes additional energy from treatment; however, treatment is often required to meet water quality regulations and so the energy use in that case would occur anyway. Achieving the State's goal of 20-percent reduction in water consumption by 2020 would result in a 20 percent reduction in greenhouse gas emissions from the electricity sector.

Waste Reduction and Recycling

When organic materials, construction materials and other municipal solid wastes are discarded, they end up in landfills. Increasing waste diversion from landfills and recycling

materials will significantly reduce greenhouse gas emissions. Furthermore, use of composted organic materials provides additional benefits. Currently, the State is mandated to divert a minimum of 50 percent of its waste from going to landfills. Diverting more organics/biomass and other waste from landfill disposal and turning them into marketable products will reduce greenhouse gas emissions associated with the manufacture of new products and the methane (CH_4) emissions from waste in landfills. This will help us continue toward a Zero Waste California.

Strategy E-3 Improve the City's recycling and source reduction programs to make continued progress in minimizing waste.

Existing City Measures

The City has operated a variety of recycling programs beginning with curbside recycling in 1989. For more details regarding these programs, see the Air Quality Element Background Report. The City has instituted the following programs:

- 1989 Curbside Recycling Program
- 1990 Home Composting Program
- 1990 City Facilities, Events, and Venues Recycling Program
- 1991 Volume-Based Garbage Rates
- 1992 Commercial Recycling Program
- 1995 Composting of Residential Yard Trimmings
- 2006 Multi-Family Dwelling Recycling Program
- 2007 Construction and Demolition Debris Recycling Ordinance
- 2010 Residential Food Scraps and Soiled Paper Composting Collection
- 2011 Residential On-call Door-to-Door Household Hazardous Waste Collection

The City's 2009 solid waste disposal rate of 3.3 pounds per person per day easily beat California Department of Resources Recycling and Recovery's (CalRecycle's) limit of no more than 5.7 pounds per person per day. San Ramon beat the requirement by over 42 percent. The City is studying potential measures regarding the use of plastic bags and Styrofoam food containers as part of its efforts to further reduce solid waste.

The City has adopted regulations to reduce the release of chlorofluorocarbons (CFCs) into the atmosphere from activities within the City of San Ramon. Municipal Code Title B Regulations, Chapter III Ozone-Depletion Control regulates these compounds. Article 1 prohibits the use of CFC-processed food packaging, and Article 2 regulates the use and recycling of CFCs in refrigeration or air conditioning units in buildings and motor vehicles, fire extinguishers, and building insulation.

General Plan Policies

Policy Number	General Plan Policy
7.5-G-1	Manage solid waste so that State goals are exceeded and the best possible service is provided to the citizens and businesses of San Ramon.
7.5-I-2	Provide and promote opportunities to reduce waste in all sectors of San Ramon, including residential, commercial, non-profit, government, and educational sectors.
7.5-I-3	Develop a consumer friendly, convenient, affordable options for community-serving recycling services
7.5-I-4	Through the development review process encourage the provision of convenient recyclable material storage locations
7.5-I-5	Comply with State requirements for proper handling and storage of solid waste, recyclables, and hazardous materials, diversion of solid waste from landfills, and provision of programs to make these activities feasible.
7.5-I-6	Ensure that solid waste programs effectively address community needs and issues.
7.5-I-7	Provide options for the safe disposal of hazardous waste and materials.
7.5-I-8	Encourage solid waste diversion (e.g. waste prevention, reuse, recycling, and composting).
7.5-I-9	Require new development projects to comply with the Municipal Code's construction and demolition debris diversion requirements.
7.5-I-10	Provide convenient recycling opportunities at large public events and venues.
7.5-I-11	Promote public and private efforts to recycle electronic waste.
12.7-I-8	Provide recycling programs for construction and demolition debris, and for commercial and/or community recycling of plastic, paper, green waste, and food waste to reduce energy consumption and greenhouse gas emissions.
12.8-I-6	Require businesses to minimize emissions of ozone-depleting compounds.

Emission Reduction Potential: Waste reduction and recycling provide emission reductions from lower transport emissions for trips to the landfill, lower methane emissions from the decomposition of organic matter in the landfill, and from energy savings from using recycled materials compared to mining, and processing virgin materials into products. The reductions are calculated using the EPA's Waste Reduction Model (WARM). Modeling of the City's emission savings from its existing programs are 32,539 metric tons CO_2e per year.

4.5 - Regional Cooperation

Measures and programs that impact greenhouse gas emissions are often operated at the regional level. Many modes of transportation operate at the regional level, because people travel throughout the region. The regional roadway network, the bus system, and the Bay Area Rapid Transit (BART) system are examples. The City also relies on regional providers for some services such as water and wastewater treatment (East Bay Municipal Utility

District (EBMUD) and Dublin San Ramon Services District (DSRSD). Regional cooperation provides a venue for sharing knowledge and resources to help address a variety of issues, including climate change and greenhouse gas emissions.

Strategy R-1 Participate in regional programs and initiatives that reduce greenhouse gas emissions.

Existing City Measures

The City is very active in regional transportation planning programs and initiatives with facets that impact greenhouse gas emissions.

