



ENERGY ROADMAP



CITY OF VISTA

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Introduction

This energy management plan, or “Energy Roadmap,” is an update to the original City of Vista Energy Roadmap (2012) prepared by the San Diego Association of Governments (SANDAG) in consultation with City of Vista (“City” or “Vista”) staff. The Energy Roadmap provides a framework for Vista to identify ways to save energy (i.e., electricity, natural gas, and transportation fuel) in government operations and in the community, resulting in municipal cost savings and benefits to the environment. This document highlights a variety of wide-ranging, cost-effective resources and information to assist the City in pursuit of these goals, including:

- No-cost expert technical assistance through the SANDAG Roadmap Program (Roadmap Program), such as no-cost energy audits of government buildings and support with identifying and applying for energy-efficiency rebates and innovative programs;
- Energy-saving resources (e.g., sample policy language, implementation guidance, information regarding funding opportunities) related to electric vehicles, alternative fuels, and transportation demand management strategies; and,
- Access to the latest information on subjects like financing energy-efficiency projects, emerging technology demonstrations, and retrofit programs.

The Energy Roadmap serves as a resource to the City for implementing goals and policies outlined in Vista’s General Plan 2030 and its Climate Action Plan (CAP) Update, which is under development as of this writing. The General Plan 2030 is referenced where applicable throughout this report and its energy-related goals and policies are included as Appendix A. The Energy Roadmap is an informational document intended to provide the City with resources and potential project opportunities that could save the City energy and money and help reduce greenhouse gas emissions in municipal operations. The projects identified and potential savings calculated were based on the best available data at the time of quantification. This does not bind the City to any programs or projects listed and more evaluation may be necessary to ensure savings and program availability.

The Vista Energy Roadmap charts a path to saving energy in government operations and in the community.

California’s Vision for Local Governments

By 2020, California’s local governments will be leaders in using energy efficiency to reduce energy use and global warming emissions both in their own facilities and throughout their communities.

California Long-Term Energy Efficiency Strategic Plan

General Plan 2030 elements best supported by this Energy Roadmap include:

1. Resource Conservation and Sustainability Element, which “reflects the City’s commitment to promote sustainable and efficient use and management of natural resources to reduce the use of nonrenewable resources, reduce GHG emissions, conserve water, and improve the overall quality of the environment;”¹ and
2. Public Safety, Facilities, and Services Element, which strives “to ensure that public facilities and services support the existing and planned future development within Vista, and are provided in an efficient, cost-effective, and environmentally sustainable manner that are considered as an integral part of the City’s development review and decision-making process.”²

The Roadmap supports Vista’s recently adopted General Plan 2030 and Climate Action Plan Update.

Since the City’s first Energy Roadmap was completed in July 2012, Vista has completed 13 energy retrofit projects at five different municipal facilities, resulting in total energy savings of over 118,000 kWh per year. Projects included Heating, Ventilation, and Air Conditioning (HVAC) replacements at the Senior Center; upgrades of exterior and interior lighting fixtures to Light-Emitting Diode (LED) at Breeze Hill Park, Thibodo Park & House, Jim Porter Rec Center, Public Works Building F, and the Senior Center; and installation of solar panels at the Senior Center.

Vista adopted its first CAP in 2012. The City’s 2012 CAP included a greenhouse gas (GHG) emissions inventory of municipal and communitywide greenhouse gas emissions, identified a GHG emissions reduction target for 2020, and detailed reduction measures to achieve the stated targets. Reduction measures included strategies to increase energy efficiency and installation of renewable energy systems at City facilities and throughout the community.

By building on its existing energy-saving efforts and taking advantage of the opportunities identified herein, Vista could demonstrate leadership in energy efficiency and sustainability in City government and throughout the community, while saving money for taxpayers, households, and businesses.

Section I. Saving Energy in City Government Operations

City governments can be significant users of energy in operating city buildings, facilities, and equipment. City employees also play a role in this consumption through their commute choices, equipment usage, and use of government vehicles. These and other energy-consuming operation activities provide Vista with an opportunity to lead by example in reducing energy consumption. The City can improve energy efficiency and, in the process, spend fewer taxpayer dollars on utilities and gasoline, contribute to cleaner air, and reduce GHG emissions. In turn, the City can showcase emerging energy-efficient technologies and educate employees on energy-efficiency strategies.

¹ Vista General Plan 2030, 2012, Page 4-20.

² Vista General Plan 2030, 2012, Page 7-2.

The chapters contained within Section I: Saving Energy in Government Operations identify five distinct opportunities for Vista to lead by example with its buildings and facilities, vehicles, and energy use practices:

1. Save Energy in City Buildings and Facilities
2. Demonstrate Emerging Energy Technologies
3. Green the City Vehicle Fleet
4. Develop Employee Knowledge of Energy Efficiency
5. Promote Commuter Benefits to City Employees

Section II. Saving Energy in the Community

Looking beyond its own operations, Vista can play an important role in influencing the energy-saving attitudes and actions of local residents and businesses.

Opportunities for influence vary widely, from public education to adopting policies and implementing programs to save energy. Vista has started to address energy use in the community by adopting energy-saving policies in its General Plan 2030 and 2012 CAP and will continue to do so through its CAP Update.

Energy use can be a major expense for households and businesses, and it is a predominant source of air pollution and GHG emissions. Saving energy benefits the environment, puts money in the pockets of households and businesses, and supports growing economic opportunities, including well-paying green jobs.

The chapters contained within Section II: Saving Energy in the Community identify the following opportunities for the City to provide leadership through innovative programs for energy efficiency and sustainability:

6. Utilize Planning and Development Authority
 - a. Smart growth development policies
 - b. Energy-efficient building upgrades
 - c. Clean and efficient transportation options
7. Market Energy Programs to Local Residents, Schools, and Businesses
8. Support Green Jobs and Workforce Training

Potential uses of the Energy Roadmap

This Energy Roadmap highlights a variety of existing resources and information to assist the City in identifying ways to save energy in government operations and in the community. These resources and information can support the City in pursuing activities such as:

- Reducing government spending on energy use, such as utilities and gasoline
- Developing and implementing measures to reduce GHG emissions from government operations and community activities as identified within the General Plan 2030 and CAP Update
- Integrating sustainability, energy efficiency, or GHG-reduction measures into local community plans and policies
- Using government operations to demonstrate the feasibility of energy-efficient and sustainable practices to local residents and businesses
- Managing the City vehicle fleet, including new vehicle purchases
- Promoting energy efficiency programs through City communications such as newsletters, email, and website
- Training of employees that deal with energy issues
- Offering commuter information and alternative transportation incentives as part of the City's employee benefits package
- Staying on top of the latest developments, programs, and trends in energy efficiency
- Applying and qualifying for future funding opportunities related to energy efficiency
- Facilitating discussions among local and regional agencies

The Vista website can be a portal for local residents and businesses to access energy-saving programs and rebates.

About the SANDAG Roadmap Program

San Diego Forward: The Regional Plan (2015) (2015 Regional Plan) provides a blueprint for a sustainable future for the San Diego region. The Regional Plan Environmental Impact Report includes a GHG-mitigation measure (MM GHG-4E) that commits SANDAG to assisting local governments in the preparation of CAPs and other climate strategies and projects that save energy and reduce energy-related GHG emissions.

The Roadmap Program was developed to implement the commitments outlined in MM GHG-4E. The Roadmap Program is primarily funded through a partnership between SANDAG and San Diego Gas & Electric® (SDG&E) that offers local jurisdictions assistance in making their buildings and processes energy-efficient, implementing State energy codes through access to training and workshops, and being a conduit to their constituents on programs that help reduce their energy bills as well as the environmental impact on the community as a whole.

The program provides free energy assessments of government buildings and online tools to monitor electricity, natural gas, and transportation fuel use. It provides continued access to experts that can assist jurisdictions in taking the next steps to implement building improvements, petroleum-reduction measures, and community outreach.

Each participating jurisdiction has received a customized Energy Roadmap that offers a comprehensive framework for saving energy at City government facilities and in the community. Each Energy Roadmap is consistent with the 2015 Regional Plan; the Regional Energy Strategy (2014 Technical Update), which serves as the San Diego region's energy policy guide; and the Climate Action Strategy (2010), the first-ever SANDAG guide on climate change. The strategies are available on the SANDAG website at sandag.org/energy.

The Roadmap Program was developed based on existing, successful SDG&E local government partnerships with the cities of Chula Vista and San Diego and the County of San Diego and pilot projects undertaken through the SANDAG Sustainable Region Program with the Center for Sustainable Energy. The Sustainable Region Program provided support for the cities of Carlsbad, Poway, and Solana Beach. The Roadmap Program is funded primarily by California utility customers and administered by San Diego Gas & Electric Company under the auspices of the California Public Utilities Commission. Transportation and other non-energy-efficiency components are funded by SANDAG.

Section I.

Saving Energy in City Government Operations

3. Save Energy in City Buildings and Facilities

Energy is a major operating cost for local governments. By evaluating energy usage in City government buildings and facilities (“sites”) and identifying energy-saving opportunities, the City can reduce its energy-related operating costs and use the savings for other government services. This chapter highlights:

- No-cost site assessments provided to the City
- Energy, utility, and cost-saving opportunities identified at each assessed site
- Financial costs and benefits to the City to undertake the savings project

Background

In 2011, two phases of energy analysis were provided at no cost to the City: 1) preliminary energy-use assessments based on energy billing information by facility and by system within each facility, called “Energy Report Cards,” were performed for 26 municipal sites identified by City staff, and 2) more in-depth energy audits, called “Phase 2 Audits,” were conducted for a subset of sites based on the results of the Energy Report Cards and direction from City staff. The Phase 2 Audits produced a list of Energy Conservation Measures for the City to consider implementing in their facilities to save energy and costs and to help the City meet their sustainability goals.

The City of Vista could save over \$270,000 each year from energy-efficiency upgrades identified at municipal sites.

Energy assessments

In 2017/18, TRC Companies, Inc. (TRC), the SANDAG Roadmap Program energy engineering consultant, reviewed the 2011 energy analyses and performed energy-efficiency audits of ten municipal facilities selected for assessment by the City, eight of which were included in the previous 2011 analyses and two additional facilities. Audited City facilities included:

- Civic Center
- Public Works
- Wave Water Park
- Fire Stations #1 through #6
- Jim Porter Rec Center

Vista General Plan 2030

Prepare and implement a comprehensive plan to improve the energy efficiency of municipal facilities and conserve electricity and natural gas.

Resource Conservation and Sustainability Element, Policy 14.6

Sites selected for audit were prioritized based on consumption and savings opportunities identified by analyzing the 2011 data, recent utility data, and consultation with the City. Audits included assessments of existing lighting, HVAC, pumping, generators, and plugload equipment. Energy audit findings for the ten sites are summarized below, and detailed findings are included as Appendix B. As part of the analysis, TRC also performed building benchmarking for all audited facilities using the U.S. Department of Energy's Energy Star Portfolio Manager tool to compare Vista's current performance to national standards; only one building type was comparable to the criteria used in the Energy Star Portfolio Manager. Details of this analysis can be found in Appendix H. The audits established each site's baseline energy use and identified energy-efficiency opportunities with the potential to reduce the City's annual energy costs, improve building comfort and safety, and reduce maintenance costs.

Energy audit findings

The 2011 site assessments identified the potential for approximately \$50,000 in annual operations savings on utility bills by implementing energy conservation measures identified in the City's 2012 Roadmap. Vista has already taken steps to realize immediate on-bill savings by implementing measures recommended by the City's 2012 Roadmap, including switching to an "Outdoor Lighting – Time of Use" rate for Townsite Park, Rancho Buena Vista Park, Breeze Hill Park, and the Vista Sports Park. Upon further analysis by TRC, additional cost-savings may be possible by switching Rancho Buena Vista Park, Breeze Hill Park, and the Vista Sports Park to an "Outdoor Lighting 2" rate. The City can contact SDG&E to request a detailed rate analysis and rate change eligibility for these sites.

In addition to the potential for further cost-savings at these three City parks through rate switching, TRC's detailed audits at the ten sites listed above, coupled with updated utility rates, have increased the City's potential annual operations savings on utility bills to approximately \$270,000, as shown in Table 1.

Table 1

Total savings* by site

Site	On-Bill Savings			IOU Program Savings**			Annual Cost Savings (\$/yr)	Potential Incentive (\$)	Project Implementation Cost (\$)	Net Implementation Cost (\$)	Net Simple Payback Period (yr)
	Electricity Savings	Electric Demand Reduction	Natural Gas Savings	Electricity Savings	Electric Demand Reduction	Natural Gas Savings					
	(kWh/yr)	(kW)	(Thm/yr)	(kWh/yr)	(kW)	(Thm/yr)					
Civic Center	303,362	106.48	0.00	102,233	37.86	0.00	\$82,064	\$5,833	\$452,794	\$446,962	5.4
Public Works	32,526	11.79	-10.00	0	0.00	0.00	\$9,264	\$0	\$79,785	\$79,785	8.6
Water Park	224,071	41.60	-10.00	119,157	7.00	0.00	\$51,146	\$10,572	\$157,184	\$146,612	2.9
Fire Station 1	115,854	26.01	-48.20	33,099	6.85	42.48	\$28,665	\$4,227	\$97,698	\$93,471	3.3
Fire Station 2	24,959	4.96	-55.02	771	0.11	-1.42	\$5,909	\$275	\$8,675	\$8,400	1.4
Fire Station 3	34,744	8.11	-92.10	673	0.09	-1.24	\$8,260	\$240	\$13,314	\$13,074	1.6
Fire Station 4	45,050	13.05	-14.01	13,466	2.91	21.65	\$12,310	\$1,781	\$88,983	\$87,202	7.1
Fire Station 5	89,003	20.65	-49.39	34,215	7.01	32.92	\$22,262	\$4,316	\$74,414	\$70,098	3.1
Fire Station 6	70,777	16.98	-78.93	23,862	5.03	32.30	\$17,746	\$3,076	\$65,057	\$61,981	3.5
Jim Porter Rec Center	99,942	62.96	0.00	14,371	2.00	0.00	\$32,271	\$1,442	\$230,211	\$228,768	7.1
Total	1,040,288	312.59	-357.65	341,847	68.86	126.69	\$269,895	31,762	1,268,115	1,236,353	4.6

*Savings shown reflect potential savings using best available data at the time of calculations. Savings may differ due to changes in rates, incentives, rebates or other IOU program changes.

**For Midstream measures, IOU savings are based on the applicable statewide workpaper.

Energy project finance options for the City of Vista

There are a variety of financing options available to the City that can help support implementation of energy-saving retrofit projects identified in TRC's analysis, including:

- SDG&E's On-Bill Financing Program – Through its On-Bill Financing Program, SDG&E provides interest-free, unsecured financing to qualified commercial and public-sector customers for the installation of energy-efficient upgrades. Financed equipment must qualify for a rebate or incentive from SDG&E's rebate/incentive programs. For more information, visit sdge.com/obf.
- SDG&E's Rebates and Incentives – As part of the energy audit findings, TRC identified the appropriate SDG&E rebates and incentives for each municipal site. It should be noted that many of these measures may be discontinued in 2019. To review all of SDG&E's rebate and incentive programs, visit sdge.com/business/rebatesincentives/.
- California Energy Commission Energy Efficiency Financing Program – The California Energy Commission provides financing for cities, counties, and schools through low-interest bond or non-bond loans for feasibility studies and installation of energy-saving measures. For more program information, visit energy.ca.gov/efficiency/financing.
- SANDAG Roadmap Program – No-cost assistance with rebates, incentives, and financing options is available to the City as part of the SANDAG Roadmap Program. The City can contact the Roadmap Coordinator with requests for assistance or questions.

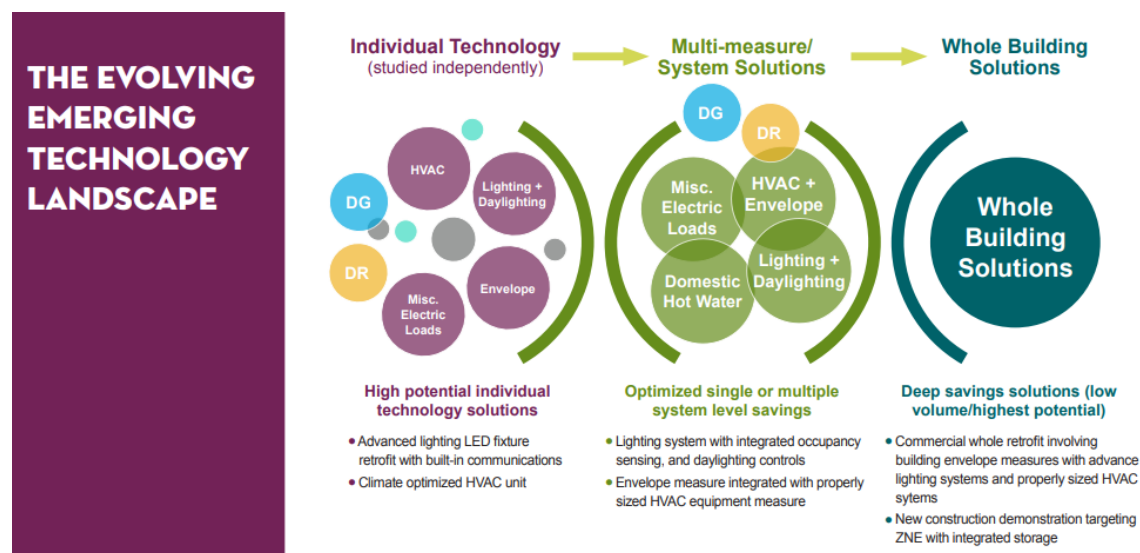
2. Demonstrate Emerging Energy Technologies

In addition to completing energy assessments and improving energy efficiency in municipal buildings and facilities, Vista also can save energy by using municipal buildings and facilities to showcase emerging energy-efficient technologies at little to no cost to the City through the statewide California Emerging Technologies Program (ETP).³ Interested local businesses and residents can be encouraged to participate too.