- Contra Costa Transportation Authority (CCTA)
- Southwest Area Transportation Committee (SWAT)
- Tri-Valley Transportation Council (TVTC)
- Tri-Valley Air Quality Resource Group
- Metropolitan Transportation Commission (MTC)
- 511 Contra Costa
- Association of Bay Area Governments (ABAG)
- Bay Area Air Quality Management District (BAAQMD)
- Bay Area Recycling Outreach Coalition (BayRoc)

The Tri-Valley Transportation Council (TVTC) includes the cities of San Ramon, Dublin, Pleasanton, and Livermore; the Town of Danville; and Alameda and Contra Costa counties. Founded in 1991, the TVTC completed the Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance in 1995 and the Plan was updated in 2009. The Plan establishes shared traffic service objectives and presents a list of 11 high-priority transportation improvement projects to ease regional traffic congestion.

Contra Costa Transportation Authority (CCTA) and the four sub-regional transportation planning committees, including the Southwest Area Transportation Planning Committee (SWAT), provides oversight of the County's Measure J Program. With the passage of Measure C in 1998, Contra Costa voters approved a half-cent sales tax to fund transportation improvements in Contra Costa County. Measure C expired in 2009 and was replaced with Measure J that was approved by Contra Costa County voters in 2004. In addition to the sales tax, Measure J includes a far-reaching Growth Management Program (GMP) component, which requires that local jurisdictions consider regional transportation conditions when planning for developments. Measure J became effective April 1, 2009 and includes funding for a mix of projects and programs, including the continuation of the Growth

Management Program component. Funds under Measure J became available in July 2009 and will be in place for the next 25 years.

General Plan Policies

Policy Number	General Plan Policy
3.1-I-6	Join with and encourage other jurisdictions to participate in regional transportation planning programs
3.5-G-1	Participate in regional cooperative and multi-jurisdictional transportation planning for the maintenance of regional mobility and air quality standards as required by the Measure J Growth Management Program and the Contra Costa Congestion Management Plan (CMP).
3.5-I-1 5.2-I-1	Continue to develop and implement Action Plans for Routes of Regional Significance, in cooperation with the Southwest Area Transportation Committee (SWAT), the Contra Costa Transportation Authority (CCTA), and the Tri-Valley Transportation Council (TVTC).
3.5-I-2 5.2-I-2	Continue to implement the Tri-Valley Transportation Action Plan through participation in the Tri-Valley Transportation Council (TVTC).
3.5-I-3	Participate in programs to mitigate regional traffic congestion, including implementation of regional and sub-regional traffic impact fees on new development.
3.5-I-5	Continue to address the impacts of land use decisions on regional and local transportation facilities by applying the Contra Costa Transportation Authority (CCTA) travel demand model and technical procedures during project analysis Additionally, help maintain CCTA's travel demand modeling system by providing information on proposed improvements to the transportation system and future developments and long-range plans within San Ramon.
3.5-I-6	Participate in the Contra Costa Transportation Authority conflict resolution process as needed to resolve disputes related to the development and implementation of Action Plans and other Growth Management Program.
5.2-I-5	Emphasize regional transportation demand management and trip reduction strategies as alternatives to improvements to existing facilities and the construction of new facilities.
5.2-I-7	Support regional air quality objectives through effective management of the City's transportation system.
5.6-I-6	Work with other jurisdictions and agencies to coordinate the City's TDM programs with regional plans that are aimed at reducing traffic congestion and improving air quality.
11.1-I-15	Work with neighboring jurisdictions in the Tri-Valley area to develop affordable housing.
12.8-I-4	Work with other local and regional governments to assess federal and state programs and their impact on greenhouse gas emissions and mitigation efforts.

Emission Reduction Potential: No reductions were taken for regional cooperation. Regional cooperation improves the effectiveness of other measures.

4.6 - Role of Existing Development

The CAP strategies described above are implemented in two ways. New development projects are proposed and constructed consistent with the General Plan and the CAP. Existing residents and businesses comply with regulations that apply to everyone and participate in new and existing programs and measures. The strategies that apply directly and indirectly to existing development are shown in Table 7.

Table 7: Strategies For Existing Development

Strategy	How It Applies
Measures That Apply to Existing Development	
Transportation Demand Management	TDM is implemented at existing and new businesses and can reduce trips from new and existing housing.
Expanded Transit Service	Improved transit service will encourage increased ridership from new and existing development.
Improved Transit Stations	Transit stations service a wider community area that includes new and existing development.
Traffic Calming Retrofits	Traffic calming designs can be retrofitted on existing roads or built in new development.
Complete Streets Program	Complete streets connect existing and new areas.
Parking Management	Parking management at new and existing employment centers encourages trip reductions from all residential development.
Energy Retrofits	Educational and incentive programs encourage existing residents and business owners to install energy retrofits providing large benefits in older structures.
Bicycle and Pedestrian Improvements on Existing Roads	Bicycle paths and lanes can be retrofitted on existing roads and sidewalks and pedestrian paths can connect existing neighborhoods with appropriate destinations.
Bicycle Parking Facilities	Bicycle parking can be added to existing businesses if needed to satisfy demand by employees and customers.
Water Conservation Programs	Educational and incentive programs encourage existing residents and businesses to conserve water.
Recycled Water Use in Existing Parks	Recycled water can be piped to any area retrofitted or initially developed with a “purple pipe” system to distribute recycled water.
Recycling Programs	Operational programs such as recycling apply to all residents and businesses in the City.
Electric Vehicle Charging	Charging stations can be installed in existing development as a retrofit or in new development.
Neighborhood Electric Vehicles	Feasibility in existing neighborhoods will depend on the street design and safety considerations.

Table 7 (cont.): Strategies For Existing Development

Strategy	How It Applies
Measures That Apply to New Development but Indirectly Benefit Existing Development	
Transit- and Pedestrian-Oriented Development	Transit and pedestrian oriented development provides destinations that encourage transit use from existing development and walking once people arrive.
Mixed Use Development	Mixed-use development creates a more walkable environment conducive to transit use for trips from existing development.
Compact Development	Making the City more compact shortens average trip lengths for residents and creates more opportunities for transit.

Implementation

Information is provided throughout the CAP strategy section regarding the existing regulations and programs that implement strategies for existing development. Examples of regulatory measures that directly affect existing development include the State Model Water Efficient Landscape Ordinance, which requires water conservation measures during remodeling, and mandatory recycling programs for certain materials. Residents and businesses in the City have access to numerous energy and water conservation incentive and rebate programs. The City will monitor the effectiveness of its strategies over time. If progress is insufficient to meet the targets, the City will consider the development of additional mandatory programs that apply to existing development.

Emission Reduction Potential

Emissions from existing development are projected to be approximately 26 percent lower than business as usual by 2020. Emission reductions projected from existing development will be achieved through compliance with state and local regulations and voluntary measures. It should be recognized that everyone who purchases new vehicles, buys motor fuels, uses electricity, and pays taxes to support voluntary incentive and educational programs is contributing to greenhouse gas reductions. Ratepayers fund utility rebates and taxpayers fund tax incentives. The CAP does not attempt to quantify reductions from voluntary programs. Insufficient data is available to separate the benefits of voluntary efforts from statewide regulations that reduce emissions from the same sources.

4.7 - Government Operations

The following strategies apply to activities directly under the responsibility of the City such as civic buildings, street and traffic lighting, the government vehicle fleet, and employee programs that reduce greenhouse gas emissions.

Building Energy Efficiency

The City's buildings make up a substantial portion of the government emission inventory. Reductions can be achieved when new buildings are constructed or remodeled. The City has replaced aging heating, ventilation, and cooling systems with more efficient systems and installed energy management systems in four city facilities and will continue this practice as old systems are replaced. Some specific measures include:

- The City plans to build a new City Hall that will meet LEED Silver standards for energy efficiency and sustainability
- Install high efficiency heating, ventilation and cooling equipment when building new buildings and replacing obsolete units
- Install high efficiency lighting fixtures in new and remodeled City buildings
- Install energy management systems in new and remodeled buildings

Energy Savings from Traffic and Street Lighting

The City will replace lighting fixtures with more efficient LED or other technology whenever possible. The City has received a federal Energy Efficiency and Conservation Block Grant to replace streetlights with LED lights. The City completed replacement of all traffic lights with LED fixtures in 2009. According to a report prepared by PG&E, Phase II LED luminaires provided power savings of 36 percent compared to high-pressure sodium luminaires and the newer Phase III LED luminaires provided 52 percent savings (PG&E 2008).

Low-Emission City Fleet Vehicles

The City operates vehicles used by the police for maintenance and other purposes. Most vehicles in the fleet are gasoline- and diesel-powered. The City currently operates vehicles powered by compressed natural gas. The City will replace vehicles with the lowest emission technology that fulfills the work requirements and that is cost-effective, as the current fleet reaches the end of its useful life. The City anticipates that all vehicles in its vehicle fleet will be replaced by the 2020 CAP target date.

The City contracts with Waste Management, Inc. for waste hauling services. Nine of the 14 vehicles that the City's franchised garbage hauler uses to collect residential and commercial garbage, recyclables, and yard trimmings in San Ramon are CNG-powered. The franchise agreement allows the City to require that the hauler utilize additional alternative fuel collection vehicles as its older diesel vehicles are gradually replaced.

Green Purchasing

The City makes purchases typical for City government operations such as vehicles, computers, paper, and materials required to maintain the City's infrastructure. Specific actions to enhance the City's purchasing include:

- Purchase equipment certified under the Energy Star program whenever cost-effective versions are available that meet all operational requirements.
- Purchase materials with high recycled content whenever products are available that meet operational requirements and do not result in additional maintenance or excessive costs.

Water Conservation

The City has implemented water saving measures at most public parks, and other landscaped areas maintained by the City. The following actions will further improve the City's water conservation efforts:

- The City will use additional recycled water in public landscaped areas as more supplies become available.
- The City will continue to install higher efficiency irrigation systems, precision sprinklers, and drip irrigation where the landscaping permits these systems and budget allows.
- The City will replace existing water-intensive landscape installations (e.g., turf in medians) with more water-efficient alternatives where feasible.

See the Air Quality and Greenhouse Gas Element Background Report for additional information regarding City programs.

Urban Forestry

The City of San Ramon was recently awarded the title of Tree City USA by the National Arbor Day Foundation. Staff is currently working to categorize and catalog all of the City's trees. Trees provide shade that can reduce the urban heat island effect caused when pavement and other open surfaces absorb solar radiation and re-radiate heat to the surrounding environment. The shade can reduce energy required for cooling. The General Plan 2030 includes the following policy to encourage urban forestry projects in new development:

Policy 12.7-3 Promote urban forestry projects that shade buildings, homes, streets, pedestrian walkways, and urban core areas to reduce surface and ambient temperatures and reduce energy required for cooling.