The goal of the statewide California ETP is to accelerate the adoption of advanced technologies that increase grid stability, reduce overall energy use, and reduce demand for energy at peak times. The technology evaluations can range between a few months to two years, depending on the technology, and provide the utilities and their regulator with necessary real-world data about the performance of promising energy-saving technologies. In addition to generating performance data, testing energy-efficiency technologies new to the market serves as a catalyst for developing interest in emerging technologies. The data from these evaluation projects are critical to developing new incentive and rebate programs for customers across the state of California.

SDG&E acts as the local liaison to the statewide ETP managers and can assist local businesses, residents, and the City with identifying new or ongoing emerging technology studies in California to see whether there are opportunities to test the new technologies at a home, business, or municipal building or facility. If there is interest by the City in hosting a demonstration, SANDAG Roadmap Program staff can help coordinate with the local SDG&E liaison to the statewide ETP (email: ETInfo@sdge.com).

Some of the areas that show the most promise for increased energy-efficiency opportunities over the next five years are in commercial and industrial refrigeration systems, commercial and residential high-performance buildings, electric vehicles and charging stations, high-performance evaporative and variable refrigerant flow HVAC systems, and advanced lighting and DC lighting conversions. To find out more, visit etcc-ca.com or email ETInfo@sdge.com.



³ In the summer of 2018, the California Public Utilities Commission (CPUC) approved new business plans for the investor-owned utilities in California. As part of that decision, Southern California Edison and Southern California Gas Company will be managing the statewide ETP in the future.

3. Green the City Vehicle Fleet

This chapter highlights ways that the City can achieve transportation-related energy savings through actions that promote fuel conservation, efficiency, and an increased use of clean, alternative fuels in its vehicle fleet. As part of this Energy Roadmap update, SANDAG partnered with the Center for Sustainable Energy (CSE) in 2018 to perform an Alternative Fuels Fleet Assessment (see Appendix G) specific to the City's municipal fleet, focused on plug-in electric vehicles (PEVs). This work was funded through the SANDAG Plug-in San Diego program at no cost to the City. This chapter summarizes California's transportation fuel goals, highlights from the City's 2018 alternative-fuels assessment, and the planning tools and resources available to the City for alternative-fuel fleet planning.

California goals for transportation fuels

Because the transportation sector is the largest source of GHG emissions in California, the State has adopted numerous policies to accelerate a shift to alternative fuels to meet ambitious goals on climate change, air quality, and petroleum reduction; leading state policies include:

- California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 GHG Target (California Air Resources Board);
- Executive Order B-16-2012, calling for 1.5 million ZEVs on California roadways by 2025; and
- Executive Order B-48-18, calling for at least 5 million ZEVs on California roads by 2030 and the installation of 250,000 plug-in electric vehicle chargers, including 10,000 direct current fast chargers and 200 hydrogen refueling stations by 2025.

Beginning in 2008, the State has allocated millions of dollars in grant funds annually through the Assembly Bill (AB) 118 Program to help address barriers to the production and deployment of alternative fuels, vehicles, and infrastructure across light-, medium, and heavy-duty applications. The legislature extended program funding until 2024 through AB 8 (Perea, 2013) and additional information on opportunities is provided later in this section.

Alternative fuels for City fleet applications

The City of Vista manages more than 100 vehicles in its fleet, ranging from light-duty sedans to heavy-duty trucks. Vista's Fleet Maintenance Division is responsible for the purchase and maintenance of all City vehicles and for the operation of the City's fueling facility, which is jointly used with the Vista Unified School District. As part of the 2018 Alternative Fuels Fleet Assessment (Appendix G), CSE identified suitable plug-in hybrid electric vehicle (PHEV) replacements through a vehicle replacement analysis.

Alternative fuel and vehicle selection can depend on several factors, including:

- **Vehicle cost**
- **Availability and proximity of refueling infrastructure**
- **Availability of grants and tax credits**
- **Whether new purchase or retrofit/conversion is being considered**
- **Vehicle maintenance**

Vehicle replacement analysis

Using 2018 fuel prices, mileage, and fuel consumption of Vista's fleet vehicles, the analysis found that the PEV replacements could save approximately \$100–\$1,000 per year in fuel savings per vehicle, depending on the vehicle type (Appendix G, Table 1). Initially, annual fuel savings are offset by generally higher purchase prices for PEVs compared to traditional vehicles of the same class; however, grants and rebates, described later in this chapter, can help reduce upfront costs. The analysis also found that the estimated payback period for different replacement vehicle types ranged from immediate payback to 15+ years (Appendix G, Table 1). In general, vehicles with a greater-than-15-year payback period may not offer a good economic return but can still offer significant petroleum- and emissions-reduction benefits.

SANDAG partnered with the Center for Sustainable Energy and San Diego Regional Clean Cities Coalition to provide Vista with an Alternative Fuels Fleet Assessment at no cost to the City.

When considering vehicle replacement options, Vista should carefully evaluate all fuel types and available incentives. The SANDAG Alternative Fuel Toolkit (sandag.org/uploads/projectid/projectid_487_19924.pdf) provides general information about different types of alternative fuel, and the State offers rebates and incentives for alternative-fuel vehicles and infrastructure outlined later in this chapter.

Another important factor for consideration when deciding to purchase PEVs should be ready access to charging infrastructure. SDG&E's Power Your Drive pilot program offered turn-key installations of electric vehicle charging infrastructure for fleets and other sites. SDG&E implements several other pilot programs to support various medium- and heavy-duty applications and is expected to offer additional programs in the coming years that the City may be able to take advantage of. Similarly, in mid-2020, SANDAG and the County Air Pollution Control District will open a regional electric vehicle charging program (sandag.org/EVChargingProgram) that provides incentives to offset the purchase and installation costs for Level 2 chargers. The program will focus on public and workplace charging and may expand in scope. Electric vehicle infrastructure considerations are also addressed later in this chapter.

Tools and resources for alternative fuel fleet planning

Online vehicle comparison tool

When considering a new fleet vehicle purchase, online calculators can help the City identify the most cost-effective vehicle with the best environmental performance. The official U.S. federal government source for fuel economy information, fuelconomy.gov, is a helpful resource for relevant data on new and used cars and trucks from both current and prior model years, to allow for comparison. This resource is provided by the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy.

State grants and rebates

The California Air Resources Board (CARB) and California Energy Commission (CEC) offer alternative transportation grants and rebates under AB 8 (Perea, 2013), as well as other low-carbon transportation funding. The CEC manages the "Alternative and Renewable Fuel and Vehicle Technology Program," which was allocated an annual program budget of approximately \$100 million in FY 2017–2018 that enables the CEC to provide grants, loans, and other measures to support projects that develop and deploy alternative and renewable fuels and advanced transportation technologies (energy.ca.gov/altfuels/). CARB manages approximately \$400 million in rebates and projects through the Air Quality Improvement Program/Low Carbon Transportation funding plan (arb.ca.gov/msprog/aqip/aqip.htm).

In addition, CSE manages CARB's Clean Vehicle Rebate Project (CVRP) (<https://cleanvehiclerebate.org/>) for light-duty zero-emission vehicles of up to \$2,500 for light-duty battery electric and plug-in hybrid vehicle purchases. CARB also offers CVRP for Public Fleets (<https://cleanvehiclerebate.org/fleet>), with a standard CVRP rebate for all California public entities and increased incentives for those entities operating in California's most vulnerable and pollution-burdened areas. CSE received \$120 million in funding for FY 2017-2018. Table 2 summarizes the available rebates as of April 2019.

Table 2

CVRP rebate amounts for light-duty vehicles and public fleets

Vehicle class	Standard incentive	Public fleet incentive
Fuel-cell electric vehicle (FCEV)	\$5,000	\$7,000
Battery electric vehicles (BEV)	\$2,500	\$4,500
Plug-in hybrid electric vehicles (PHEV)	\$1,500	\$3,500
Zero-emission motorcycles (ZEM)	\$900	N/A

Note: Eligible vehicles and associated rebate amounts are subject to change. Visit the CVRP program site for eligible vehicle models and associated rebates: <https://cleanvehiclerebate.org/eng>.

Source: Clean Vehicle Rebate Project (<https://cleanvehiclerebate.org/eng>).

Rebates for commercial vehicles including trucks and buses are available through CARB's Hybrid Truck and Bus Voucher Incentive Project (HVIP) (californiahvip.org). As of May 2018, the HVIP estimated fund balance was over \$120 million. Summaries of available incentives are provided in Tables 3 and 4. Additional incentives are available through HVIP for transit buses, vehicle conversions, and disadvantaged communities (californiahvip.org/wp-content/uploads/2018/11/HVIP-FY18-19-Funding-Tables-11-19-2018.pdf).

Table 3

HVIP voucher amounts for zero-emissions trucks and buses

Gross vehicle weight (pounds)	Voucher amount
5,001 – 8,500	\$20,000
8,501 – 10,000	\$25,000
10,001 – 14,000	\$50,000
14,001 – 19,500	\$80,000
19,501 – 26,000	\$90,000
26,01 – 33,000	\$95,000
>33,001	\$150,000

Source: Hybrid Truck and Bus Voucher Incentive Project (californiahvip.org).

Table 4

HVIP voucher amounts for hybrid trucks and buses

Gross vehicle weight (pounds)	Voucher amount
6,001 – 8,500 (plug-in hybrids only)	\$8,000
8,500 – 10,000 (plug-in hybrids only)	\$10,000
10,001 – 19,500	\$15,000
19,501 – 26,000	\$20,000
26,001 – 33,000	\$25,000
>33,000	\$30,000

Note: The first three vouchers redeemed by a fleet are eligible for the following additional voucher amounts: \$2,000 per vehicle if below 8,500 lbs.; \$5,000 per vehicle if 8,501 – 10,000 lbs.; and \$10,000 per vehicle if over 10,000 lbs.

Source: Hybrid Truck and Bus Voucher Incentive Project (californiahvip.org).

Local alternative-fuel infrastructure

In addition to considering fuel types and available incentives, the City also should be aware of the availability of local alternative-fuel infrastructure. There are fewer refueling stations for alternative-fuel vehicles than gasoline and diesel stations. A primary consideration in purchasing an alternative-fuel vehicle is that adequate fueling sources exist near where the vehicle will be used. Appendix G, Table 3 includes a list of publicly accessible alternative-fuel infrastructure near the City of Vista as of December 2018. To locate alternative fueling stations in the future, including EV charging sites, visit the U.S. Department of Energy's Alternative Fuels Data Center (afdc.energy.gov).

Electric vehicle infrastructure

Plug-in electric vehicles for fleet use require a dedicated charging solution. All electric vehicle charging stations (EVCS) are classified into three categories: Level 1, Level 2, and direct current (DC) fast charging. The main distinction between these three levels is the input voltage: Level 1 uses 110/120 volts; Level 2 uses 208/220/240 volts; and DC fast chargers use between 200- and 600-volts direct current. Certain programs may fund the installation of charging stations, especially Level 2 and DC fast chargers.

Level 1 EVCS

Fleets can use the OEM-branded charging cord that comes with most electric vehicles anywhere a 120-volt outlet is present. Overnight Level 1 charging is viable where daily mileage is well within the vehicle's maximum electric range. Most fleet Level 1 charging is conducted from 120-volt outlets that run to a parking lot. If new installations are planned, a higher output 240-volt circuit is often more cost-effective to install as it offers greater charging capacity for a similar installation price.

Level 2 EVCS

Level 2 EVCS offer higher power output than Level 1 EVCS and have additional functionality. In general, Level 2 EVCS produce between 16 and 40 amps of power output, which delivers between 14 and 35 miles of electric range per hour of charging, depending on the vehicle. Level 2 EVCS are available in both networked and non-networked stations. Networked stations offer features that help track and manage charging, including access control, energy management, and reporting.

DC fast charging

DC fast chargers are the highest-powered, but least common, EVCS on the market. They are often used as range-extendors along major travel corridors for long-distance trips and in urban environments to support drivers without home charging. Except for Medium- and Heavy-Duty vehicle pilots, they are uncommon in fleet settings. Most DC fast chargers on the market charge at rates of 25–50 kW. At current charging speeds, they are ideal for locations at which a person would spend 30 minutes to an hour, such as meeting locations. Current DC fast chargers typically require inputs of 480+ volts and 100+ amps (50–60 kW) and can produce a full charge for an electric vehicle (EV) with a 100-mile range battery in slightly more than 30 minutes (178 miles of electric drive per hour of charging).

Funding

Public funding from federal, state, and local agencies, as well as utilities, has resulted in a variety of geographically focused incentive programs for EV infrastructure; however, there are currently no open, fleet-focused programs available in the San Diego region. The City of Vista should continue to look for available opportunities for EV charging as they consider adopting EVs into their fleet.

Fleet planning with the Petroleum Reduction Planning Tool

There are many conservation and efficiency measures that could be deployed to reduce petroleum use in the municipal fleet. To increase overall fleet fuel efficiency, the Federal Energy Management Program (FEMP) recommends initially focusing on increasing fuel efficiency of the least efficient vehicles. In addition, the U.S. Department of Energy's Petroleum Reduction Planning Tool provided by the Alternative Fuels and Advanced Vehicles Data Center (afdc.energy.gov/afdc/prep/) can help fleet managers evaluate and calculate petroleum-reductions through the following methods:

- Efficiency
 - Fuel economy increase
 - Idling time reduction
 - Onboard idle reduction
- Conservation
 - Vehicle miles traveled reduction
- Alternative Fuel Use
 - Hybrid electric vehicles transition
 - Biodiesel blend use
 - Truck stop electrification

The fleet manager can set a petroleum reduction goal (e.g., 10% savings), and the free online tool will identify potential savings based on the fleet information entered and petroleum-reduction measures selected.

Additionally, FEMP has dedicated resources to assist federal agency fleet managers in developing and implementing petroleum reduction strategies. Through Executive Order 13514 and other mandates, federal agencies are required to reduce petroleum usage and increase alternative fuel use in their fleets. Local jurisdictions are not impacted by the federal mandates but may find FEMP's resources helpful if developing a petroleum-reduction plan. Guidance and a handbook on fleet-management provided by FEMP are available online at energy.gov/eere/femp/federal-fleet-management-requirements.

Fuel-saving tips for City employees

To support the State's goals and to conserve fuel locally, there also are a variety of strategies that City employees and fleet managers can pursue to reduce petroleum use and transportation costs associated with work-related trips, including trip planning, efficient driving habits, and routine fleet maintenance. Fleet managers also can review vehicle scheduling and routing to determine potential fuel-efficiency improvements. In addition, employees can consider:

- Alternative transportation options, such as carpooling, walking, bicycling, and public transit
- Shared-vehicle options, like carpooling with other staff and staff from other agencies
- Alternatives to in-person meetings or events, such as conference calls or webinars
- Choosing the most fuel-efficient vehicle that will serve the trip purpose

The official U.S. government source for fuel economy information is fuelconomy.gov. The site provides data about new and used cars and trucks and provides fuel-efficiency tips that the City can share with employees. Tips include:

- Drive sensibly – Aggressive driving habits like speeding, rapid acceleration, and hard-stop braking can lower fuel efficiency by 33 percent at highway speeds and by 5 percent around town
- Use cruise control – Using cruise control on the highway helps to maintain a constant speed and, in most cases, saves fuel
- Observe the speed limit – While each vehicle reaches optimal fuel economy at a different speed, fuel efficiency usually decreases at speeds above 60 miles per hour (mph). As a rule of thumb, each 5-mph increase over 60 mph can cost about \$0.21 per gallon of gasoline
- Remove excess weight – Avoid keeping unnecessary and heavy items in vehicles. An extra 100 pounds can reduce fuel efficiency by up to 2 percent. The reduction is based on the percentage of extra weight relative to the vehicle's weight and affects smaller vehicles more than larger ones
- Avoid excessive idling – Vehicles with larger engines typically waste more fuel while idling than vehicles with smaller engines
- Use overdrive gears – Engine speed goes down when in overdrive gears, thereby saving fuel and reducing engine wear
- Properly inflate tires – Check tires monthly for proper inflation. Underinflated tires can lower fuel efficiency by 0.4 percent for every one-psi drop in pressure of all four tires

4. Develop City Employee Knowledge of Energy Efficiency

Overview

Developing employee knowledge of energy efficiency is another way for the City of Vista to promote energy savings in municipal operations and throughout the community. This chapter identifies free educational seminars available to City employees at the CSE and the SDG&E Energy Innovation Center (EIC). In addition to the no-cost resources offered by CSE and SDG&E, local colleges and universities host educational programs that focus on energy efficiency that are available to City staff and energy professionals. Professional certifications in energy management also are identified in this chapter. If City staff is interested in these local courses, SANDAG Roadmap Program staff can facilitate participation in the certification programs and may be able to assist with enrollment costs.

For educational material relating to energy efficiency outside of San Diego County, please consult the additional resources listed at the end of this chapter.

Getting started

As a first step in determining appropriate energy efficiency educational, training, and certification opportunities for employees, the City is asked to identify the following:

- Training and certification goals for staff, teams, and internal working groups
- Staff positions or employees who could benefit from energy-related workshops and trainings, such as those listed in Table 5
- Other workshops or trainings of interest (if not listed herein)
- Workshops or trainings that Vista may be interested in hosting at a City facility

SDG&E, CSE, and others conduct expert-facilitated seminars on a broad spectrum of energy topics. Workshop costs are covered by SDG&E and funded by California utility customers under the auspices of the California Public Utilities Commission, unless otherwise posted. An RSVP is requested for workshops to ensure that adequate space and catering are provided. Sign up for SDG&E workshops at seminars.sdge.com, or email seminars@sdge.com for more information. For more information on programs hosted by CSE, contact CSE at (858) 244-1177. CSE and SDG&E publish a workshop calendar online at energycenter.org/events.