Green Business Program

The City's Green Business Program is designed to provide public recognition to businesses that maintain compliance with all environmental regulations and demonstrate a commitment to conserving resources and preventing pollution. Twenty-six San Ramon businesses have been recognized by Contra Costa County's Bay Area Green Business Program.

4.8 - Emission Reduction Estimates

Implementing the strategies described earlier in this section are expected to provide emission reductions that are adequate to meet the City's target reduction of 15 percent compared to current 2008 emissions or 26 percent compared to business as usual by 2020 and achieve an emission efficiency below 6.6 $MTCO_2e$ per service population per year by 2020. The following information provides an analysis that demonstrates that the reductions are feasible. The analysis is not intended to provide definitive project level emission assessments, but to provide assurance that when the City implements its General Plan policies and CAP strategies, the targets will be achieved. The CAP provides a mechanism to track progress in implementing the CAP that will help to identify problems early and to provide corrective actions needed to keep on target.

Potential Land Use Related Emission Reductions

The heart of the City's strategy is to develop and redevelop the City to make it a more vibrant, pedestrian-oriented, mixed-use community that served by high-quality transit service to reduce emissions from vehicle travel. The City has done a great deal to set this strategy in motion. All Specific Plans, Development Plans, the 2020 General Plan, and the new General Plan 2030 promote this strategy. As described earlier, the City will concentrate on infill and redevelopment within the existing planning areas of the City. Development within the City's primary growth areas will occur under design guidelines and development plans that ensure that more people will be living and working in places that provide greater transportation options.

Land use and transportation strategies cannot be looked at in isolation. Providing a high-density housing development that is not adjacent to necessary and compatible service and uses and with no transit service will generate limited reductions. Place high-density housing within walking distance of high-quality transit service and frequently accessed destinations, and the reductions in travel are substantial. A year 2000 study of differences in VMT by Robert Cervero found that the vehicle miles traveled in urban development with a strong pedestrian environment and good transit service is 50 percent lower than produced by suburban communities without these amenities (Cervero 2000). According to the Caltrans Statewide Transit Oriented Development Study (Caltrans 2008), TOD can lower annual household rates of driving by 20 to 40 percent for those living, working, and/or shopping

near transit stations. It is important to consider this wide range of differences in travel when attempting to predict the effect of the City's land use strategy on future travel.

San Ramon is currently in the middle to upper range of Bay Area communities in terms of its VMT per household. Table 8 provides a comparison of VMT per household at select Bay Area communities to illustrate the differences. The urban cities have VMT rates that are one third to one half of those in the more suburban communities. The significance of this information for San Ramon is that it shows the large potential for reducing VMT as it pursues its strategy of increasing development densities and becomes more pedestrian- and transit-oriented. Comparison of San Ramon with the more urban San Francisco, Berkeley, and Emeryville shows that VMT per capita is 30 to 50 less in those cities than in San Ramon.

Table 8: Vehicle Miles Traveled at Selected Bay Area Communities in 2006

City	VMT per Household	VMT per Capita	Average Household Size
Emeryville	16.09	9.41	1.71
San Francisco	19.37	8.49	2.28
Berkeley	24.72	11.41	2.17
Walnut Creek	36.79	17.42	2.11
San Ramon	47.97	18.22	2.63
Danville	55.79	19.64	2.82
Byron	62.54	23.09	2.71

Notes:
Association of Bay Area Governments (ABAG) estimates for San Ramon for 2008 indicate an average household size of 2.81.
Source: MTC Bay Area Simplified Simulation of Transportation Energy and Greenhouse Gases (2009).

The City's role as a regional employment center has resulted in high employment densities, especially in Bishop Ranch with its 30,000 employees. This provides an environment conducive to successful Transportation Demand Management (TDM) programs. Although the City is currently only served by bus transit, the City's TDM programs, including the Bishop Ranch TDM has achieved 33-percent reduction in daily vehicle traffic to Bishop Ranch and a 40-percent reduction in peak-hour traffic through a variety of measures such as rideshare, vanpools, transit, bicycling, alternative work schedules, and walking. As the City Center project and the proposed North Camino Ramon Specific Plan are implemented, the existing TDM programs implemented by San Ramon and the Bishop Ranch TMA can be expected to be even more effective, and the redeveloped areas near Bishop Ranch can be expected to achieve even greater reductions in travel through implementation of TDM measures.

The General Plan 2030 Land Use Element identifies the plan subareas that will absorb the growth predicted for the City. Some of the areas are nearly built out and will see very little development. The majority of growth since 2000 has related to housing and population resulting from annexations of Dougherty Valley development. As development has extended to the city limits, San Ramon accommodated further growth by annexing new areas, such as Henry and Thomas Ranches in the Westside, Faria Preserve in the Northwest, and Windemere and portions of Gale Ranch in Dougherty Valley. Eventually, when the remaining unincorporated portions of Dougherty Valley are developed, they too will be annexed and added to the list of new areas within the City.

With little vacant land remaining for new development within the city limits, San Ramon abides by two basic philosophies to accommodate future growth. The first is the continued annexation of adjacent unincorporated areas within the Urban Growth Boundary (UGB) into the City to accommodate any future housing needs, support the regional employment base, and meet demand for municipal services. The second is to focus new growth inward through the intensification of land use density by encouraging infill and redevelopment projects within the existing urban areas defined by the UGB. The previous smart growth General Plan 2020 embraced this philosophy through the creation of mixed-use districts to accommodate both commercial and residential uses as well as a continuing commitment to regional programs such as the Association of Bay Area Governments (ABAG) FOCUS Program.