Table 5 identifies quarterly workshops offered at CSE and the EIC, beneficial energy-related training and certification programs for City employees, and other educational resources that extend beyond the San Diego region.

Table 5

Workshops, energy trainings and certification programs, and other educational resources

Free educational seminars at CSE and EIC		Audience
Building Performance and Monitoring	Energy management systems Benchmarking tools Facility management	Facilities, public works staff
General Energy Workshops	Energy efficiency 101 Basics of solar, basics of solar water heating Zero Net Energy Lunch and learn topics	Interested staff
Best Practices and Programs	Rebate and incentive programs	Planning, public works, Cist administration staff
Online Workshop Calendar	CSE Workshops: energycenter.org/events SDG&E Workshops: seminars.sdge.com	
Training and certification programs		Audience
Nonresidential/Residential Standards for Plans Examiners & Building Inspectors	In this hands-on course, plans examiners and building inspectors will gain the knowledge and skills needed to more quickly and effectively enforce the energy code for nonresidential/residential energy projects.	Code inspectors, planning staff
Building Operator Certification (BOC)	SDG&E offers BOC Level 1 and 2 trainings and certifications to City staff at a reduced rate. Building Operator Certification is a nationally recognized training and certification program offering improved job skills and more comfortable energy-efficient facilities. The training is led by experienced, professional instructors.	Facilities, public works staff
Certified Energy Manager (CEM)	Certification is through the Association of Energy Engineers (AEE). CEM distinguishes high levels of competency and proficiency in energy management, demonstrating expertise in several areas ranging from standards, air quality, energy audits, lighting, procurement, and financing.	Facilities, public works staff
North American Technician Excellence (NATE) Certification Exam	SDG&E and the Institute of Heating and Air Conditioning Industries, Inc. (IHACI) co-sponsor seminars designed to help experienced HVAC professionals prepare for successfully completing the NATE Certification Exam.	Facilities, public works staff
Leadership in Energy and Environmental Design (LEED®) Professional Credentials	The LEED® designation acknowledges expertise in green planning, design, construction, operations, neighborhood development, and other sustainable practices. SDG&E will cover the cost of appropriate City employees to undergo training for a LEED® Professional Credential.	City administration, planning, facilities, public works, environmental services staff
Home Energy Score (HES) Assessor Candidate Orientation	Tailored to energy auditors, home inspectors, and other types of residential energy professionals interested in becoming a HES Assessor, this free orientation explains the steps to becoming a Participating Assessor in the San Diego Regional HES Program. Developed by the U.S. Department of Energy and its national laboratories, the HES provides credible information about a property's energy use.	Code inspectors, planning staff

Additional educational resources		Audience
World Bank – Open Learning Campus Energy Efficiency in Cities course	Developed and provided by the City Energy Efficiency Transportation Initiative (CEETI), the Energy Efficiency in Cities course is an online platform through which staff can learn about citywide energy initiatives and energy measure implementation. This coursework focuses on energy project financing, practical approaches to urban energy efficiency measures, and key issues and solution-based modeling for all cities (olc.worldbank.org/content/energy-efficiency-cities-self-paced)	City leadership
Security and Sustainability Forum (SSF)	The SSF archive of free webinars includes an array of energy-related content. Course completion certificates are offered during live webinar series. Webinar speakers are leaders in the energy industry and can be reached through the interactive portion of the presentations (securityandsustainabilityforum.org/archives/webinars)	Varies
Association of Climate Change Officers (ACCO)	Credentialing, training, and networking are available through ACCO. Online courses are part of a high-level curriculum catering to city staff and energy professionals. Comprehensive energy management and renewable energy portfolio strategizing are cornerstones to the online ACCO prospectus (accoonline.org/)	Interested staff and energy professionals
International Council for Local Environmental Initiatives (ICLEI)	Through ICELI, City staff can access free webinars and trainings that focus on local, regional, and statewide project methodologies for energy efficiency programs (icleiusa.org/webinars/)	Interested staff

5. Promote Commuter Benefits to City Employees

The City of Vista can achieve transportation-related energy savings by promoting commuter programs to its employees. Such programs provide alternative transportation options to driving alone and incentives to use them.

The SANDAG iCommute Employer Services Program (icommutesd.com/employers/employer-services) provides assistance and tools to help organizations design and implement customized commuter programs that meet sustainability goals. Services are offered at no cost and are customized to address the specific needs of a jurisdiction and its employees. As part of the Employer Services Program, iCommute offers organizations assistance with developing a customized Trip Reduction Plan for City staff to help them reduce their drive-alone trips. Development of a Trip Reduction Plan starts with a needs assessment and a survey and map of employee commute patterns and preferences. Based on the needs assessment and survey results, the City can make informed decisions about how to develop a commuter program that can help employees save money while providing the City with a cost-effective way to reduce greenhouse gas emissions.

Vista can promote and participate in annual events such as Bike to Work Day and Rideshare Week.

How commuter programs work

An employee commuter program provides workers with alternative transportation options, as well as incentives for using them. A custom program could include everything from helping connect employees who want to carpool or vanpool with one another to offering telework options to providing free or reduced-cost transit passes.

Some of the programs are free or subsidized by SANDAG. For example, the SANDAG Vanpool Program (icommutesd.com/vanpool/vanpool) provides a \$400 per month subsidy for qualifying vanpools to manage the costs of the van lease. In addition, the SANDAG Try Transit Program is an employer benefit program for employers located within a half-mile of a transit stop that provides eligible employees with a 30-day pass to try one of the many transit choices – bus, train, or trolley – in the San Diego region (icommutesd.com/employers/employer-services). The Guaranteed Ride Home Program (icommutesd.com/Commuters/Guaranteed-Ride-Home) is another SANDAG incentive that makes choosing an alternative commute easy. Commuters who carpool, vanpool, use transit, walk, or bike to work are eligible for a free Uber ride, taxi ride, or rental car to get home from work in the event of emergency or unscheduled overtime up to three times per year.

Benefits of participation

Alternative transportation is good business; jurisdictions can:

- Measure and reduce their petroleum consumption and carbon footprint
- Add commuter benefits to employee compensation packages at little or no cost
- Utilize tax benefits and provide cost-savings on payroll taxes
- Reduce employee parking demand
- Enhance retention and recruitment
- Earn recognition as a Diamond Award Employer at the annual Diamond Awards reception (icommutesd.com/employers/diamond-awards)
- Receive points toward LEED® certification

The Commute Calculator provides commuters with the actual cost of their current commute and the potential savings from choosing alternative forms of transportation.

Getting started

At any time, the City can request assistance from iCommute to engage its employees in alternative transportation options and to establish municipal commuter policies; initial steps include:

- Establishing a City of Vista point person (usually a representative from Human Resources) to work with the City's SANDAG iCommute representative
- Surveying staff on their current commute habits and preferences with the assistance of an iCommute representative
- Sharing the Commute Calculator with City employees so they can determine their potential cost-savings from choosing an alternative transportation option (icommutesd.com/commuters/calculator)
- Mapping employee commutes to determine which alternative transportation choices are best to promote to staff – conducted by iCommute
- Formalizing a commuter benefit policy that outlines the commuter benefits that the City can offer (commuter benefit examples can be found at icommutesd.com, and examples of commuter benefit policies from other municipalities and employers are available upon request – see contact information at the end of this chapter)

iCommute can help the city survey its employees to identify local commuting habits and preferences.

Once the City has decided which commute choices to promote and/or incentivize, an iCommute representative will give a presentation to staff and hold an iCommute-sponsored event, such as:

- A vanpool or carpool formation meeting
- A "Try Transit" lunch-and-learn where eligible attendees will receive a complimentary 30-day transit pass
- A biking promotion for employees to participate in a free bike education class, group ride, or bike tune-up offered by iCommute (icommutesd.com/bike/BTWDEmployerServices)

After the commuter program has been established, commuter benefit information can be provided in all-new employee orientation packets, and a link to iCommute can be added to the City intranet site for ongoing easy access to program information. The City also can participate in and promote iCommute annual events, such as Bike to Work Day (icommutesd.com/events/bike-month) and Rideshare Week (icommutesd.com/events/rideshare-week).

For more information or to continue developing and implementing a City of Vista commuter program, contact SANDAG iCommute staff Deborah Jones at deborah.jones@sandag.org.

Section II.

Saving Energy in the Community

6. Utilize Planning and Development Authority

Local governments can promote energy efficiency in their communities by leveraging their authority over local land use and development activity. The City of Vista has incorporated several energy-efficiency policies in its General Plan and has developed a CAP that includes additional energy-saving measures.

This chapter addresses ways in which energy considerations can be integrated into local land use and transportation planning. Each energy efficiency measure has been designed to be consistent with regional and state energy policies and falls under the following categories:

1. Smart growth development policies
2. Energy-efficient building upgrades
3. Clean and efficient transportation options

The built environment is comprised of a city's building stock, transportation network, open space system, and land use pattern. In turn, the energy demand of the built environment is strongly dependent upon the design and orientation of buildings, distribution and density of development, and types of transportation infrastructure.

The planning role of local and regional governments

Regional energy consumption is strongly related to urban form, the physical features and composition of the built environment. Local governments and SANDAG can influence the built environment, including the amount of energy consumed, through collaborative planning, regulations, and infrastructure investments that affect land use patterns, the transportation system, and public infrastructure.

State law gives local governments authority over land use and development activities within their jurisdictions in accordance with their general plans. A general plan is made up of seven mandatory elements: land use, circulation, housing, open space, conservation, safety, and noise, and can include optional elements such as air quality, energy, public facilities, and economic development. Local governments develop policies and programs to implement their general plans. The City is promoting energy conservation and efficiency through the Resource Conservation and Sustainability Element and the Public Safety, Facilities, and Services Element of its General Plan.

Sustainable Communities Strategy

Pursuant to Senate Bill 375 (Steinberg, 2008) (SB 375), SANDAG and regional planning agencies across the state are required to develop a Sustainable Communities Strategy (SCS) to reduce GHG emissions from passenger vehicles by targets set by the CARB. Table 6 presents the updated CARB targets and the projected GHG reductions achieved in the SANDAG SCS included in the 2015 Regional Plan. In 2011, SANDAG became the first Metropolitan Planning Organization (MPO) in the state to adopt the SCS as part of its 2050 Regional Transportation Plan (RTP). The Regional Plan adopted by the SANDAG Board of Directors in 2015 represents the second SANDAG SCS, with the third currently in development as part of San Diego Forward: The 2021 Regional Plan pursuant to SB 375.

Table 6

GHG reductions in the SANDAG 2015 Regional Plan/Sustainable Communities Strategy

Average Weekday Per Capita CO₂ and VMT Reductions for Cars and Light Trucks from 2005

Target Year	CARB Target	Projected GHG Reduction
2020	15%	15%
2035	19%	21%

Note: CO₂ = carbon dioxide

CARB identifies CO₂ as the GHG whose concentration is being most affected directly by human activities. CO₂ also serves as the reference to compare all other GHGs.

SB 375 also provides an opportunity for streamlining the California Environmental Quality Act (CEQA) process for projects if they are consistent with the SCS as either a “residential/mixed-use project” or as a “Transit Priority Project” (TPP). A residential/mixed-use project that is consistent with the SCS would not need to include growth-inducing impacts or increases in GHG emissions from passenger cars and light trucks in the project’s CEQA analysis. For a TPP, the project would need to be a minimum of 50 percent residential with a density of at least 20 units per acre and be within a half-mile of a major transit stop or a high-quality transit corridor included in the 2015 Regional Plan. Appendix D contains larger definitions for what could qualify for CEQA streamlining.

Smart growth development policies

Smart growth can be defined as a compact, efficient, and environmentally sensitive pattern of development that provides people with additional travel, housing, and employment choices by focusing future growth away from rural areas and closer to existing and planned job centers and public facilities, while preserving open space and natural resources.

The City of Vista’s General Plan 2030

Reduce GHG emissions from community activities and municipal facilities and operations within the City boundaries to support the State’s efforts under Assembly Bill 32, Senate Bill 375, and other state and federal mandates and mitigate the community’s contributions to global climate change.

Resource Conservation and Sustainability Element, Goal 2

Past planning of the built environment typically featured segregation between land uses and transportation systems that favored the automobile over biking, walking, and public transit. Communities in which people walk, bike, and ride public transit are typically characterized by a mix of more concentrated, diverse, and synergistic land uses. These areas have a distinct sense of place created by safe, generous, and attractive sidewalks; well-defined and well-connected bike paths and lanes; street-adjacent buildings that accommodate pedestrian-oriented uses; a variety of housing types and choices; and an interconnected street grid that controls the speed and volume of vehicle traffic. In addition to promoting multimodal transportation, smart growth land use patterns help protect open space, wildlife habitat, watersheds, and agricultural land.

The City has included several smart growth and sustainable development policies in its General Plan. A complete list of these policies is included in Appendix A. Two areas in which the City has integrated smart growth principles into local plans are exhibited in the Downtown Specific Plan and along North Santa Fe Avenue from Orange Street to Weston Circle. These areas are included in an updated regionwide Smart Growth Concept Map from January 2012:

- Downtown Specific Plan (Downtown Vista) is a 300-acre town center planning area encompassing a mix of retail, commercial, office, and high-density residential uses. The area includes historic downtown Vista, the South Santa Fe commercial corridor, the Vista Village entertainment center, and existing multi-family and single-family neighborhoods. The Downtown Specific Plan area is anchored by a multimodal transit center that includes the Vista Village SPRINTER Station.
- North Santa Fe Avenue (from Orange Street to Weston Circle) is a Mixed-Use Transit Corridor extending approximately 1.5 miles from slightly north of Bobier Drive to within walking distance of the Vista Transit Center and encompassing the urbanized portions of North Santa Fe Avenue. This stretch of North Santa Fe Avenue currently features strip retail centers interspersed with auto repair facilities, fast-food restaurants and single-family residential uses. A mixed-use zoning designation has been implemented within this corridor, allowing residential densities up to 40 dwelling units per acre.

Funding for smart growth planning

SANDAG manages the *TransNet* Smart Growth Incentive Program (SGIP), which funds transportation and transportation-related infrastructure improvements and planning efforts that support smart growth development. The SGIP awards 2 percent of the annual *TransNet* revenues to local governments through a competitive grant program. On October 26, 2018, the SANDAG Board of Directors approved the funding recommendations for the SGIP Capital grants. The City was awarded \$2.5 million to improve multimodal mobility, reduce speeds, and enhance pedestrian elements in the Paseo Santa Fe Phase 3 project. For more information on the SGIP and upcoming funding cycles, visit sandag.org/grants.

Appendix D contains the existing and potential “smart growth opportunity areas” that the City provided to SANDAG for inclusion in the 2016 update of the Smart Growth Concept Map. The SGIP utilizes the Smart Growth Concept Map when determining eligibility for grant awards. Appendix D also contains sample smart growth measures that the City could consider to assist in the implementation of its General Plan or for use in its development review process.

Energy-efficient building upgrades

The *California Long Term Energy Efficiency Strategic Plan* (2011),⁴ the California Public Utilities Commission's (CPUC's) framework for energy efficiency in the State, describes local governments' authorities and opportunities for promoting energy efficiency in new and existing buildings. The City has included an energy goal and several policy measures as part of its General Plan within its Resource Conservation and Sustainability Element:

The City of Vista Resource Conservation and Sustainability Goal 14: Promote efficient and sustainable use of energy resources through conservation, demand-reduction activities, and alternative energy sources

- 14.1: Consider the goals and policies in the SANDAG Regional Energy Strategy in drafting new legislation, policies, or procedures
- 14.2: Through collaborative efforts, promote energy-conservation programs to install energy-efficient technologies and products
- 14.3: Encourage energy- and water-saving retrofits for existing residential development
- 14.4: Continue to target local funding mechanisms to assist affordable housing developers in incorporating energy-efficient designs and features
- 14.5: Promote voluntary energy retrofits for existing commercial and industrial/business park uses

The unabbreviated list of energy policy measures from the City's General Plan is provided as Appendix A. In addition, the Roadmap includes Appendix E, which contains energy-related policy measures that reflect the State's goals to reduce energy use and increase the use of renewable energy.

Codes, permits, and compliance

Through the Roadmap Program, SDG&E can offer free energy code training for local code inspectors and planning department personnel. The training opportunities are to help local governments understand the most recent updates to building energy codes, because local governments adopt and enforce building codes and regulate development activity within their jurisdictions. The *California Long Term Energy Efficiency Strategic Plan* (2011) identifies areas where local government authority can impact energy use in new and existing buildings:

- Ensuring compliance and enforcement of the Title 24, Part 6 building energy-efficiency standards for residential and commercial buildings
- Adopting and implementing voluntary and mandatory "reach" (enhanced energy efficiency) codes beyond Title 24, Part 6 energy requirements (and potentially CALGreen [Title 24, Part 11] requirements)
- Supporting high-performance projects that voluntarily exceed minimum energy codes through favorable fee structures, fast-tracked permitting, and other innovative and locally appropriate approaches
- Enacting ordinances with point-of-sale or other approaches that spur energy-efficiency decisions and actions in existing, privately owned buildings
- Applying energy efficiency-related "carrots" and "sticks" using local zoning and development authority

⁴ The *California Long Term Energy Efficiency Strategic Plan* (January 2011): cpuc.ca.gov/general.aspx?id=4125. Accessed on 2/20/19.

Advanced Home Upgrade

Local governments can promote residential programs like Advanced Home Upgrade (AHU) which help homeowners undertake building retrofits that save energy and reduce monthly utility bills (sdge.com/residential/savings-center/rebates/energy-upgrade-california-home-upgrade).

Energy Upgrade California (EUC) (energyupgradeca.org) is a statewide initiative committed to uniting Californians to strive toward reaching our state's energy goals. EUC was created to motivate and educate California residents and small businesses about energy management. EUC is supported by an alliance of the CPUC, the CEC, utilities, regional energy networks, local governments, Community Choice Aggregates, businesses, and nonprofits to assist communities in meeting state and local energy and climate action goals.

The AHU program promotes a “whole house” performance approach to efficiency that focuses on the elements within a home that affect energy use, how they interact, and how they influence health and safety. The AHU program approach can provide deeper, more comprehensive energy improvements compared to a “widget” approach that targets only one energy improvement at a time, such as lighting, air conditioners, or insulation. To determine the best approach for improvements to an individual home, a home energy assessment is performed. The assessment identifies appropriate upgrades, the costs of those upgrades, and applicable rebates or incentives. The home assessments and retrofit projects are performed by licensed building contractors that have been trained specifically for the AHU program (more information on workforce development programs is discussed in Chapter 8).

Property Assessed Clean Energy (PACE) programs are becoming available in parts of California to cover the upfront capital costs of energy and water upgrades at commercial buildings. Appendix E provides information on PACE and other energy finance mechanisms.

Clean and efficient transportation options

Transportation Demand Management

Transportation Demand Management (TDM) refers to programs and strategies that reduce drive-alone trips by encouraging alternative transportation options. Including TDM measures in the development review process may offer developers creative, affordable, and effective ways to reduce vehicle trips and mitigate traffic and parking impacts, as well as greenhouse gas emissions. TDM measures also contribute toward LEED® certification. For more information on how to incorporate TDM into the planning and development process, visit icommutesd.com/localgov.

The SANDAG iCommute program offers free assistance to San Diego regional businesses and agencies in developing and implementing customized commuter benefit programs that reduce traffic congestion, fuel use, air pollution, and greenhouse gas emissions (for more information see Chapter 5). Active transportation choices like biking and walking provide a healthier alternative to driving and reduce petroleum consumption and pollution locally. In addition, smart growth land use patterns, like those characterized on the SANDAG Smart Growth Concept Map, accommodate biking and walking as mobility choices. Smart growth land use patterns typically contain a diverse mix of land uses, complemented by sidewalks, bike paths, a variety of housing types, and an interconnected street grid that can slow and disperse vehicle traffic.

Mobility hubs are transportation centers located in smart growth areas served by high-frequency transit service. They provide an integrated suite of mobility services, amenities, and technologies that bridge the distance between transit and an individual's origin or destination. The Vista Transit Center was identified as a mobility hub prototype location in the SANDAG Regional Mobility Hub Implementation Strategy (sdforward.com/mobility-planning/regionalmobilityhub). The Vista Transit Center is conveniently located near the City's downtown village, making the SPRINTER light rail service and local bus routes ideal for accessing the community's retail destinations. The station features a large waiting area with ample opportunities to implement mobility hub features and technology enhancements such as:

- WiFi and USB charging ports
- Interactive transportation kiosks that display real-time travel information
- Convenient package delivery stations
- Mobile retail services that complement those located in the village

To learn more about mobility hub recommendations for the Vista Transit Center developed as part of the Regional Mobility Hub Strategy, visit sdforward.com/mobilityhubs.

To implement bike and pedestrian network and mobility hub improvement projects and pilots, the City can apply for grant funds through the *TransNet* SGIP, discussed previously, and the Transportation Development Act (TDA) *TransNet* Bicycle and Pedestrian grant programs. SANDAG allocates funds under the TDA and *TransNet* local sales tax program to support bicycle and pedestrian transportation projects through a competitive process on an annual basis.

Alternative fueling infrastructure

The 2015 Regional Plan provides a blueprint for a sustainable future for the San Diego region. As part of the 2015 Regional Plan, SANDAG committed to a series of near-term and continuing actions, as well as specific performance-monitoring indicators, that serve to expand the use of alternative fueling infrastructure in the region. In addition, the Regional Plan Environmental Impact Report includes several mitigation measures that outline GHG reduction measures that SANDAG would or other agencies could implement; these activities include:

- Near-Term Action #4 and Mitigation Measure GHG-4B – commits SANDAG to adopting a Regional Mobility Hub Implementation Strategy and Plan. Mobility Hubs include amenities for passenger vehicle charging as well as Neighborhood Electric Vehicles and e-bikes/e-scooters. The SANDAG Regional Mobility Hub Strategy is available online at sdforward.com/mobility-planning/regionalmobilityhub
- Near-Term Action #5 and Mitigation Measure GHG-4D – commits SANDAG to completing a study and adopting a plan that details ways to reduce greenhouse gases by expanding the use of alternative fuels regionwide. These two actions were completed as a part of the San Diego Regional Alternative Fuel Readiness Plan (2016),⁵ which addresses barriers to alternative fuel deployment

⁵ San Diego Regional Alternative Fuel Readiness Plan (2016): sandag.org/uploads/projectid/projectid_487_23916.pdf. Accessed on 2/20/19.

- Continuing Action #5 – commits SANDAG to promoting the use of both zero-emission vehicles and alternative fuels and ensuring that we have the infrastructure to support these innovations. Plug-in San Diego continues to offer technical assistance to local jurisdictions, workplaces, multi-family communities, and local vehicle dealerships on EV charging
- Performance Monitoring Indicators – SANDAG reports the most recent data available for alternative fuel vehicle ownership in performance monitoring reports for the 2015 Regional Plan on a four-year cycle⁶
- Mitigation Measure GHG-4C – commits SANDAG to allocating funding for EV charging infrastructure and establishing a regional incentive program by 2020 to promote and increase publicly accessible EV charging infrastructure. SANDAG is currently in the process of developing a Regional Electric Vehicle Infrastructure Charging Program⁷

In addition to these activities, one of the six early actions identified in the SANDAG Regional Energy Strategy (2014) is to support the planning for EV charging and alternative fueling infrastructure. Siting alternative fueling stations, electric charging points, vehicle maintenance facilities, and other infrastructure in coordination with vehicle availability is important to provide customers like fleet managers and the general public with a level of certainty that infrastructure will be available to support their investment in an alternative fuel vehicle.

Support for alternative fuel infrastructure also can help attract private investment associated with alternative transportation to the region. The San Diego Regional Clean Fuels Coalition, along with its members, including the County, SANDAG, local cities, the Airport Authority, the Port of San Diego, and CSE, must continue to address the need for more fueling choices across the region.

There are multiple alternative fueling stations that currently exist in the City's boundary. A current status of fueling stations by type and location can be found on the Alternative Fuel Data Center website (afdc.energy.gov/stations/#/find/nearest) and listed in Appendix G of this report.

Electric vehicles and charging stations

The San Diego region is at the forefront of EV deployment; however, with aggressive State goals for EVs on California roads, additional charging infrastructure will still be needed. Several barriers have been identified through the region's early experiences with EV deployment and EVCS installation. The cost of installation and electrical capacity are two of the biggest barriers to adoption. These barriers need to be addressed in a strategic and coordinated manner to enable widespread regional EV adoption and efficient deployment of EVCS. While the EVCS landscape continues to evolve and grow, there are a number of programs that aim to increase charging infrastructure in the San Diego region.

⁶ Regional Plan Performance Monitoring: sandag.org/index.asp?classid=12&projectid=309&fuseaction=projects.detail. Accessed on 2/21/19.

⁷ SANDAG Regional Electric Vehicle Infrastructure Charging Program: sandag.org/index.asp?classid=17&subclassid=46&projectid=560&fuseaction=projects.detail. Accessed on 2/20/19.

The City may consider the following programs, some of which are under development and others that are currently available, that seek to provide EV infrastructure incentives, installation, or technical assistance:

- SANDAG Regional Electric Vehicle Infrastructure Charging Program: sandag.org/index.asp?classid=17&subclassid=46&projectid=560&fuseaction=projects.detail
- Plug-in San Diego: <https://energycenter.org/pluginsd>
- Electrify America: electrifyamerica.com/index
- SDG&E's Power Your Drive Program: sdge.com/residential/electric-vehicles/power-your-drive

In addition, assisted by a CEC grant, SANDAG and CSE have developed the Plug-in San Diego Needs Assessment Interactive Mapping Tool to help city planners and decision makers identify areas within their jurisdiction that could potentially benefit from additional EVCS. The tool can be found on the SANDAG website here:

sandag.org/index.asp?classid=17&subclassid=46&projectid=511&fuseaction=projects.detail

Sample mandatory and voluntary ordinances for including TDM, alternative fueling infrastructure, and other transportation-related measures in development projects are provided in Appendix F.

7. Market Energy Programs to Local Residents, Schools, and Businesses

Overview

This chapter provides the City of Vista with Internet links to existing energy efficiency and fuel-saving resources that the City could include on its municipal website and in its newsletters or E-Alerts, which would enable Vista to serve as a conduit to its constituents in energy-saving residential, school, and commercial programs. The City could help promote messages of sustainability that foster a greater local understanding of the connection between energy/fuel use and environmental impacts. Becoming a local government partner with national energy-saving educational campaigns, such as *ENERGY STAR* and *WaterSense*, would allow for greater jurisdictional leadership and influence. By sharing informative resources with stakeholders and by co-facilitating educational opportunities, Vista can expand its learning portfolio and help provide energy program information to residents and business owners.

The following five outreach mechanisms are sample methods by which the City can engage residents and businesses in energy programs:

- Provide summary descriptions and links to SDG&E programs, customer rebates, and related resources on the City's website
- Include articles about opportunities to save energy with links to existing programs and community resources in City newsletters (print or email) or similar media (energy efficiency material included in public outreach could include CSE training events; local, regional, and state energy legislation updates; and information regarding SANDAG iCommute and SDG&E programs and services for residents and businesses)
- Provide educational energy-related materials at City venues and facilities, such as the Civic Center information counters, department buildings, libraries, senior centers, and information-sharing kiosks at partnering agencies (e.g., Vista Community Clinic)
- Invite SDG&E, SANDAG iCommute representatives, and CSE to host an information booth on energy-saving programs or commuter programs at community events
- Help coordinate presentations by energy program staff to community organizations such as a neighborhood planning group or local chamber of commerce

California's vision for marketing, education, and outreach

Californians will be engaged as partners in the state's energy efficiency, demand-side management, and clean energy efforts by becoming fully informed of the importance of energy efficiency and their opportunities to act

California Long-Term Energy Efficiency Strategic Plan

Energy programs and educational resources

Local programs and resources

SDG&E Energy Innovation Center

In January 2012, SDG&E opened the Energy Innovation Center (EIC), which was designed to be one of San Diego's first LEED® Platinum buildings open to the public. The EIC offers training, education, and innovation related to energy efficiency technologies and green building practices. Visitors can attend one of the 250 free training classes offered, borrow a tool from the EIC tool lending library, test cooking equipment in the Commercial Demonstration Kitchen, or simply stop by for a tour.

The EIC is located at 4760 Clairemont Mesa Boulevard, San Diego, California 92117. Call (800) 411-7343 or visit sdge.com/eic.

CSE events and workshops

CSE conducts expert-facilitated seminars on a broad spectrum of energy topics. For more information on programs hosted by CSE, visit energycenter.org/events or contact CSE at (858) 244-1177.

SANDAG iCommute programs for the community

In addition to supporting City-employee commuter programs like those identified in Chapter 5, Vista could help inform its residents and local businesses about regional transportation programs:

- Promote regional commuting services offered by iCommute, the SANDAG TDM program, on municipal websites and newsletters. This includes the SANDAG Vanpool Program, which offers a subsidy of up to \$400 per month for eligible vans; the Guaranteed Ride Home service; Regional Bike Parking Program; and support for carpool, transit, and biking. For more information on regional commute programs, visit icommutesd.com
- Encourage employers to offer commuter benefit programs for their employees. The SANDAG iCommute employer services program provides assistance and tools to help organizations design and implement customized commuter programs that meet sustainability goals (icommutesd.com/employers/employer-services). Services are offered at no cost and are customized to address the specific needs of the employer and its employees
- Participate in annual events and campaigns that encourage commute alternatives to driving alone:
 - Participate in and promote iCommute annual events such as Bike to Work Day (icommutesd.com/events/bike-month) and Rideshare Week (icommutesd.com/events/rideshare-week) to demonstrate the City's commitment to sustainable commute choices
 - Adopt proclamations and celebrate these events in Vista. Examples are provided in Appendix C
 - Host a Bike to Work Day pit stop

- Encourage K–12 schools in the community to participate in the iCommute Walk, Ride, and Roll to School program, which offers free classes and events to public or private K–12 schools in the San Diego region (icommutesd.com/bike/walkriderolltoschool)
- Encourage community-based organizations (including schools) to apply for the iCommute GO by BIKE Mini-Grant program that provides funding to local government agencies and community organizations for projects that encourage biking as an everyday transportation choice through outreach and education (icommutesd.com/events/bike-month)
- Recognize and honor local commuters and employers who have demonstrated a commitment to sustainable commute choices

National programs and resources

ENERGY STAR Government Partnerships

In addition to appliance labeling, the *ENERGY STAR* program seeks partnerships with local businesses, congregations, industries, schools, and others. By becoming a Government *ENERGY STAR* Partner, a local government can receive recognition nationally and can co-brand local energy-saving initiatives with *ENERGY STAR*. More information is available at energystar.gov.

The U.S. Environmental Protection Agency and U.S. Department of Energy host an annual *ENERGY STAR* Awards ceremony to honor organizations that make outstanding contributions to protecting the environment through energy efficiency. For more information on government partnerships, visit energystar.gov/partner_resources.

WaterSense Promotional Partners

WaterSense is an EPA program that helps consumers identify water-efficient products and programs that meet *WaterSense* water efficiency and performance criteria. Products carrying the *WaterSense* label have high performance ratings, help save money, and encourage innovation in manufacturing. More information is available at epa.gov/watersense.

Local governments, utilities, and other organizations can become *WaterSense* Promotional Partners to help provide outreach on water-efficiency measures. Jurisdictions can receive national recognition and can co-brand local water-saving initiatives with *WaterSense* as a promotional partner. For more information on promotional partners, visit epa.gov/watersense/partners/promotional.html.

Additional energy efficiency and fuel-saving resources by audience

Table 7

Energy programs for residential and business audiences

Renewable energy programs	
Self-Generation Incentive Programs	energycenter.org/index.php/incentive-programs/self-generation-incentive-program
The California Solar Initiative (CSI)	energycenter.org/index.php/incentive-programs/california-solar-initiative
CSI Thermal Program (Solar Water Heating)	energycenter.org/california-solar-initiative-thermal
Sustainable Communities Program	sdge.com/environment/sustainablecommunities/
California Energy Commission's Emerging Renewables	consumerenergycenter.org/erprebate/index.html
SDG&E Solar Initiative	sdge.com/environment/solar/sdSolarInitiative.shtml
Net Energy Metering	sdge.com/nem/
Energy and water	
20-Gallon Challenge	The 20-Gallon Challenge is a call for residents and businesses to reduce our region's water use on average by 20 gallons per person per day. Hosted by the San Diego County Water Authority.
GoGreen Financing	gogreenfinancing.com/
Smart Grid	
SDG&E Smart Grid Program	Smart meter and smart grid technologies are being deployed throughout the San Diego region and across the state. sdge.com/smartgrid
Clean transportation and petroleum reduction programs	
Clean Vehicle Rebate Project	cleanvehiclerebate.org/eng
SANDAG iCommute	icommutesd.com/
SDG&E Clean Transportation	sdge.com/cleantransportation/
The EV Project	theevproject.com/
Clean Vehicle Rebate Project	energycenter.org/index.php/incentive-programs/clean-vehicle-rebate-project
The California Electric Vehicle Infrastructure Project (CALeVIP)	calevip.org/

Table 8

Energy programs and assistance for local businesses

Energy efficiency and demand responseBusiness Incentives sdge.com/business/rebatesincentivesCritical Peak Pricing sdge.com/cppTechnical Assistance and
Technology Incentives sdge.com/tatiProject Management Builder
Services sdge.com/builderservicesSummer Saver sdge.com/vendor/summersaver/On-Bill Financing sdge.com/obfEnergy Savings Bid sdge.com/bidEnergy Challenger
(energy audit tool) sdge.com/auditEnergy-Efficiency Seminars sdge.com/trainingSan Diego Regional Green Business
Network greenbizsd.org**New construction**SDG&E's Residential
Rebates and Services All SDG&E residential programs can be accessed from this website.
sdge.com/saveenergyProperty Assessed Clean Energy
(PACE) and AB 811 Programs PACE or AB 811 programs are intended to give cities and counties
the ability to offer low-interest loans for energy efficiency projects
and solar panels to homeowners and small businesses.
PACENation.us

Table 9

Energy programs and assistance for residents

Comprehensive residential websites	
SDG&E's Residential Rebates and Services	All SDG&E residential programs can be accessed from this website. sdge.com/saveenergy
PACE and AB 811 Programs	PACE or AB 811 programs are intended to give cities and counties the ability to offer low-interest loans for energy efficiency projects and solar panels to homeowners and small businesses. PACENation.us
Energy efficiency and demand response	
Advanced Home Program	sdge.com/builderservices/programs/advancedhomes/index.shtml
Air Conditioning Tune-Ups	actimeprogram.com/ProjectCenter/
Summer Saver Program	sdge.com/summersaver/
Affordable Financing for Home Improvements	sdge.com/residential/homeImpFinance.shtml
Refrigerator-Freezer Recycling Program	arcaincutility.com/CA/SDGE/Step2_ZipCode.cfm?ServiceCompany=43
Clothes Washer Rebate Program	20gallonchallenge.com/programs_residential.html or (888) 376-3314
Residential Energy Survey	sdge.com/residential/resEnergyProfiles.shtml or (800) 411-SDGE (7343)
Lighting Turn in Program	sdge.com/lighting
Tax Credits	energytaxincentives.org/
San Diego Regional Home Energy Score Program	energycenter.org/home-energy-score
New construction programs	
Advanced Home Program	sdge.com/builderservices/programs/advancedhomes/index.shtml
New Solar Homes Partnership	sdge.com/environment/solar/solarForNewHomes.shtml
Low income assistance	
Residential Rate Assistance Program	sdge.com/residential/assistance/assistServCare.shtml
The Energy Team Program	sdge.com/residential/energyTeam.shtml or (866) 597-0597
Programs for Customers with Special Needs	sdge.com/residential/assistance/otherCustomerServices.shtml
Neighbor to Neighbor	sdge.com/residential/assistance/financialAssistance.shtml
Solar on Multifamily Affordable Housing	calsomah.org
Energy and water	
WECalc Home Water-Energy-Climate Calculator	Free online tool from the Pacific Institute that estimates home water-related energy use and associated greenhouse gas emissions. wecalc.org/
SoCal Water Smart for Residential Customers	Available water efficiency product rebates socalwatersmart.com/
Clothes Washer Rebate Program	20gallonchallenge.com/programs_residential.html or (888) 376-3314

8. Support Green Jobs and Workforce Training

The City of Vista can increase local awareness of workshops, trainings, and employment resources related to green jobs available to its constituents. The City can make this information more widely available in several ways, such as including it on the City website and providing handouts at locations such as community centers and the Civic Center. The City is further enhancing local awareness through direct conversations with employers via the Vista CAREs Walks and Visits. This Chapter shares examples of green training and education resources available both in the San Diego region and across the State. Chapter 4 outlines additional resources specifically for training and education of municipal staff.