Land Use and Transportation Strategy to Meet a 15-Percent Reduction Target

As described earlier, the development pattern, density, and transportation system have a great impact on the amount people drive. This applies to the different development areas within San Ramon that have different patterns and transportation options and so will vary in their ability to achieve emission reductions. The reductions presented here are based primarily on information assembled by California Air Pollution Control Officers Association (CAPCOA) in its document, CEQA and Climate Change. The document provides emission reduction estimates for many land use and transportation measures. This analysis uses the reductions presented by CAPCOA and the characteristics of development planned for San Ramon to show the reductions that are possible here.

The mixed-use, infill, transit-oriented developments would have travel reductions well in excess of 15 percent. Suburban developments with limited transit service and commercial services nearby are not likely to approach a 15-percent reduction. Recognizing this variability in land use pattern and that the future citizens of San Ramon will desire a variety of housing and commercial opportunities, this analysis proposes a four-level approach to achieving an overall reduction of 15 percent in transportation emissions. The four levels correspond to growth areas identified in the General Plan that reflect this variety.

The Civic Center and proposed NCRSP represent the area with the highest potential reductions that can exceed 15 percent by a large margin. The Dougherty Valley Specific Plan and the Crow Canyon Specific Plan area represent areas with strong pedestrian and transit orientation that would achieve at least 15 percent. The Northwest Specific Plan represents a more suburban area with benefits from clustering development and providing services nearby that would achieve a 10-percent reduction. The more rural Westside Specific Plan represents an area that can achieve an 8-percent reduction. Specific development projects within these plan areas will vary in their ability to reduce transportation-related emissions, due to their proximity to transit and bicycle facilities, surrounding uses, development density, and business type. However, the overall community target of a 15-percent reduction would be achieved assuming that an equal amount of development would occur in each of the four levels. The City cannot predict how the market forces for different development types will affect the eventual buildout. For this reason, the CAP implementation will be monitored for progress.

Table 9 lists the characteristics that result in emission reductions and the range of potential reductions. The table provides percentage reductions in emissions corresponding to four categories of development described above in terms of the level of reductions possible as high, medium-high, medium-low, and low. The percentage assigned is based on a qualitative assessment of the characteristics of the development in the plan areas described above. Many of the CAPCOA measures provide ranges of effectiveness. The reduction levels identified below reflect the land use and transportation factors that have been shown in the studies used for the CAPCOA reduction estimates to impact the effectiveness of the measure. Individual projects may achieve higher or lower percentage reductions depending on the location of the project with relation to transit facilities and project design features. The numbers shown in Table 8 represent a reasonable expectation of average reductions that can be achieved in the different development areas.

Energy Conservation and Alternative Energy Strategy to Meet a 15-percent Reduction Target

Energy efficiency provides reductions through several strategies described earlier. These include building energy efficiency, lighting efficiency, water use efficiency, and alternative energy use. Factors affecting the ability of an individual project to achieve a reduction in excess of regulations include the design and intended use of the building, and the location of the building.

Table 9: Emission Reduction Potential for San Ramon's Development Areas

Factors	Characteristics	Potential Emission Reduction (Percent)				
		Range	High	Medium High	Medium Low	Low
Land Use Factors	Mixed-use with housing, jobs, and commercial services within walking distance.	3–9[1]	3	2	0	0
	Pedestrian oriented with traffic calming features, gridded street system, and good connections with the other land uses in the area.	1–10[1]	2	1	1	1
	Transit oriented development with a major transit hub or center within 0.25 mile	1–40[2]	4	1	1	0
	High density housing and high floor area ratio (FAR) office and commercial development	1–40[1]	5	3	2	1
	Affordable housing component included in residential development	0.4–6[1]	2	2	1	1
Transportation Factors	The site has frequent transit service (at least 10-minute headways during commute hours)	5[1]	3	2	1	1
	The site is served by a system of bicycle paths and lanes that provide access to most locations in the City	1–10[1]	2	1	1	1
	The businesses in the development offer high quality transportation demand management (TDM) programs.	1–28[1]	5	2	2	1
	The development uses parking structures with parking fees, shared parking, and parking lots located to preserve pedestrian orientation.	1–30[1]	4	2	1	1
	Total Reductions		**30**	**16**	**10**	**7**

Notes:
Mixed use, transit oriented, infill projects = high; transit and pedestrian oriented suburban projects = medium high; suburban development with limited higher density development, some pedestrian orientation and less frequent transit service = medium low; low-density development in rural areas and cluster development without transit service and limited pedestrian opportunities = low. The percent reductions represent generalized amounts that can vary based on individual project characteristics.
Sources:
[1] CAPCOA 2008; Caltrans 2002
[2] Transit-Oriented Development Study: Factors for Success in California

Building Energy Efficiency

Energy efficiency standards in buildings have prescriptive elements that specify standards for individual building components and overall building performance standards. The construction materials, amount of windows, and type of roof and foundation all have an effect on energy consumption. For example, in order to meet the Title 24 standards, a building with just a few windows may not need high technology energy efficient windows to meet the standard, while a building with many windows would need to provide high-efficiency windows to meet the standard. This flexibility allows architects to design buildings of all types that can meet the standards without imposing excessive costs. As Title 24 has become more stringent over the years, technology has advanced to the point that most building designs can still achieve the higher efficiency requirements.