Examples of green job fields:

- Building retrofitting
- Mass transit-freight rail
- Smart grid
- Wind power
- Solar power
- Advanced biofuels
- Alternative transportation vehicles and infrastructure

Examples of green jobs:

- Heating, ventilation, and air conditioning (HVAC) installers
- Electricians
- Carpenters, construction workers, and managers
- Home builders, roofers
- Building inspectors
- Engineers (civil, mechanical, environmental, electrical)
- Welders, metal fabricators
- Assemblers
- Transit and truck drivers
- Dispatchers
- Software engineers
- Technicians, machinists, equipment operators
- Power line installers and repairers
- Iron and steel workers, sheet metal workers
- Chemists, chemical technicians
- Agricultural workers, inspectors
- Farm product purchasers

California's vision for workforce education and training

By 2020, California's workforce is trained and fully engaged to provide the human capital necessary to achieve California's economic, energy efficiency, and demand-side management potential

California Long-Term Energy Efficiency Strategic Plan

Regional resources for training and education

San Diego Regional Green Business Network

The Center for Sustainable Energy, on behalf of the San Diego Regional Energy Partnership, launched the San Diego Regional Green Business Network (SDRGBN) to help businesses save energy and money by connecting businesses to local programs and fostering networking and idea-sharing among businesses. The SDRGBN offers businesses the opportunity to engage in resources, workshops, events, and community recognition programs designed to facilitate actions that improve the environment and boost economic growth. More information is available at greenbizsd.org.

San Diego Regional Home Energy Score Program

Developed by the U.S. Department of Energy and its national laboratories, the Home Energy Score (HES) provides homeowners, homebuyers, and tenants directly comparable and credible information about a property's energy use. Like a miles-per-gallon rating for a car, the HES is based on a standard assessment of energy-related assets to easily compare energy use across the housing market. Energy auditors, home inspectors, and other residential energy professionals can become HES Assessors; training is available through the Center for Sustainable Energy. More information is available at energycenter.org/home-energy-score.

University of California San Diego Extension Program

Offered online and in person, the University of California San Diego (UC San Diego) Extension program provides certificates in sustainable green business, environmental management, CEQA practice, HVAC system design, and other related specialties. These programs provide foundations of sustainability principles in the green market. Coupled with the coursework is an interactive blog for professionals seeking cutting edge technology updates and green job trends, available at extension.ucsd.edu/news-and-events/extension-blog/may-2013/finding-a-sustainable-career/. For more information, visit extension.ucsd.edu/courses-and-programs/sustainable-business-practices.

The San Diego Workforce Partnership

The San Diego Workforce Partnership works with public and private agencies, local businesses, and educational institutions to create workforce solutions for the San Diego region. It provides services for employers and job seekers, online access to workforce training and resources, and has ten One-Stop Career Centers located throughout San Diego County. The Workforce Partnership serves as this region's Workforce Investment Board. More information can be found at workforce.org. There are three One-Stop Career Centers near Vista:

- Interfaith Community Services – 4700 North River Road, Oceanside, California 92057, (760) 445-3656
- Access, Inc. – 931 East Vista Way, Vista, California 92085, (858) 560-0871
- North County Coastal Career Center – 1949 Avenida del Oro, Suite 106, Oceanside, California 92056, (760) 631-6160

SDG&E Energy Innovation Center

The Energy Innovation Center (EIC) hosts a variety of workshops and includes a Food Service Demonstration Kitchen that hosts free seminars on energy-efficient cooking, equipment, lighting, and food safety. The EIC is located at 4760 Clairemont Mesa Boulevard, San Diego, California 92117. Call (800) 411-7343 or visit sdge.com/eic.

Statewide resources for training and education

Grid Alternatives

Grid Alternatives offers volunteer opportunities to gain hands-on solar experience and network with others interested in renewable energy, the environment, and our communities. More information is available at gridalternatives.org.

Solar Training Institute

The Solar Training Institute provides accelerated training classes for contractors, electricians, engineers, solar energy entrepreneurs, salespeople, or others considering a career change to the growing solar industry. More information is available at trainingforsolar.com.

California Community Colleges Economic and Workforce Development

The California Community Colleges Economic and Workforce Development (CCCEWD) program provides industry-specific workforce education, training, and consulting services to help foster healthy competition amongst Californian businesses and develop strong and innovative workforces. CCCEWD is the state program from which the local Advanced Transportation Technology and Energy Center, San Diego Workforce Partnership, and One-Stop Career Centers stem. More information is available at cccewd.net.

Acronyms

AB	Assembly Bill
ACCO	Association of Climate Change Officers
AEE	Association of Energy Engineers
AHU	Advanced Home Upgrade
BOC	Building Operator Certification
CALeVIP	California Electric Vehicle Infrastructure Project
CAP	Climate Action Plan
CARB	California Air Resources Board
CCCEWD	California Community Colleges Economic and Workforce Development
CEC	California Energy Commission
CEETI	City Energy Efficiency Transportation Initiative
CEM	Certified Energy Manager
CEQA	California Environmental Quality Act
CO2	Carbon dioxide
CPUC	California Public Utilities Commission
CSE	Center for Sustainable Energy
CSI	California Solar Initiative
CVRP	Clean Vehicle Rebate Project
DC	Direct Current
EIC	Energy Innovation Center
ETP	California Emerging Technologies Program
EUC	Energy Upgrade California
EV	Electric Vehicle
EVCS	Electric vehicle charging station
FEMP	Federal Energy Management Program
GHG	Greenhouse gas
HES	Home Energy Score
HVAC	Heating, ventilation, and air conditioning
HVIP	Hybrid Truck and Bus Voucher Incentive Project
ICLEI	International Council for Local Environmental Initiatives
IHACI	Institute of Heating and Air Conditioning Industries, Inc.
LED	Light-Emitting Diode
LEED®	Leadership in Energy and Environmental Design
MPO	Metropolitan Planning Organization
NATE	North American Technician Excellence (Certification Exam)
PACE	Property Assessed Clean Energy
PEV	Plug-in electric vehicle
PHEV	Plug-in hybrid electric vehicle
RCS	Resource Conservation and Sustainability Element
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill

SCS	Sustainable Communities Strategy
SDG&E	San Diego Gas & Electric®
SDRGBN	San Diego Regional Green Business Network
SGIP	Smart Growth Incentive Program
SSF	Security and Sustainability Forum
TDA	Transportation Development Act
TDM	Transportation Demand Management
TPP	Transit Priority Project
TRC	TRC Companies, Inc.
UCSD	University of California San Diego
VMT	Vehicle miles traveled

Appendix A: City of Vista General Plan Update (2012) Elements Related to Energy

City of Vista General Plan Update (2012)

Elements Related to Energy

Introduction

Issues and opportunities

Issue No. 1: New regulatory framework exists

Municipalities must address certain topics in the context of their general plans in order to comply with legislation passed by the State of California. Such recent legislative mandates include Senate Bill 18 (Burton, 2004) (SB 18), Assembly Bill 32 (Nunez, 2006) (AB 32), Senate Bill 375 (Steinberg, 2008) (SB 375), and Assembly Bill 1358 (Leno, 2008) (AB 1358). SB 18 requires municipalities to consult with Native Americans when amending their general plans to protect Native American cultural places. The State of California passed AB 32 in 2007; this is landmark legislation that addresses climate change by reducing energy consumption in the sectors of electricity, natural gas, and transportation, and places emphasis on land use strategies to reduce energy consumption. Municipalities must include strategies to address climate change in their general plans. SB 375 aims to address climate change by reducing sprawl and dependence on the personal automobile. SB 375 helps implement AB 32's GHG-reduction goals by integrating land use, regional transportation, and housing planning. Although SB 375 currently applies to regional planning efforts, cooperation by municipalities will be key to its implementation. AB 1358 requires California cities, upon revision of the Circulation Element of their General Plan, to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway, including motorists, pedestrians, bicyclists, individuals with disabilities, seniors, and users of public transportation.

Issue No. 7: Climate change

Climate change is a worldwide concern and is related to the City of Vista through CO₂ emissions associated with traffic and energy use. Addressing Vista's incremental contribution to greenhouse gases and climate change is necessary to comply with AB 32, discussed in Issue 1.

Opportunity No. 7: Address climate change and sustainability

Vista can address climate change and sustainability needs by incorporating policies to decrease sprawl, protect open space and environmentally sensitive lands, promote energy and resource efficiency, improve walkability, accommodate mixed-use development and transit-supportive land uses, encourage local food production, and provide housing for its residents of varying income levels. Important benefits include improved air quality, reduced CO₂ emissions, preserved nonrenewable resources, and compliance with AB 32 and SB 375.

Opportunity No. 11: Implement smart growth and sustainability

Smart growth emphasizes better coordination between land use and transportation to manage anticipated growth in a way that reduces urban sprawl; expands transportation options; balances jobs and housing; brings commercial goods and services closer to the consumers who need them; preserves natural resources, such as wildlife habitat, watersheds, and agricultural lands; and promotes a healthy lifestyle.

A key principal of smart growth is providing alternative means of transportation to the personal automobile. The SPRINTER rail line provides new public transportation opportunities for residents, commuters, and visitors. In addition, there are several high-frequency bus routes that traverse major arterials and collectors within the City. The SPRINTER stations and high-frequency bus routes provide opportunities for mixed-use development and concentrated residential development to capitalize on the combination of rail access and associated bus routes to help reduce dependence on the automobile and the associated vehicular trips. The Land Use and Community Identity Element provides the City an opportunity to apply smart growth principles through new development, redevelopment, and infill, emphasizing pedestrian- and transit-friendly design, transit-supportive residential densities, and mixed-use development. Given the fact that vacant land is in short supply, the City will be applying these principles to an already built environment, and the transformation will occur over time as individual properties recycle or redevelopment opportunities occur. The City will encourage this change through offering incentives, use of design guidelines, and making improvements to the infrastructure to create a transit- and pedestrian-supportive environment. Sustainability refers to principles, practices, and application of techniques that conserve energy, water, and other natural resources; manage the use of renewable and nonrenewable resources in an efficient and responsible manner; preserve and improve the environment from the local to the global level; reduce pollution; improve human health and safety; and strengthen the economy. The City has the opportunity to integrate its commitment to long-term sustainability throughout the elements of the General Plan.

Land use and community identity element

Smart growth and sustainable development

LUCI Goal 4: Promote sustainable and smart growth land use patterns and development regulations and guidelines

LUCI Policy 4.1: Encourage mixed-use projects (including residential/commercial/office and live/work developments) in designated areas, such as close to SPRINTER stations, along high-frequency public transportation corridors, in the Downtown Specific Plan, in certain Opportunity Areas, and near jobs, schools, parks, and recreational facilities.

LUCI Policy 4.2: Ensure that the existing and future transportation system is interconnected with the smart growth land use patterns to serve multiple modes of travel, such as walking, biking, transit, and driving.

LUCI Policy 4.3: Ensure that new and redeveloped projects are designed to improve pedestrian and transit connections and connections to trail and bicycle networks.

LUCI Policy 4.4: Encourage new and redeveloped projects to incorporate facilities that support bicycle use, such as bike racks, lockers, and/or showers, to the extent possible and appropriate.

LUCI Policy 4.5: Designate areas for the development of mixed-use projects where alternative modes of transportation, such as walking, biking, and transit, will be emphasized over vehicle use.

- LUCI Policy 4.6: Promote mixed-use development in targeted areas by developing zoning classifications, development standards, and design guidelines that are appropriate for the scale, intensity, and character desired for the particular area.
- LUCI Policy 4.7: Develop and offer incentives for mixed-use development, such as reduced parking requirements, expedited permit processing, and/or lot consolidation assistance.
- LUCI Policy 4.8: Mixed-use development projects shall be evaluated based on consistency with the City's zoning regulations and adopted Design Guidelines as well as SANDAG Smart Growth publications, including: (1) Designing for Smart Growth, Creating Great Places in the San Diego Region; (2) Planning and Designing for Pedestrians, Model Guidelines for the San Diego Region; (3) Trip Generation for Smart Growth; and (4) Parking Strategies for Smart Growth.
- LUCI Policy 4.9: Ensure that new development complies with the California Green Building Standards Code (the CALGreen Code) to promote sustainable design and construction practices and positive environmental impacts in planning and design, energy efficiency, water efficiency and conservation, and material conservation and resource efficiency.
- LUCI Policy 4.10: Develop and provide incentives proportionate to the level of sustainability for projects that utilize sustainable and green building techniques/installations, such as reduction or waiver of fees, priority building permit processing, and/or density and/or intensity bonuses.

Resource conservation and sustainability element

Climate change

RCS Goal 2: Reduce GHG emissions from community activities and municipal facilities and operations within the City boundaries to support the state's efforts under Assembly Bill 32, Senate Bill 375, and other state and federal mandates and to mitigate the community's contributions to global climate change

- RCS Policy 2.1: Prepare and implement a Climate Action Plan (CAP) within 24 months of adoption of the General Plan that, through its full implementation, will reduce GHG emissions from community activities and municipal operations by at least 15 percent by 2020 compared to the 2005 baseline community emissions inventory (including any reductions required by the CARB under AB 32).
- RCS Policy 2.2: Update the City's Greenhouse Gas Emissions Inventory periodically to incorporate improved methods, better data, and/or more accurate tools and methods and to assess progress.
- RCS Policy 2.3: Participate in interagency and/or interjurisdictional meetings and planning activities to share best practices and adaptation strategies to reduce GHG emissions, increase community sustainability, and educate the public about climate change.
- RCS Policy 2.4: Develop a public outreach program to increase public awareness of climate change and climate protection challenges, publicize the importance of reducing GHG emissions, and provide information on actions community members and businesses can take to reduce their individual impacts.
- RCS Policy 2.5: Adopt City purchasing practices and standards to support reductions in GHG emissions, including preferences for energy-efficient equipment and the use of recycled

materials and manufacturers that have implemented green management practices; encourage other public agencies and private businesses within Vista to do the same when feasible.

RCS Policy 2.6: Establish City bidding standards and contracting practices that encourage GHG emissions reductions, including preferences or points for the use of low- or zero-emission vehicles and equipment, recycled materials, and provider implementation of other green management practices; encourage other public agencies and private businesses within Vista to do the same when feasible.

RCS Policy 2.7: Through California Environmental Quality Act (CEQA) documents, evaluate and disclose the contribution new projects could have on climate change and require mitigation measures as appropriate.

RCS Policy 2.8: Implement new or enhance existing measures to reduce employee vehicle trips and mitigate emissions impacts from business-related travel to reduce GHG emissions.

Energy

RCS Goal 14: Promote efficient and sustainable use of energy resources through conservation, demand-reduction activities, and alternative energy sources

RCS Policy 14.1: Consider the goals and policies in the SANDAG Regional Energy Strategy in drafting new legislation, policies, or procedures.

RCS Policy 14.2: Collaborate with San Diego Gas & Electric (SDG&E) and any other local energy suppliers and distributors to promote energy conservation programs, EnergyStar® appliance change-out programs, rebates, vouchers, and other incentives to install energy-efficient technology and products.

RCS Policy 14.3: Partner with energy providers and community services agencies to offer grants to low-income homeowners to encourage energy retrofits for existing residential development, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization energy efficiency projects.

RCS Policy 14.4: Continue to target local funds, including redevelopment and Community Development Block Grant resources, to assist affordable housing developers in incorporating energy-efficient designs and features.

RCS Policy 14.5: Promote voluntary energy retrofits for existing commercial and industrial/business park uses and require major renovations that exceed a certain dollar amount (such as the amount considered an unreasonable hardship for disabled access) to meet a prescriptive list of energy-efficiency requirements.

RCS Policy 14.6: Prepare and implement a comprehensive plan to improve the energy efficiency of municipal facilities and conserve electricity and natural gas, including the following:

- a. conducting energy audits for all municipal facilities and equipment;
- b. retrofitting facilities for energy efficiency where feasible and when remodeling or replacing components, including increasing insulation and installing green or reflective roofs and low-emissive window glass;
- c. implementing an energy-tracking and -management system;
- d. installing energy-efficient exit signs, street signs, and traffic lighting;

- e. installing energy-efficient lighting retrofits and occupancy sensors, and instituting a “lights out at night” policy;
- f. retrofitting heating and cooling systems to optimize efficiency (e.g., replace chillers, boilers, fans, pumps, belts, etc.);
- g. installing EnergyStar® appliances and energy-efficient vending machines;
- h. improving efficiency of water pumping and use at municipal facilities, including a schedule to replace or retrofit system components with high-efficiency units (i.e., ultra-low-flow toilets, fixtures, etc.);
- i. providing chilled, filtered water at water fountains and taps in lieu of bottled water;
- j. installing a central irrigation control system and timing its operation for off-peak use; and
- k. adopting an accelerated replacement schedule for energy-inefficient systems and components.

RCS Policy 14.7: Encourage any newly constructed, purchased, or leased municipal space to meet minimum standards as appropriate, such as the following:

- a. requiring new commercial buildings to meet Leadership in Energy and Environmental Design (LEED) criteria established by the U.S. Green Building Council;
- b. incorporating passive solar design features in new buildings, including daylighting and passive solar heating;
- c. retrofitting existing buildings to meet standards under Title 24 of the California Building Energy Code, or to achieve a higher performance standard as established by the City/County; and
- d. retrofitting existing buildings to decrease heat gain from non-roof impervious surfaces with cool paving, landscaping, and other techniques.

RCS Policy 14.8: Create a Capital Reinvestment Fund to provide capital for future energy-efficiency improvements from ongoing energy-efficiency savings.

RCS Policy 14.9: Implement a training program for City staff to support the City’s goal of reducing GHG emissions from municipal facilities and operations, including energy-efficiency training to engineering, building operations, and facility maintenance staff; and energy conservation for all City employees.

RCS Policy 14.10: Encourage adherence to the California Green Building Code.

RCS Policy 14.11: Promote alternative energy development by preparing an Alternative Energy Promotion Study, which will include the following:

- a. Identify possible sites for the production of energy using local renewable sources, such as solar, wind, and biofuel.
- b. Consider the potential for exemption of alternative energy facilities from other General Plan policies concerning visual and biological resources.
- c. Evaluate potential land use, environmental, economic, and other constraints affecting renewable energy development.
- d. Develop a ministerial process for approval of small-scale wind and solar energy systems for on-site residential, commercial, industrial, and agricultural uses.
- e. Expedite permits for projects that incorporate alternative energy sources.

RCS Policy 14.12: Provide, where possible, incentives for renewable energy projects (e.g., reduced fees and expedited permit processing), creative financing (e.g., subsidized or other low-interest loans and/or the option to pay for system installation through long-term assessments on individual property tax bills), and other support for community members or developers seeking funding for such projects.

RCS Policy 14.13: Support SDG&E in the location of new or expanded service facilities where appropriate, and support maintenance and operational activities through coordinated efforts with SDG&E staff and contractors.

Public safety, facilities, and services element

Other public facilities

PSFS Goal 15: Provide and maintain public facilities, including the Civic Center, maintenance and warehouse facilities, and City welcome signs and other community identifiers, to serve the citizens of Vista and meet their existing and anticipated needs

PSFS Policy 15.1: Provide public facilities that increase the efficiency and effectiveness of City operations and service delivery and provide user-friendly citizen access.

PSFS Policy 15.2: Maintain the quantity and quality of public facilities to serve the long-term needs of Vista's citizens, including consideration of population size and demand.

PSFS Policy 15.3: Design and construct new public facilities utilizing green building techniques and achieve Leadership in Energy and Environmental Design (LEED) certification.

PSFS Policy 15.4: As older public facilities are renovated, design and construct the renovations to incorporate green building techniques.

Appendix B: City of Vista Municipal Energy Audit Reports

Appendix C: Transportation Demand Management Resources

This appendix consists of a variety of resources to aid the City of Vista in implementing a transportation demand management program.

The sample telework documents can aid the City in coordinating agreements with employees and ensuring a successful telework policy:

Appendix C1 – Sample Telework Program Policy

Appendix C2 – Sample Telework Employee Agreement

Appendix C3 – Telework Implementation Guidelines

The telework employer toolkit is available at icommutesd.com/telework. For more information about telework or our employer program, contact SANDAG iCommute staff Deborah Jones at deborah.jones@sandag.org.

The City can develop proclamations for National Bike Month and National Rideshare Week to encourage biking and ridesharing to employees and constituents:

Appendix C4 – SANDAG 2018 National Bike Month Proclamation

Appendix C5 – SANDAG 2018 National Rideshare Week Proclamation

Appendix C1: Sample Telework Program Policy

Appendix C2: Sample Telework Employee Agreement

Appendix C3: Telework Implementation Guidelines

Appendix C4: SANDAG 2018 National Bike Month Proclamation

Appendix C5: SANDAG 2018 National Rideshare Week Proclamation

Appendix D: Sample Smart Growth Measures and Resources

Sample Smart Growth Measures and Resources

The City of Vista updated its General Plan in February 2012 with many smart growth policies included in the Land Use and Community Identity Element of the plan. The following measures were identified to help implement smart growth policies. When considering implementation of these measures, it is recommended that local officials evaluate the economic, social, and environmental implications – in addition to energy savings – for their individual situation and community. The resources for Smart Growth include a description of the CEQA streamlining provisions from SB 375 as well as the site descriptions for the areas of Vista identified in the SANDAG Smart Growth Concept Map.

Sample policy measures

Smart growth and transit-oriented development

- 1.1 Promote compact, mixed-use development in the following existing/planned and potential smart growth opportunity areas as identified by the city on the SANDAG Smart Growth Concept Map.
- 1.2 Identify additional planned or potential smart growth opportunity areas within the city as feasible.
- 1.3 Coordinate with regional agencies, including SANDAG, North County Transit District (NCTD), and neighboring jurisdictions to plan for and accommodate alternate travel modes to driving alone.
- 1.4 Encourage a variety of uses that offer many choices for people to live, work, and recreate in a core area.
- 1.5 Promote adaptive reuse, infill, and/or redevelopment of vacant or underutilized sites such as through provision of incentives.
- 1.6 Consider integrating supporting retail uses into existing residential and employment developments – for example, through plan updates and zoning amendments.
- 1.7 Provide incentives and zoning regulations to promote mixed-use, higher-intensity employment uses and residential density near existing and planned transit nodes and smart growth areas, such as increased lot coverage and floor area ratio (FAR) requirements, height limits, and/or expedited approval processes.
- 1.8 Continue allowing accessory units in single family residential areas where appropriate.
- 1.9 Promote a compact, transit-oriented distribution of land uses with convenient access to a mixture of uses and destinations, and at densities appropriate to the unique character, context, and characteristics of each community.
- 1.10 Establish land use policies that support multimodal transportation systems and connection of travel modes to each other.
- 1.11 Create multimodal transportation centers that provide integrated access to a variety of transportation facilities and services.
- 1.12 Continue to review development projects in consideration of transit needs and access.

- 1.13 Require new development at transit nodes and along transit corridors to meet planning and design standards to generate, attract, and facilitate transit ridership as a condition of approval.
- 1.14 Locate larger retail, employment, medical, educational and government land uses near arterial and major collector streets served by public transit. Conversely, work with NCTD to provide or enhance transit service to these types of land uses.
- 1.15 Prioritize new growth in existing developed areas that have adequate levels of transit and neighborhood services.
- 1.16 Inventory infill development sites. Plan, zone, and provide incentives for new development and renovation of existing uses in identified infill areas.
- 1.17 Encourage or provide incentives for new housing and mixed-use developments to be built to the LEED® for Neighborhood Development (LEED-ND) standard or its equivalent.⁸
- 1.18 Provide expedited application processing, as feasible, for development projects that meet community-established energy-efficiency standards or goals.

Public infrastructure investments

- 1.19 Coordinate public investments for transportation, parks, open space, water, sewer, and other infrastructure in a manner that supports smart growth development.
- 1.20 Prioritize new or infill residential development in areas with adequate levels of existing or planned public facilities, such as parks, fire stations, and public transit service.
- 1.21 Support investments to provide high-performance broadband connectivity throughout the community to enable e-commerce and teleworking.
- 1.22 Convert streetlights, outdoor lighting, water pumps, water treatment, and other energy-intensive operations to more energy-efficient technologies.

Community design

- 1.23 Implement the city's "complete streets" policies that make roadways safe, attractive, and comfortable for all users, including pedestrians, bicyclists, and public transit users, as well as automobiles.
- 1.24 Design, site, and orient new development to facilitate pedestrian, bicycle, and transit access.
- 1.25 Establish a walkable, interconnected street network.
- 1.26 Plan and permit networks of neighborhood-scaled streets (generally two or four lanes) with high levels of connectivity and short block lengths.
- 1.27 Reduce the potential for higher-than-average temperatures and increasing air conditioning–related energy demand associated with the Urban Heat Island Effect by using strategies such as increasing tree and vegetative cover, installing green or reflective rooftops, and using cool pavements. The term cool pavements refers to paving materials that reflect more solar

⁸ The LEED® for Neighborhood Development Rating System integrates the principles of smart growth, new urbanism, and green building into the first national system for neighborhood design. LEED® certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. LEED® for Neighborhood Development is a collaboration among the United States Green Building Council, Congress for the New Urbanism, and the Natural Resources Defense Council. For more information, visit usgbc.org/DisplayPage.aspx?CMSPageID=148.

energy, enhance water evaporation, or have been otherwise modified to remain cooler than conventional pavements.

- 1.28 Install transportation infrastructure and make urban design improvements that promote walking and biking and increase access to public transit in smart growth areas.
- 1.29 Provide sidewalks and bicycling facilities along with measures like bulb outs, lighting, landscaping, street furniture, secure bicycle parking, and well-marked crossings at intersections.
- 1.30 Make reductions in energy consumption and related criteria such as vehicle miles traveled a high priority in evaluation of development projects, plans, policies, and programs.

Resources available for smart growth

SB 375 and CEQA streamlining

Definition of Residential/Mixed Use Residential Project:

A project that is consistent with the general use designation, density, building intensity, and applicable policies for the project area in either an accepted (by CARB) SCS or APS. Additionally, the project would have at least 75 percent of the total building square footage of the project consist of residential uses or would be a Transit Priority Project.

Definition of a Transit Priority Project:

1. Contain at least 50 percent residential use based on total building square footage and, if the project contains between 26 percent and 50 percent nonresidential uses, a floor area ratio of not less than 0.75;
2. Provide a minimum net density of at least 20 dwelling units per acre; and
3. Be within a half-mile of a major transit stop or high-quality transit corridor included in a regional transportation plan.

Types of CEQA relief:

- Full exemption: If a TPP complies with all environmental, land use, and affordable housing criteria described in SB 375, the project can be determined by a local jurisdiction to be a Sustainable Communities Project and receives full CEQA exemption.
- Sustainable Communities Environmental Assessment (SCEA): The SCEA is applicable to a TPP and is similar to a mitigated negative declaration.
- Streamlined CEQA analysis: A Residential/Mixed-Use Residential project, as defined above, would not be required to repeat growth inducing impacts analyses or the discussion of how cars and light trucks could increase greenhouse gas emissions. If an EIR were being prepared, the alternatives section would not be required to include a reduced-density alternative to reduce greenhouse gas emissions. If an EIR were prepared for a TPP, the document would not need to include an analysis of cumulative impacts, or of greenhouse gas emissions from cars and light-duty trucks. In addition, project alternatives need not address reduced density or off-site location alternatives.

Vista's potential and existing smart growth areas

The following table provides site descriptions for each smart growth area identified in the City of Vista on the SANDAG Smart Growth Concept Map. The San Diego Regional Comprehensive Plan (RCP) identified seven categories of smart growth place types, which were incorporated into San Diego Forward: The Regional Plan. The place types include the Metropolitan Center, Urban Centers, Town Centers, Community Centers, Rural Villages, Mixed-Use Transit Corridors, and Special Use Centers. The Regional Plan includes land use and transportation targets for each of these areas (listed below). If the areas meet the minimum land use and transit service targets identified for their place type, they are identified as "Existing/Planned" smart growth areas. If they do not meet the targets, but have future potential, they are identified as "Potential" smart growth areas. Grant funding is available from SANDAG for cities to conduct planning and infrastructure improvements in their smart growth opportunity areas.

Additional information on the Smart Growth Concept Map, the land use and transportation targets, incentives for smart growth, and other information, is available on the SANDAG website at sandag.org/smartgrowth.

Land use and transportation targets

Each smart growth place type is associated with certain housing and employment density targets and transit service thresholds and can qualify as either "Existing/Planned" or "Potential" depending upon whether it meets the minimum land use and transit thresholds listed in Table 1. Areas must meet both the land use and the transit service targets to qualify as Existing/Planned.

Appendix D Table 1

Smart growth place type thresholds

Smart Growth Place Type	Minimum Residential Target	Minimum Employment Target	Minimum Transit Service Characteristics
Metropolitan Center	75 du/ac	80 emp/ac	COASTER, Amtrak, Metrolink, Trolley, SPRINTER, or <i>Rapid</i> Service
Urban Center	40 du/ac	50 emp/ac	Trolley, SPRINTER, or <i>Rapid</i> Service
Town Center	20 du/ac	30 emp/ac	Trolley, SPRINTER, <i>Rapid</i> Service, or Streetcar/Shuttle*
Community Center	20 du/ac	N/A	High-Frequency Local Bus or Streetcar/Shuttle within Urban Area Transit Strategy Boundary
Rural Village	10.9 du/ac	N/A	N/A
Special Use Center	Optional	45 emp/ac	Trolley, SPRINTER, or <i>Rapid</i> Service
Mixed-Use Transit Corridor	25 du/ac	N/A	High-Frequency Local Bus or Streetcar/Shuttle

Note: du/ac = dwelling units per acre; emp/ac = employees per acre; N/A = Not applicable

In Town Centers, areas can be connected to the Trolley/SPRINTER and/or *Rapid* Service by a local transit connection or Streetcar/Shuttle service.

Existing/Planned smart growth areas are locations that either contain existing smart growth development or allow planned smart growth in accordance with the identified land use targets and are accompanied by existing or planned transit services included in San Diego Forward: The Regional Plan. Potential smart growth areas are locations where smart growth development could occur if local land use plans are changed and/or if the Regional Plan is modified to include minimum levels of planned transit service.

Public transit service characteristics

The following are the main characteristics of the public transit services referenced in Table 1 (more information is available in Chapter 2 [pages 52–55] of the Regional Plan and the Transit Service Definitions below):

- COASTER/Amtrak/Metrolink/*Rapid* Service – Designed for longer-distance trips with station spacing every four to five miles on average (e.g., COASTER, SPRINTER Express, freeway-based *Rapid* Service).
- Trolley/SPRINTER/*Rapid* Service – Designed for medium-distance trips with station spacing about every mile on average (e.g., Trolley and SPRINTER services, arterial/local street-based *Rapid* Service).
- High-Frequency Local Bus/Streetcar/Shuttle – Designed for shorter-distance trips with frequent stops and 15-minute or better peak period headways (e.g., high-frequency peak period local bus services, future streetcar services).

Appendix D Table 2

SANDAG smart growth concept map – City of Vista

Jurisdiction (Vista)	Location	Existing/Planned or Potential (and reason for Potential)	Smart Growth Place Type	Land Use Description	Transit Service Description per San Diego Forward: The Regional Plan
VS-1	Downtown Specific Plan (Vista Village Drive and South Santa Fe Avenue)	Existing/Planned	Town Center	The Downtown Specific Plan is a 300-acre planning area encompassing a mix of retail, commercial, office, and high-density residential uses. The area includes historic downtown Vista, the South Santa Fe commercial corridor (referred to as Paseo Santa Fe), the Vista Village entertainment center, and existing multi-family and single-family neighborhoods. The project area is anchored by a multimodal transit center, which includes the Vista Village SPRINTER Station.	Existing SPRINTER Existing High-Frequency Local Bus (Routes 303 and 332) Planned High-Frequency Local Bus (Routes 302, 305, and 335 to be phased in by 2020, Route 334 to be phased in by 2035) Planned <i>Rapid</i> Service (Route 474 to be phased in by 2050) Planned SPRINTER Express (to be phased in by 2040)
VS-2	North Santa Fe Avenue from Orange Street to Weston Street	Existing/Planned	Mixed-Use Transit Corridor	Encompassing the urbanized portions of North Santa Fe Avenue, this Mixed-Use Transit Corridor extends approximately 1.5 miles from slightly north of Bobier Drive to within walking distance of the Vista Transit Center. One of the principal commercial corridors in the City of Vista, this stretch of North Santa Fe Avenue currently features strip retail centers interspersed with auto repair facilities, fast-food restaurants, and single-family residential uses. A mixed-use zoning designation has been implemented within this corridor, allowing residential densities up to 40 dwelling units per acre. The City's Community Development Commission owns a number of vacant parcels within the corridor and is currently pursuing joint ventures with private developers to facilitate mixed-use projects that will serve as catalysts for further redevelopment. Fifteen-minute peak-hour NCTD bus service currently links the corridor to the nearby transit center at Vista Village Drive. Additional bus service links northern segments of the corridor with the SPRINTER station at Oceanside Boulevard and Melrose Drive.	Existing High-Frequency Local Bus (Route 303) Planned High-Frequency Local Bus (Route 335 to be phased in by 2020, Route 334 to be phased in by 2035) Planned <i>Rapid</i> Service (Route 474 to be phased in by 2050)

VS-3	Vista Village Transit Center	Existing/Planned	Community Center	Anchored by the Vista Village Transit Center and SPRINTER station, this Community Center focuses on mixed-use development opportunities within walking distance of the transit center. This area abuts the Downtown Specific Plan and North Santa Fe Transit Corridor and is intended to expand transit-oriented development opportunities adjacent to these areas with a focus on pedestrian connections to mass transit within the City's core.	Existing SPRINTER Existing High-Frequency Local Bus (Routes 303 and 332) Planned High-Frequency Local Bus (Routes 302, 305, and 335 to be phased in by 2020, Route 334 to be phased in by 2035) Planned <i>Rapid</i> Service (Route 474 to be phased in by 2050) Planned SPRINTER Express (to be phased in by 2040)
VS-4	North County Regional Court Facility (Melrose Drive just south of State Route 78)	Potential (Requires land use change)	Community Center	This area is anchored by the North County Regional Court House. It is located in a Specific Plan area, which includes residential, commercial, and office professional developments. As a regional center, the project has a large daytime population. Existing NCTD bus service is provided to the area, and the site is only one mile to the southwest of the Vista Village Transit Center (bus and light rail). Significant development has occurred in the last ten years, and additional mixed-use, residential, and commercial development is slated in the near future.	Existing High-Frequency Local Bus (Route 332) Planned High-Frequency Local Bus (Routes 302 and 335 to be phased in by 2020)
VS-5	Escondido Avenue SPRINTER Station	Existing/Planned	Community Center	In consideration of the SPRINTER station at this location, City Council has directed staff to look into smart growth development opportunities in and around the station. The area is largely developed with single-family and lower-density multi-family uses that might be appropriately rezoned for higher-density residential or mixed-use development to take advantage of the public transportation opportunities. This area abuts the Downtown Specific Plan, which is zoned for mixed-use development with residential densities up to 40 dwelling units per acre.	Existing SPRINTER

VS-6	East Vista Way/ Foothill	Potential (Requires land use and transit changes)	Community Center	East Vista Way is a regional arterial serving the Bonsall Area to the north and connecting to the Vista Village Transit Center to the southwest. This area is characterized by a mix of mobile home parks and multi-family residential and single-family residential developments. This area has a diversity of income levels and housing types ranging from mobile homes and apartments to large estate lots in the surrounding hillside areas. There has been significant reinvestment in the commercial centers in this area; however, there remain some underutilized centers, which may be redeveloped mixed-use projects.	No Qualifying Existing or Planned Transit
VS-7	West Vista Community Center (Emerald Drive and West Vista Way)	Existing/Planned	Community Center	This area to the north of West Vista Way in the vicinity of Emerald Drive is characterized by a large concentration of auto-oriented commercial uses as well as multi-family and single-family residential. West Vista Way is a major transit corridor in the City and is served by NCTD bus service. The area is just east of the Tri-City Medical Center, the major regional medical center for north coastal San Diego County. West Vista Way is a regional arterial connecting this part of Vista to Oceanside to the west and the Vista Village project to the east. The Vista Village Transit Center is located approximately two miles to the east.	Planned High-Frequency Local Bus (Route 302 to be phased in by 2020)

Appendix E: Sample Energy-Saving Policies and Resources

Sample Energy-Saving Policies and Resources

The following sample policies were identified based on their ability to save energy, increase the use of renewable energy, and save water. The policies reflect the goals of State agencies including the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and Office of the Attorney General. The City of Vista adopted several energy policies in its 2012 General Plan Update; the sample policies included below can help to implement the City's energy policies. Energy-saving goals and policies that the City of Vista included in its 2012 General Plan Update are provided in Appendix A. When considering implementation of these policies, it is recommended that local officials evaluate the economic, social, and environmental implications – in addition to energy savings – for their individual situation and community.