The most recent amendments to Title 24 went into effect in January 2010. They are anticipated to reduce greenhouse gas emissions by 396,520 tons per year statewide. The State revises Title 24 every 3 years to identify changes that can provide additional cost-effective energy efficiency improvements. The California Energy Commission (CEC) encourages local governments to adopt local ordinances that go beyond Title 24. The ordinances must demonstrate to CEC that they will achieve energy reductions at least as great as Title 24 and are cost-effective.

The Public Utility Commission's 2008 Strategic Energy Plan includes a goal for residential buildings to be zero net energy consumers by 2020 and for commercial buildings to be zero net energy consumers by 2030. Zero net energy is a general term applied to a building with a net energy consumption of zero over a typical year. To cope with fluctuations in demand, zero energy buildings are typically envisioned as connected to the grid, exporting electricity to the grid when there is a surplus, and drawing electricity when not enough electricity is being produced. The zero net energy goal will be implemented with a combination of revisions to Title 24 to make the efficiency standards increasingly stringent and with voluntary tiers that could be implemented at the local level through policies, programs, ordinances and incentives.

The CAP strategy for energy efficiency provides support for the State's zero net energy goal with the implementation action that would require new development projects to achieve energy efficiencies that are at least 15 percent more stringent than Title 24. This would ensure that the energy sector of the CAP emission inventory is consistent with the CAP target. The City will review this level of reductions as part of its annual review of CAP implementation and may revise the reductions if additional reductions are feasible or if the 15-percent reductions prove to be infeasible.

Water Use Efficiency

Conserving water reduces greenhouse gases through savings in energy used to transport and pump water from its source and from water treatment.

San Ramon will achieve reductions through several different strategies. These include requirements for new development to achieve water efficiency improvements consistent with the State's 20-percent target by 2020, implementation of the State's Model Water Efficient Landscape Ordinance (MWELO) that will achieve a 20-percent reduction in water used for landscaping, and expansion of the use of recycled water for landscaping. A 20-percent reduction in water use will result in a 20-percent reduction in energy used to transport and treat water.

The San Ramon Valley Recycled Water Program is administered by a joint powers authority DSRSD-East Bay MUD Recycled Water Authority (DERWA). The first phase of the program was completed in 2006 and provides 23 sites, including greenbelts, parks, and schools, with a total of 700,000 gallons per day of recycled water. When completed, the program will supply approximately 2 million gallons per day (mgd) to parts of San Ramon, Danville, and Blackhawk. Future plans identify a network of recycled water lines serving the Bishop Ranch office park. Full implementation will provide a 342-percent increase in recycled water use over current conditions.

Energy savings from recycled water use are more difficult to determine. The water treatment process to create recycled water requires additional energy. However, if one assumes that the treatment would be required for water quality purposes, then the energy from treatment energy use would not be considered. The differential in energy used to treat and transport fresh water to San Ramon compared with treating and transporting recycled water has not been estimated. This strategy will be examined at a later date.

Based on the 20-percent water savings from new development and from the implementation of the Model Water Efficient Landscape Ordinance, the CAP will exceed the 15-percent target for this sector.

Alternative Energy Use

Alternative energy includes solar photovoltaic generation systems, solar water heating systems, and alternative fuels for transportation. Solar systems generate zero operational emissions. Compressed natural gas (CNG) produces 25 percent fewer greenhouse gas emissions than an equivalent vehicle powered by gasoline or diesel.

The energy savings from the use of solar is included in the overall 15-percent reduction in energy use from new development. Solar implemented at existing homes and commercial buildings is counted as a state reduction for the Million Solar Roofs program.

The City operates a number of CNG vehicles. As City fleet vehicles are replaced, the City will determine the appropriate fuel and power source for the vehicle that achieves the maximum technological feasible and cost-effective reduction to greenhouse gases. Currently, no reductions from alternative fuels are included in the CAP targets.

Solid Waste Reductions

New development in the City will participate in the residential and commercial recycling programs that are available to all residents and businesses. The City currently exceeds the state per capita disposal rate by 42 percent. The City's Construction and Demolition Debris Ordinance requires projects to divert at least 50 percent of waste from construction/ demolition/remodel activities. The City anticipates that its current programs will result in continued improvements in rates of recycling of at least 15 percent by 2020.

Emission Reduction Commitment Summary by Emission Inventory Sector

- Transportation Sources 15 percent
- Residential 15 percent
- Commercial Energy Use 15 percent
- Water Treatment and Transfer 20 percent
- Solid Waste 15 percent
- Overall Reduction from 2008 At least 15 percent

4.9 - Reductions from State Scoping Plan Measures

The future year inventories provided in Section 3 do not include reductions from state measures that will go into effect prior to the inventory 2020 target year and the General Plan 2030 buildout year. California has a very aggressive program that was adopted in the AB 32/CARB Climate Change Scoping Plan in 2008. Many of the measures have already been adopted as state regulations and others are scheduled for adoption by 2012. The following describes the state greenhouse gas reduction strategy and provides emission reduction estimates for the state strategies. Also provided is an estimate of the reductions that the state regulations will have on sources in the San Ramon emissions inventory.