Resources for energy savings in buildings include financing opportunities such as rebates in Energy Upgrade California, PowerSaver Loan, Energy Efficient Mortgages, and Property Assessed Clean Energy (PACE) programs.

Sample policies

Support building codes⁹

- 1.1 Ensure compliance and enforcement of the Title 24, Part 6 building energy standards for residential and commercial buildings.
- 1.2 Promote building energy performance beyond Title 24, Part 6 energy requirements using mandatory or voluntary mechanisms, including CALGreen (Title 24, Part 11).
- 1.3 Work with other local jurisdictions, where feasible, to adopt regionwide standards for energy-efficient buildings and development projects that also allow for local priorities and flexibility.
- 1.4 Support highly energy-efficient projects that voluntarily exceed minimum energy code requirements through incentives such as favorable fee structures, fast-tracked permitting, technical or financial assistance, and other innovative or locally appropriate approaches.
- 1.5 Train appropriate staff such as planners, inspectors, plan checkers, building code officials, and builders in energy codes, and energy-efficiency standards and technologies to facilitate approval and inspection processes.
- 1.6 Utilize tools, such as those available through EnergyCodeAce, to make code compliance more user-friendly or opportunities for staff education and training to reduce the rate of noncompliance with energy code requirements in new construction.

Existing residential and commercial buildings

- 1.7 Establish or support building energy rating and disclosure policies that inform building owners of their energy usage.
- 1.8 Promote policies that lead to energy-efficiency retrofits in existing buildings.
- 1.9 Promote and reward energy-efficiency efforts of local businesses.

⁹ For more information on green building codes for local jurisdictions, see Nonresidential Green Building Codes and Policies for Local Jurisdictions available at sandag.org/uploads/projectid/projectid_373_12681.pdf, and Three Case Studies of Municipal Green Buildings available at sandag.org/uploads/projectid/projectid_373_12682.pdf.

- 1.10 Collaborate with local retail businesses to stock energy-efficient products, thereby encouraging residents to purchase energy-efficient products.
- 1.11 Support increased use of solar thermal water heating in residential, pool, and commercial uses to reduce natural gas demand. For example, through incentives for new construction or renovation projects.
- 1.12 Create or participate in financing programs such as those available through Assembly Bill 811 (Levine, 2008) (AB 811) energy financing districts and similar Property Assessed Clean Energy (PACE) programs that allow residents and businesses to overcome the upfront costs of energy improvement projects.
- 1.13 Work with San Diego Gas & Electric and other organizations to promote use of financial incentives to assist residential and commercial customers improve energy efficiency.
- 1.14 Enact ordinances or programs to incorporate energy efficiency, conservation, and clean distributed generation technologies (such as solar photovoltaic panels) in the existing building stock, such as PACE financing programs, point-of-sale requirements for energy-efficiency audits or improvements, or other approaches.
- 1.15 Encourage savings-by-design in new construction and address energy-efficient building and site design in the retrofits of existing buildings and developments.
- 1.16 Promote education of community businesses and Homeowners Associations about policies, programs, and opportunities to conduct energy assessments and audits.

New residential and commercial buildings

- 1.17 Develop a policy to include *ENERGY STAR* appliances in new construction.
- 1.18 Give energy conservation and efficiency equal consideration with all other development criteria in the City's evaluation of development projects.
- 1.19 Encourage passive solar design by orienting buildings to the south and providing as much unshaded exposure as possible on the south side of buildings during winter months from neighboring buildings, trees, and other obstructions that create shade. Encourage shading through strategic and appropriate tree planting and architectural techniques to minimize the need for cooling during summer months.

Renewable energy and distributed generation

- 1.20 Revise zoning policies and encourage the revision of homeowner association conditions, covenants, and restrictions (CC&Rs) and similar governing documents, as feasible, to remove hindrances and promote installation of photovoltaic or other distributed renewable energy systems. For example, require or provide incentives such as streamlined permitting or fee waivers for new construction to pre-wire for, or install, photovoltaic systems.
- 1.21 Establish financing programs using public or private sources that residents can access to install distributed energy systems to reduce system costs and maximize energy savings.
- 1.22 Identify local barriers to installing distributed generation systems, including combined heat and power systems, and identify potential solutions that could be applied consistently.
- 1.23 Consider solar access in new development.

Energy and water conservation

- 1.24 Increase energy conservation through the efficient use of water in the residential and commercial sectors through policies that prioritize the largest end-users of water, like landscape irrigation.
- 1.25 Address energy efficiency, demand response, and clean on-site generation opportunities at water pumping stations, water or wastewater treatment facilities, and similar government-owned or -operated facilities.
- 1.26 Coordinate efforts to implement water conservation and reclamation programs with the San Diego County Water Authority, local water districts, and other agencies to reduce energy use associated with water delivery.
- 1.27 Require installation of water conservation measures, devices, and practices for new construction projects and major alterations to existing private buildings.
- 1.28 Require the replacement of energy- and water-intensive fixtures and appliances with more efficient alternatives at the point of sale or change in tenancy.
- 1.29 Establish rebate and or incentive programs for the replacement of leaking, aging, and/or inefficient plumbing devices and inefficient appliances with more efficient, water-saving devices and appliances in existing commercial and residential developments.

Water supply

- 1.30 Identify and support programs for residential reuse of gray water to decrease the amount of energy needed to meet residential water needs.
- 1.31 Use non-potable or recycled water as feasible for irrigation of parks, playfields, schools, golf courses, and other landscape areas.
- 1.32 Continue to expand infrastructure for reclaimed water as feasible.

Water conservation education

- 1.33 Continue to support landscape design educational programs to help residential and commercial customers install low-water-use landscaping, thereby reducing water-related energy use.
- 1.34 Provide public education on water conservation such as optimum timing, run-off, efficient appliances, and behavioral changes.
- 1.35 Promote existing programs that city residents, businesses, and property owners can take advantage of to realize water-related energy savings, such as water audits.

Resources available for energy-saving in buildings

Energy Upgrade California

Energy Upgrade California is a statewide energy efficiency initiative that is supported by an alliance of the California Public Utilities Commission, the California Energy Commission, utilities, regional energy networks, local governments, businesses, and nonprofits. This initiative serves as an umbrella to the myriad retrofit programs, tools, and trainings available. The overall statewide program is outlined here. Program aspects include:

- Statewide Internet Portal
- Statewide residential and commercial financing options
- Utility residential and commercial building retrofit rebates
- Comprehensive residential retrofit program delivery through regional partnerships in 51 counties (including San Diego), which includes:
 - Marketing and outreach
 - Qualified contractors
 - Subsidized financing
 - Workforce development
 - Quality assurance
- Pilot residential and commercial property assessed clean energy (PACE) programs
- New tools for affordable housing energy retrofits

Program outreach is being developed to reduce confusion about energy-efficient and renewable energy building retrofits. The EUC program coordinates under one logo, brand, and website all retrofit outreach and marketing by state and local government and utilities. Efforts include media buys, billboards, utility bill inserts, brochures, and community forums. The state's program focus is on county-level interaction. San Diego Gas & Electric (SDG&E) coordinates the various efforts and incentives for the San Diego region. For more information on EUC and building retrofit programs in general, contact SDG&E at 1 (800) 411-7343.

EUC leverages over \$1.3 billion of energy program funds ranging from federal programs, utility programs, California Energy Commission programs, and State Energy Program and Energy Efficiency and Conservation Block Grant (EECBG) funds from ARRA to Workforce Investment Act and local government funds.

Energy project financing

Energy-efficient mortgages

Another financing mechanism available to residents is the energy-efficient mortgage (EEM). An EEM allows new or current homeowners to finance purchase of a home (or refinance a current mortgage) and include the value of energy-saving, cost-efficient improvements. EEMs can be used to purchase a new energy-efficient home or to finance new improvements to existing homes (also known as an Energy Improvement Mortgage, or EIM). Because cost-effective energy improvements can result in lower utility bills, making more funding available for a mortgage payment, energy-efficiency improvements can be directly included in the EEM without the need to qualify for additional financing. By giving borrowers the opportunity to finance improvements as part of a single mortgage, an EEM also can stretch the debt-to-income qualifying ratio and enable homebuyers to qualify for a larger loan amount (and a more energy-efficient home).

EEMs are sponsored by federally insured mortgage programs and the conventional secondary mortgage market (Fannie Mae and Freddie Mac). Several types of EEM programs are available. Eligibility for individual EEM programs varies, but in general, there is no age limit or income level required. Typically, all programs require that a home energy rating be conducted to provide the lender with an estimate of the “Energy Savings Value,” which includes monthly energy savings and the value of existing/planned energy-efficiency measures.

Property Assessed Clean Energy programs

Property Assessed Clean Energy, or “PACE” programs, also commonly referred to as AB 811–style programs in California, can serve as a financing mechanism to implement energy efficiency and renewable energy projects. Energy Upgrade California includes support for PACE programs, a program formerly known as CaliforniaFIRST. PACE programs allow property owners within participating regions to finance the installation of energy improvements on their home or business and pay the amount back as a line item on their property tax bill. The City currently provides opportunities for financing energy efficiency projects through PACE programs for both residential and commercial customers (cityofvista.com/business/business-incentives).

California legislation passed in 2017 that took effect on January 1, 2018 (i.e., Senate Bill 242 [Skinner, 2017] and Assembly Bill 1284 [Dababneh, 2017]), provides a regulatory framework and consumer-protection language supporting the viability of PACE programs in California. By the City adopting a resolution to join Energy Upgrade California, interested property owners in Vista could participate and apply for financing when the program becomes available.

Appendix F: Sample Clean and Efficient Transportation Policies and Resources

Sample Clean and Efficient Transportation Policies and Resources

The sample policy measures were identified based on their ability to reduce roadway congestion, reduce greenhouse gases, or increase lower-carbon alternative fuels. When considering the implementation of these measures, it is recommended that local officials also consider the economic, social, and environmental attributes or needs specific to their community.

Sample policy measures

Transportation Demand Management

Transportation Demand Management (TDM) refers to programs and strategies that encourage the use of transportation alternatives and help reduce traffic congestion.

- 1.1 Consider implementing a TDM ordinance that would require developers to incorporate TDM strategies into developments.
- 1.2 Consider developing a commuter benefit ordinance that would require major employers to promote and incentivize transportation alternatives for their employees.

For information on how to implement and monitor TDM policies into the planning and development process, please refer to Integrating Transportation Demand Management Into the Planning and Development Process (sandag.org/uploads/publicationid/publicationid_1663_14425.pdf).

Mobility hubs and shared mobility

Mobility hubs provide an integrated suite of transportation services and amenities that help facilitate access to high-frequency transit stations.

- 1.3 Pursue policies that support Mobility Hub implementation, such as flexible curb space and access to the right-of-way for dedicated passenger pick-up and drop-off.
- 1.4 Pursue partnerships and pilot projects with shared mobility service providers. This could include on-demand rideshare (e.g., Uber, Lyft, Waze Carpool), microtransit, scootershare, and electric bikeshare providers.
- 1.5 Consider enhancing wayfinding investments to include kiosks that provide real-time travel and trip-planning information for regional transit services, shared mobility services, parking, and other available transportation options.

SANDAG has developed a Regional Mobility Hub Implementation Strategy (sdforward.com/mobility-planning/regionalMobilityHub) to demonstrate how transportation services, amenities, and supporting technologies can work together to make it easier for communities to access transit and other shared mobility choices. For more detailed information on mobility hub services and amenities, please refer to the Mobility Hub Features Catalog (sdforward.com/fwddoc/mobipdfs/mobilityhubcatalog-features.pdf).

Parking

- 1.6 Develop a parking-management plan that recommends custom policies and strategies for managing the parking supply in a way encourages the use of transportation alternatives.

The Regional Parking Management Toolbox

(sandag.org/uploads/publicationid/publicationid_1910_18614.pdf) provides guidance on customized parking-management strategies for local jurisdictions. The Parking Strategies for Smart Growth study (sandag.org/uploads/publicationid/publicationid_1499_11603.pdf) reviews current parking requirements and policies in the San Diego region and highlights relevant smart growth parking demand and policy studies.

Active transportation

- 1.7 Promote walking and bicycling as safe and convenient modes of transportation.
- 1.8 Develop a cohesive master plan of bicycle and pedestrian routes that identifies and closes gaps in the network, labels major travel routes, prioritizes safety improvements, maximizes the potential for walking and bicycling trips, and establishes strong connections to major destinations such as commercial areas, activity centers, schools, public transit stations, and regional networks.
- 1.9 Encourage businesses to provide facilities that support bicycles, such as secured bicycle parking, showers, and lockers for employees who bicycle or walk to work.
- 1.10 Require new commercial developments to install bicycle parking facilities and other cyclist amenities (showers, lockers, repair stands) at a level commensurate with the size of the development, such as the square footage or number of employees.
- 1.11 Provide bicycle education programs.
- 1.12 Support funding of infrastructure and capital improvement projects, such as streetscape enhancements, traffic calming features, transit stop and station amenities, wayfinding signage, and pedestrian/bicycle paths and bridges.
- 1.13 Support or implement carsharing and bikesharing programs.

Low-carbon, alternative transportation fuels

- 1.14 Promote the use of alternatives to petroleum-based transportation fuels, such as natural gas and plug-in electric vehicles by residents and businesses through strategies that facilitate the siting, permitting, and installation of fueling and electric vehicle charging infrastructure on public and private property.
- 1.15 Develop streamlined permitting requirements, standardized design guidelines, and siting criteria for all types of electric charging stations, including single- and multi-family residential, commercial, public property, and fast-charge stations designed to facilitate longer trips.
- 1.16 Implement strategies that prioritize alternative fuel vehicles on the road and for parking, such as priority parking spaces for electric vehicles.
- 1.17 Electric shared mobility services, such as emission-free carshare, bikeshare, and scootershare, require fast charging points to support operations. Consider siting future charging infrastructure near transit and dedicated shared mobility parking to ensure a connected charging network.

Traffic congestion reduction and efficient driving conditions

- 1.18 Evaluate measures to reduce vehicle idling at stop signs and traffic signals to facilitate efficient travel conditions and minimize traffic congestion.

- 1.19 Continue to evaluate and implement traffic calming measures and programs to, among other benefits, reduce vehicle speeds and volumes and increase the safety and feasibility of bicycling and walking.
- 1.20 Promote transportation alternatives for special events that draw large crowds such as festivals, games, and fairs. Alternatives could include special transit, shuttle, or ridesharing services, bicycle valet or bicycle parking corrals, parking management or shared parking, or vehicle restrictions.
- 1.21 Promote and provide educational information on fuel-efficient “eco-driving” practices such as reduced idling, slower driving speeds, gentle acceleration, and proper tire inflation.
- 1.22 Implement strategies that prioritize high-occupancy vehicles on the road and for parking, including carpools, vanpools, and public transit vehicles.

Resources available for clean and efficient transportation

Sample TDM programs and ordinances

City of San Francisco, CA

The City of San Francisco formally adopted the TDM Ordinance in February 2017 (default.sfplanning.org/plans-and-programs/emerging_issues/tsp/tdm_bos_ordinance_leg_ver4-013117.pdf). TMA SF Connects (tmasfconnects.org), the local Transportation Management Association, was established in 1989 and promotes transportation alternatives to San Francisco’s major employers.