Key elements of California's strategy for reducing its greenhouse gas emissions to 1990 levels by 2020 include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33 percent

- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets (SB 375)
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation

The CARB Climate Change Scoping Plan identifies measures designed to reach the State's 2020 target and provides emission reduction estimates for each measure. The following describes the primary statewide measures that apply to development related emissions in San Ramon:

- **Motor Vehicles - Pavley Standards:** The EPA recently granted the waiver for California for its greenhouse gas emission standards for motor vehicles. The Pavley I (AB 1493) regulation, which has already been adopted by CARB, requires greenhouse gas emission reductions from passenger cars and light trucks up to the 2016 model year. This regulation is expected to provide 27.7 $MMTCO_2e$ of emission reductions in 2020. The Pavley I standards are expected to reduce total emissions for automobiles and light trucks by 17.2 percent relative to the business as usual scenario (without Pavley or corporate average fuel economy) by the year 2020. CARB is currently developing standards for passenger vehicles model year 2017 and later that is being referred to as Pavley II. That regulation will also provide reductions by 2020. The new standards will follow up on the existing standards that reach maximum stringency in 2016. The CARB Climate Change Scoping Plan indicates that the Pavley II standards will achieve additional emission reductions of 4.1 $MMTCO_2e$ by 2020. The Pavley I and II standards are expected to reduce total emissions for automobiles and light trucks by 19.7 percent relative to the business as usual scenario (without Pavley or corporate average fuel economy) by the year 2020.
- **Motor Vehicles - Low Carbon Fuel Standard (LCFS):** CARB adopted a new regulation in December 2009 to implement the LCFS. The regulation is a discrete early action measure under AB 32 and implements Governor Schwarzenegger's Executive Order S-01-07. The regulation will reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by an average of 10 percent by the year 2020. The CARB Climate Change Scoping Plan estimates this regulation will provide 15 $MMTCO_2e$ of emission reductions in 2020. The LCFS

is expected to reduce total emissions from passenger vehicles and heavy-duty trucks by 7.2 percent. A 7.2-percent reduction from business as usual emissions for passenger vehicles and heavy-duty trucks is taken for this regulation.

- **Motor Vehicles - Passenger Vehicle Efficiency:** CARB identified several measures that would further reduce tailpipe greenhouse gas emissions from passenger vehicles by increasing vehicle efficiency. These measures include ensuring proper tire inflation and using solar-reflective automotive paint and window glazing (cool car standards). The CARB Climate Change Scoping Plan estimates these regulations will provide 1.44 $MMTCO_2e$ of emission reductions in 2020. These measures are expected to reduce total emissions from passenger vehicles by 2.8 percent. Details regarding the current status of these initiatives is provided below:
  - CARB approved a regulation that requires California's automotive maintenance industry to check the tire pressure of every vehicle they service in March 2009. A properly inflated tire helps to reduce fuel greenhouse gas emissions by reducing tire-rolling resistance.
  - In June 2009, CARB approved the cool car standards, which cut greenhouse gases by reducing heat gain in automobile interiors. The cool car standards begin phasing in with the 2012 model year. The regulation requires that passenger cars, pickup trucks, and sport utility vehicles be equipped with windows that reduce the amount of heat that enters vehicles from solar radiation. Less heat inside vehicles will allow air conditioning units to be downsized or used less, thereby increasing fuel economy and reducing the amount of greenhouse gases emitted by vehicles when they are in use.
  - Additional measures that would further reduce tailpipe greenhouse gas emissions from passenger vehicles by increasing vehicle efficiency include low friction oil and a tire tread program. The CARB Climate Change Scoping Plan estimates these regulations will provide 3.1 $MMTCO_2e$ of emission reductions in 2020. The combined benefit of these measures is expected to reduce total emissions from passenger vehicles by 2.8 percent.
- **Motor Vehicles, Heavy Duty Truck Vehicle Efficiency (Aerodynamic Efficiency):** CARB approved this regulation in December 2008. This measure requires existing trucks/trailers to be retrofitted with the best available technology and/or CARB-approved technology. Technologies that reduce greenhouse gas emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. The requirements apply to California and out-of-state registered trucks that travel to California. The 2020 estimated greenhouse gas emission reductions are about 0.93 $MMTCO_2e$. This regulation is expected to reduce total emissions from heavy-duty trucks by 2.9 percent.
- **Natural Gas Energy Efficiency:** The CARB Climate Change Scoping Plan Energy Efficiency measure includes a number of actions that reduce energy consumption of

both natural gas and electricity through improvements in building and appliance efficiency and through efficiency in combustion of the natural gas. Examples of efficiency improvements include the use of condensing heaters; tankless, gas-fired, on-demand heaters; and other super efficient, gas-fired heating appliances that will replace less efficient water and space heaters by attrition as they fail. The 2020 emission reductions from this measure are 4.3 $MMTCO_2e$ or 9.4 percent of the inventory for this source category.

- **Renewable Energy Portfolio Standard:** CEC estimates that about 12 percent of California's retail electric load is currently met with renewable resources. Renewable energy includes (but is not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas. California's current Renewables Portfolio Standard (RPS) was intended to increase that share to 20 percent by 2010. Increased use of renewables will decrease California's reliance on fossil fuels, thus reducing emissions of greenhouse gases from the Electricity sector. Based on Governor Schwarzenegger's call for a statewide 33-percent RPS, the CARB Climate Change Scoping Plan anticipates that California will have 33 percent of its electricity provided by renewable resources by 2020, and includes the reduction of greenhouse gas emissions based on this level. San Ramon is served by Pacific Gas and Electric (PG&E). Based on the 2007 renewables portfolio, reaching the 33 percent target would result in an 18.4-percent reduction by 2020 in the City of San Ramon.
- **Electrical Efficiency:** The CARB Climate Change Scoping Plan lists twelve strategies to maximize energy efficiency that are expected to achieve a savings of up to 40,000 gigawatt-hours of electricity by 2020. The CARB Climate Change Scoping Plan estimates reductions from electrical efficiency measures would reduce emissions from this source category by 15.2 $MMTCO_2e$ by 2020. With the implementation of the strategies, emission reductions of 15.7 percent would be achieved from this source category.
  - Cross Cutting Strategy for Buildings
    - "Zero Net Energy" Buildings
  - Standards Strategies
    - More stringent building codes and appliance standards
    - Broader standards for new types of appliances and for water efficiency
    - Improved compliance and enforcement for existing standards
    - Voluntary efficiency and green building targets beyond mandatory codes for Existing Buildings
    - Voluntary and mandatory whole-building retrofits for existing buildings
    - Innovative financing to overcome first-cost and split incentives for energy efficiency, onsite renewables, and high efficiency distributed generation
    - Improved Utility Program Strategies
    - More aggressive utility programs to achieve long-term savings

- Other Strategies
  - Water system and water use efficiency and conservation measures
  - Local government programs that lead by example and tap local authority planning, development, and code compliance
  - Additional Industrial and Agricultural Efficiency Efforts
  - Providing real time energy information to help consumers conserve and optimize energy performance.
- **Million Solar Roofs:** As part of Governor Arnold Schwarzenegger's Million Solar Roofs Program, California has set a goal to install 3,000 megawatts of new, solar capacity by 2017 - moving the state toward a cleaner energy future and helping lower the cost of solar systems for consumers. The Million Solar Roofs Program is a ratepayer-financed incentive program aimed at transforming the market for rooftop solar systems by driving down costs over time. Created under Senate Bill 1 (Murray, Chapter 132, Statutes of 2006), Million Solar Roofs builds on previous ratepayer-funded programs and provides up to $3.3 billion in financial incentives that decline over time.
- **Waste–Landfill Methane:** The Scoping Plan measure "Landfill Methane Control Measure" would reduce 1.5 $MMTCO_2e$ in California, which is 17.6 percent of the 8.5 $MMTCO_2e$ emissions for the "Landfill" sector, according to the CARB 2020 Forecast (CARB 2010).
- **Refrigerants, Regulations:** On December 9, 2009, the CARB adopted the Management of High Global Warming potential Refrigerants for Stationary Sources in the California Code of Regulations. Beginning in 2011, the rule will require leak inspection, repairs, required service practices, and recordkeeping for large commercial and industrial systems that use more than 50 pounds of refrigerant for a single unit, about the equivalent of the refrigerant found in 100 household refrigerators. The emission reduction percentage was estimated based on varying leak emission rates as shown in the appendix and is shown in Table 10.

Table 10 shows emission reductions that CARB predicts for state regulations that implement AB 32 along with the scaled reductions that will apply to sources in the City of San Ramon.

Table 10: 2020 Community Greenhouse Gas Emission Reductions from State Regulations and AB 32 Measures

End Use Sector	California Regulations and Measures	Reduction from 2020 BAS Inventory (%)	Percentage of 2020 San Ramon Inventory (%)	Scaled Emission Reduction Credit (%)
On-road passenger/light truck transportation	AB 1493 Pavley	19.7	52.6	10.4
	Passenger Vehicle Efficiency	2.8	52.6	1.5
	LCFS	7.2	52.6	3.8
On-road heavy/medium duty transportation	LCFS	7.2	9.8	0.7
On-road heavy duty transportation	Heavy Duty Efficiency	2.9	9.8	0.3
Natural gas (residential)	Energy Efficiency Measures	9.5	10.4	1.0
Natural gas (non-residential)			5.4	0.5
Refrigerants	Refrigerant Management	48.5	3.1	1.5
Electricity (excluding cogeneration)	Renewable Portfolio Standard	21.0	16.0	3.4
	Solar Roofs	1.5	16.0	0.2
Electricity	Energy Efficiency Measures	15.7	16.0	2.5
Solid Waste	Waste - Landfill Methane	17.6	1.5	0.3
Total Reductions from Statewide Measures in San Ramon				**26.1**

Notes:
AB = Assembly Bill; LCFS = Low Carbon Fuel Standard; BAS = business as usual; Scaled Emission Reduction Credit = Reduction for 2020 Inventory percentage multiplied by the End Use Sector percentage. Source of California Regulations and Measures: Bay Area Air Quality Management District. California Environmental Quality Act Air Quality Guidelines, June 2010 (Table D-4), with the exception of refrigerants and waste, which are estimated as discussed in the text above this table and in Appendix A.

Projects within approved Specific Plan areas, development plans, and other new discretionary projects undergoing CEQA review are expected to provide reductions of 15 percent beyond those required by state regulation and programs to be consistent with this CAP. The CAP business as usual inventory is projected to increase 9.8 percent by 2020. Therefore, a 15-percent reduction from all new development will provide an overall reduction of 1.5 percent by 2020. When added to the reductions anticipated from state measures and programs (26.1 percent), the CAP would provide a reduction of 27.6 percent and a plan efficiency of 4.0 metric tons of CO_2e per service population per year, which exceeds the BAAQMD threshold for demonstrating that the CAP meets CARB Climate Change Scoping Plan targets of 6.6 $MTCO_2e$ per service population per year.