- City of San Francisco’s Transportation Demand Management Program
sfplanning.org/transportation-demand-management-program
- Standards for the Transportation Demand Management Program
default.sfplanning.org/plans-and-programs/emerging_issues/tsp/tdm_D1_TDM_Program_Standards.pdf
- TDM Program Standards: Appendix A
default.sfplanning.org/plans-and-programs/emerging_issues/tsp/tdm_D2_Appendix_A_TDM_Measures.pdf
- Draft of TDM Menu Options
default.sfplanning.org/plans-and-programs/emerging_issues/tsp/tsp_TDM_Menu_Options_v3b_handout.pdf

City of Cambridge, MA

The Parking and Transportation Demand Management (PTDM) Ordinance was adopted in 1998 and made permanent in 2006.

- Parking and Transportation Demand Management (PTDM) Ordinance
cambridgema.gov/CDD/Transportation/fordevelopers/ptdm
- PTDM Plan Checklist
cambridgema.gov/~media/Files/CDD/Transportation/PTDM/ptdm_plan_how_to.pdf?la=en
- Sample PTDM Plan
cambridgema.gov/~media/Files/CDD/Transportation/PTDM/ptdm_sample_plan.pdf?la=en

- Sample PTDM Annual Monitoring Report
cambridgema.gov/~media/Files/CDD/Transportation/PTDM/ptdm_sample_report.pdf?la=en

City of Bloomington, MN

The City of Bloomington adopted a TDM Ordinance in 2008 and works in tandem with programs offered by the local Transportation Management Organization, Commuter Services (494corridor.org/).

- Bloomington Transportation Demand Management Ordinance (§ 21.301.09)
[library.amlegal.com/nxt/gateway.dll/Minnesota/bloomington_mn/bloomingtonminnesotacodeofordinances?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:bloomington_mn](http://library.amlegal.com/nxt/gateway.dll/Minnesota/bloomington_mn/bloomingtonminnesotacodeofordinances?f=templates$fn=default.htm$3.0$vid=amlegal:bloomington_mn)

Boca Raton, FL

Downtown developments with 50 or more employees and/or 30 or more residential units must comply with the City of Boca Raton's TDM Ordinance.

- Transportation Demand Management Ordinance
library.municode.com/fl/boca_raton/codes/code_of_ordinances?nodeId=VOII_CH23PLDE_ARTIVD_ERE_DIV8TRDEMA
- TDM Development Requirements
myboca.us/754/Development-Requirements
- Sample TDM Application/Annual Report Forms
myboca.us/752/Transportation-Demand-Management

Contra Costa, CA

The County's TDM ordinance was adopted in 1997 and is aimed at both residential and commercial developments. The County's TDM program, 511 Contra Costa (511contracosta.org/), also has voluntary programs available for both employers and residents.

- Contra Costa TDM Ordinance (§)
library.municode.com/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT8ZO_DIV82GERE_CH82-32TRDEMA_82-32.006TDRE
- TDM Ordinance Guide
co.contra-costa.ca.us/DocumentCenter/View/3994/TDM-Ordinance-Guidelines

Santa Monica, CA

The City of Santa Monica's first TDM ordinance was adopted in 1990 and was most recently updated in 2015.

- Santa Monica's TDM Ordinance
qcode.us/codes/santamonica/view.php?topic=9-6-9_53
- Santa Monica's TDM District Map
smgov.net/uploadedFiles/Departments/PCD/Applications-Forms/AVR%20Map.pdf
- Worksite Transportation Plan (10–29 employees)
smgov.net/uploadedFiles/Departments/PCD/Transportation/Employers/Worksite%20Transportation%20Plan%2018-19.pdf

- Emission Reduction Plan (30 or more employees)
smgov.net/uploadedFiles/Departments/PCD/Transportation/Employers/Emission%20Reduction%20Plan%2018-19.pdf

Arlington, VA

Arlington County Commuter Services Transportation Demand Management Plan (arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/03/DES-ACCS-FY18_TDM_Strategic_Plan_FINAL_VERSION.pdf) defines five TDM goals as well as key objectives and performance measures to be used to monitor progress and outcomes over the next 27 years.

- Arlington Zoning Ordinance
arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/38/2016/06/ACZO.pdf
- Arlington Site Plan Approval Process (For Developers)
building.arlingtonva.us/project/site-plan-projects/

Alexandria, VA

Alexandria's ordinance requires that certain developments apply for Special Use Permits, conduct a transportation study, and prepare a site-specific Transportation Management Plan (alexandriava.gov/tes/info/default.aspx?id=6556).

- Alexandria's Transportation Management Ordinance
alexandriava.gov/uploadedFiles/tes/info/14-2506_ordinance.pdf
- TDM Program Checklist
alexandriava.gov/uploadedFiles/tes/info/TMP%20Program%20Components.pdf

Seattle, WA

Under the State's Commuter Trip Reduction (CTR) regulations (seattle.gov/transportation/projects-and-programs/programs/transportation-options-program/commute-trip-reduction-program), employers with 100 or more employees are required to develop a TDM program. The City of Seattle also developed a Transportation Management Plan (seattle.gov/transportation/projects-and-programs/programs/transportation-options-program/transportation-management-programs-) to implement TDM in new commercial developments.

- Seattle's CTR Ordinance
library.municode.com/wa/seattle/codes/municipal_code?searchRequest=%7B%22searchText%22:%22commute%20trip%20reduction%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&noid=TIT25ENPRHIPR_CH25.02COTRRE
- TDM Toolkit for Employers
commuteseattle.com/wp-content/uploads/2015/05/ETC-Toolkit-2016-April-FINAL-with-cover.pdf
- TDM Toolkit for Developers
commuteseattle.com/wp-content/uploads/2018/01/Property-Toolkit_April-2019.pdf

Appendix G: Alternative Fuels Fleet Assessment

Alternative Fuels Fleet Assessment

Overview

This assessment serves as a supplement to the Energy Roadmap and highlights ways that the City of Vista can achieve transportation-related energy savings during its vehicle-replacement process. To develop this alternative-fuels fleet assessment, SANDAG partnered with the Center for Sustainable Energy (CSE) and San Diego Regional Clean Cities Coalition. SANDAG recognizes that many factors influence vehicle-replacement decisions and provides this information as another tool to assist the City.

Alternative fuel and vehicle selection can depend on several factors, including:

- Vehicle cost
- Availability and proximity of refueling infrastructure
- Availability of grants and tax credits
- Whether new purchase or retrofit/conversion is being considered
- Vehicle maintenance

In addition to the Energy Roadmap, the San Diego Regional Clean Cities Coalition can provide Vista with more information on vehicle technologies, alternative fuels, and infrastructure needs.

Vista's current municipal fleet

The City of Vista maintains a fleet of more than 100 vehicles that range from sedans and pick-up trucks to fire engines and other heavy-duty trucks. Vista's Fleet Maintenance Division is responsible for the purchase and maintenance of all City vehicles and for the operation of the City's fueling facility, which is jointly used with the Vista Unified School District.

Recently, the City has begun replacing sedans with hybrids, which are some of the most efficient gasoline-powered vehicles available. Options for even greater efficiency exist: plug-in electric vehicles are now available as sedans, SUVs, and light trucks.

Vehicle replacement analysis

The City of Vista's Fleet Services Division provided CSE with a list of potential replacement vehicles, including sedans, SUVs, and pick-up trucks, that have suitable plug-in replacement options (shown in Table 1); fire equipment, construction equipment, and specialty medium-/heavy-duty vehicles were not included in this analysis. The analysis of alternative-fuel vehicles focused on plug-in electric vehicles, which offer the lowest fuel costs and emissions; however, compressed natural gas (CNG) and propane (LPG) vehicles also could provide some fuel cost-savings on higher-mileage vehicles. Other fuels and technologies, including biodiesel and ethanol (e85), could offer petroleum and emissions reductions, but would not offer the City significant cost-savings at this time.

Table 1 summarizes the replacement vehicles that show savings in total cost of ownership over the vehicle's lifetime. The table includes total estimated fuel costs and savings from petroleum displaced by replacing traditional fleet vehicles with their alternatively-fueled counterparts. Alternative-fuel vehicles typically cost more upfront than a traditional vehicle of the same class, but alternative-fuel vehicles demonstrate savings over an extended lifetime at current fuel prices. Rebates and incentives are available to reduce the incremental upfront cost of these vehicles and are included in the payback period analysis (see Chapter 3 for more information regarding available rebates and incentives). The availability of incentives does not always match the timing of ordering cycles and is not guaranteed. More detailed analysis should take place before any vehicle purchase decision is made.

Appendix G Table 1

Potential vehicle replacements and savings

Unit Being Replaced	Replacement Vehicle	Annual Mileage	Gallons Fuel Displaced	Estimated Annual Fuel Savings	Estimated Annual Maintenance Savings	Total Lifetime Savings	Estimated Payback Period (Years)
500	F-150 PHEV	838	64	\$123	\$21	\$1,149	15+
005	Bolt	1,443	58	\$121	\$72	\$1,548	15+
663	F-150 PHEV	2,485	178	\$323	\$62	\$3,077	15+
661	Bolt	2,574	112	\$244	\$129	\$2,978	15+
501A	F-150 PHEV	2,926	172	\$268	\$73	\$2,728	15+
141	F-150 PHEV	2,989	213	\$388	\$75	\$3,701	15+
3126	Fusion PHEV	3,031	144	\$325	\$76	\$3,204	15+
323	Bolt	3,075	123	\$258	\$154	\$3,298	15+
401	Fusion PHEV	3,185	78	\$117	\$80	\$1,573	15+
107	Fusion PHEV	3,187	78	\$117	\$80	\$1,575	15+
765	F-150 PHEV	3,425	228	\$395	\$86	\$3,845	15+
5523	F-150 PHEV	3,595	225	\$370	\$90	\$3,682	15+
105	F-150 PHEV	3,640	260	\$472	\$91	\$4,507	15+
106	Fusion PHEV	4,333	106	\$159	\$108	\$2,141	15+
144	Bolt	4,626	243	\$566	\$231	\$6,378	12.5
300	Bolt	4,742	190	\$399	\$237	\$5,086	15+
F-43	Outlander PHEV	4,887	326	\$698	\$122	\$6,565	Immediate
301	Bolt	5,024	201	\$422	\$251	\$5,388	15+
309	Bolt	5,243	210	\$441	\$262	\$5,623	15+
426	F-150 PHEV	5,620	228	\$350	\$141	\$3,926	15+
436	F-150 PHEV	5,622	228	\$350	\$141	\$3,927	15+
665	F-150 PHEV	5,681	284	\$523	\$142	\$5,316	15+
5142	F-150 PHEV	5,840	288	\$533	\$146	\$5,435	15+

Unit Being Replaced	Replacement Vehicle	Annual Mileage	Gallons Fuel Displaced	Estimated Annual Fuel Savings	Estimated Annual Maintenance Savings	Total Lifetime Savings	Estimated Payback Period (Years)
672	Bolt	5,982	315	\$732	\$299	\$8,247	9.7
668	F-150 PHEV	6,224	297	\$559	\$156	\$5,721	15+
F-46	Bolt	6,253	329	\$765	\$313	\$8,621	9.3
782	Bolt	6,465	340	\$791	\$323	\$8,913	9
F-63	Outlander PHEV	6,764	410	\$903	\$169	\$8,578	Immediate
145	F-150 PHEV	6,849	372	\$787	\$171	\$7,669	15+
F-50	Bolt	7,072	372	\$865	\$354	\$9,750	8.2
669	Bolt	7,216	380	\$883	\$361	\$9,949	8.04
F-47	Bolt	7,225	380	\$884	\$361	\$9,960	8.03
F-62	Outlander PHEV	7,322	425	\$948	\$183	\$9,051	Immediate
413	F-150 PHEV	7,631	253	\$427	\$191	\$4,944	15+
671	Bolt	7,659	403	\$937	\$383	\$10,559	7.5
670	Bolt	7,941	418	\$971	\$397	\$10,948	7.3
F-68	F-150 PHEV	8,052	258	\$443	\$201	\$5,157	15+
F-49	Bolt	8,119	427	\$993	\$406	\$11,193	7.2
F-51	Lightning Cargo Van BEV	8,392	496	\$1,165	\$210	\$10,995	15+
F-48	Bolt	8,448	445	\$1,033	\$422	\$11,646	6.9
F-56	Outlander PHEV	8,567	422	\$941	\$214	\$9,239	Immediate
F-58	Outlander PHEV	9,333	479	\$1,111	\$233	\$10,753	Immediate
003	Fusion PHEV	9,919	136	\$209	\$248	\$3,658	15+
F-69	F-150 PHEV	10,900	294	\$552	\$273	\$6,599	15+
F-67	F-150 PHEV	11,589	303	\$579	\$290	\$6,948	15+
772	F-150 PHEV	11,803	422	\$940	\$295	\$9,879	15+
773	F-150 PHEV	14,366	480	\$1,115	\$359	\$11,790	13.5

The vehicle-replacement analysis used current fuel prices (see Table 2 for assumptions), mileage, and fuel consumption of Vista's fleet vehicles. This analysis showed that the PEV replacements could save approximately \$100–\$1,000 per year in fuel savings per vehicle. In fact, the Outlander PHEV showed a lower purchase price than the current full-sized SUVs in the City's fleet, leading to immediate savings. However, the City would need to evaluate whether these vehicles could perform the same duties as the current full-sized SUVs. The Bolt, used as a replacement for the Ford Escape, showed less than a 10-year payback period in most cases; Ford is expected to release a plug-in version of the Escape in 2020. In general, vehicles with a greater-than-15-year payback period may not offer a good economic return but can still offer significant petroleum- and emissions-reduction benefits.

Basis for fuel and cost savings figures

Fuel costs used in this analysis are shown in Table 2. The gasoline cost is based on average West Coast retail prices found in the *Alternative Fuel Price Report*, January 2018, compiled by the U.S. Department of Energy.

Appendix G Table 2

Fuel cost assumptions

Fuel type	Cost
Gasoline	\$3.03
Electricity (per kWh)	\$0.13

Source: fueleconomy.gov

Fuel purchased on fleet contracts may vary in cost and can depend on capital recovery for new infrastructure. For the purposes of this assessment, fuel prices were held constant over the ownership period. Electricity has much more stable pricing than gasoline and diesel, assuming vehicles can be charged during off-peak times. Maintenance savings included in the analysis are based on manufacturer estimates of \$0.025 per mile for Plug-in Electric Vehicles (PHEVs) and \$0.05 per mile for Battery Electric Vehicles (BEVs); electric vehicles do not need regular oil changes and have reduced brake wear.

Determination of vehicle replacements

Replacement vehicles were selected to match vehicle types currently in use in Vista's fleet. Electric Sedans and SUVs are available from multiple manufacturers, and F-150 plug-in upfits are provided by XL Hybrids.

Propane and CNG vehicles are available in almost all of the same applications for larger work trucks, although there are no heavy-duty propane options. Alternative-fuel vehicles can be ordered through existing dealer channels, with alternative-fuel conversions performed by a factory-certified upfitter. All alternative-fueled vehicles must be certified by the California Air Resources Board to operate in the state.

Alternative fuel infrastructure near the City of Vista

A primary consideration in purchasing an alternative-fuel vehicle is that adequate fueling sources exist near where the vehicle will be used. Table 3 identifies publicly accessible alternative fuel infrastructure near Vista as of December 2018. To locate alternative fueling stations in the future, including EV charging sites, visit the U.S. Department of Energy's Alternative Fuels Data Center (afdc.energy.gov).

Appendix G Table 3

Alternative fuel infrastructure near the City of Vista

Fuel type	Location of publicly accessible fueling infrastructure	Distance from Vista Public Works Department (1165 East Taylor Street)
Biodiesel (B20 and above)	Pearson Fuels – B20 4067 El Cajon Boulevard San Diego, CA 92105	43.2 miles
Compressed Natural Gas (CNG)	San Diego Gas & Electric – Carlsbad 602 Cannon Road Carlsbad, CA 92008	11.5 miles

Fuel type	Location of publicly accessible fueling infrastructure	Distance from Vista Public Works Department (1165 East Taylor Street)
Electricity	EDCO Disposal – San Marcos 224 South Las Posas Road San Marcos, CA 92078	7.8 miles
	ChargePoint 369 East Broadway Vista, CA 92084 <i>Type: Level 2</i>	2.3 miles
	ChargePoint 435 La Tortuga Drive Vista, CA 92081 <i>Type: Level 2</i>	3.5 miles
	North County Ford 450 West Vista Way Vista, CA 92083 <i>Type: Level 2 (call ahead)</i>	3.0 miles
	ChargePoint CPEX County Complex Vista, CA 92081 <i>Type: Level 2</i>	3.7 miles
	Albertsons 1601 South Melrose Drive Vista, CA 92081 <i>Type: Level 2 and DC Fast (EVgo network subscription and key fob required)</i>	5.2 miles
	Walmart 1800 University Drive Vista, CA 92083 <i>Type: Level 2</i>	5.6 miles
	Walgreens 310 Sycamore Ave Vista, CA 92220 <i>Type: Level 2 (key card required)</i>	4.1 miles
	Mossy Nissan – Oceanside 3535 College Boulevard Oceanside, CA 92056 <i>Type: Level 2 and DC Fast (call ahead)</i>	6.2 miles
Ethanol (E85)	Pearson Fuels – Vista ARCO 1403 South Santa Fe Avenue Vista, CA 92083	3.7 miles
Hydrogen	Pearson Fuels – Oceanside ARCO 1501 North Melrose Drive Oceanside, CA 92056	2.6 miles
	FirstElement – Del Mar 3060 Carmel Valley Road San Diego, CA 92130	26.9 miles
	Liquefied Petroleum Gas (Propane)	
	Expo Propane – Diamond Environmental 807 East Mission Road San Marcos, CA 92069	10.1 miles
	U-Haul 802 South Coast Highway Oceanside, CA 92054	10.2 miles

Source: US Department of Energy, Alternative Fuels Data Center, afdc.energy.gov (2018)

Appendix H: City of Vista ENERGY STAR Progress and Goals Reports