

Regional Energy Strategy Goals Summary

for the
San Diego Region



June 2014



Regional Energy Strategy Goals Summary

TABLE OF CONTENTS

Table of Contents.....	i
Executive Summary	1
Energy Efficiency and Conservation.....	2
Renewable Energy.....	4
Distributed Generation.....	6
Energy and Water.....	8
Peak Demand	10
Smart Energy	12
Natural Gas Power Plants	14
Transportation Fuels	16
Land Use and Transportation Planning.....	18
Energy and Borders.....	20
Clean Energy Economy	22

EXECUTIVE SUMMARY

In order to provide updated information and data for San Diego Forward: The Regional Plan, the Regional Energy Working Group (EWG) has discussed and provided input to the development of a technical update of the Regional Energy Strategy (RES). The RES technical update demonstrates progress toward RES goals since it was adopted in 2009, identifies priorities for achieving goals, and updates the existing conditions and future projections data.

The RES technical update consists of two parts: summary reports for each RES goal and the updated RES document. Each of the goal summaries describes progress made since the RES adoption in 2009, relevant data and monitoring methods, and recommendations for continued progress toward achieving the RES goals. The updated RES document reflects changes in relevant state policies since 2009, updated existing conditions and future projections data, programs and projects that demonstrate progress toward achieving RES goals, and recommendations described in the RES goal reports.

The data included in the RES is consistent with the 2012 greenhouse gas (GHG) emissions inventory prepared by the Energy Policy Initiatives Center at the University of San Diego. The inventory quantifies regionwide GHG emissions from all sources, including electricity, natural gas, transportation, waste, and water.

The RES technical update, along with the updated GHG emissions inventory and climate change mitigation and adaptation white paper, will inform the development of the energy and climate change components for the Regional Plan.

Both the updated RES document and goal summary reports are available on the SANDAG website at www.sandag.org/RES.

Energy Efficiency and Conservation

**Reduce per capita electricity consumption by 20 percent by 2030
in order to keep total electricity consumption flat.**

Overview

Energy efficiency is the first priority in the state's preferred loading order for meeting new energy demands and several state policies and programs work to reduce energy use through building and appliance efficiency. Local governments have a broad range of energy-related authorities and opportunities to influence energy efficiency in municipal facilities and their communities.

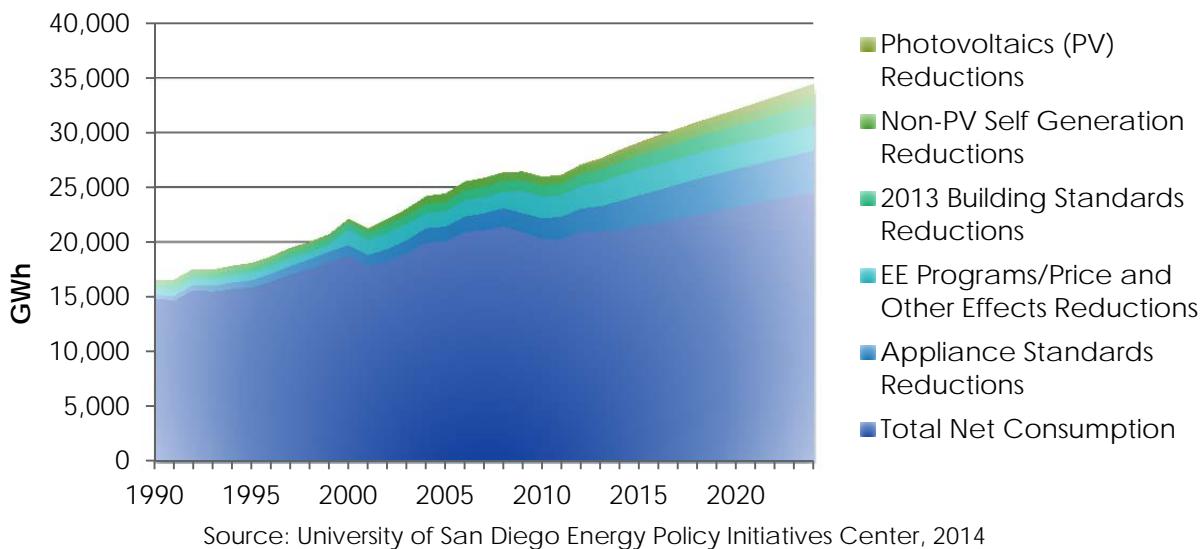
Progress since RES Adoption

SDG&E Local Government Partner Programs	City of Chula Vista, City of San Diego, County of San Diego, Port of San Diego and SANDAG have Local Government Energy Efficiency Partnerships (LGP) with SDG&E. The SANDAG LGP created the Energy Roadmap Program to assist member agencies with energy planning and implementation. The LGPs collaborate on energy efficiency initiatives and programs including: <ul style="list-style-type: none">• San Diego Regional Climate Collaborative• Regional Energy Mapping Project• San Diego Regional Energy Partnership (SDREP)
Building Upgrade Programs	City of Chula Vista, City of San Diego and County of San Diego developed single- and multi-family home upgrade programs using American Recovery and Reinvestment Act (ARRA) funds. These funds, which expired in 2012, added incentives and workforce training to existing SDG&E programs. Energy Upgrade California (EUC) began as the state brand for all residential whole-house upgrade programs. From December 2010 – February 2013, SDG&E's EUC program projects and savings were 87 Basic Path projects with an average 10% savings per project and 308 Advanced Path projects.
Financing Programs	Financing programs help to enable property owners to retrofit their buildings by overcoming the hurdle of upfront capital. <ul style="list-style-type: none">• Property Assessed Clean Energy (PACE) programs assist commercial and residential customers through AB 811 and SB 555 financing districts• On Bill Financing program from SDG&E offers zero percent financing for eligible commercial and public agency customers• Traditional and non-traditional loan products
Regional Energy Networks	For 2013, the CPUC accepted a new regionally-focused and local government led structure termed Regional Energy Network (REN) as a mechanism to continue and expand local government ARRA-funded energy programs and implement climate action plans. RENs were approved as pilot programs in the Bay Area (Bay REN) and Southern California (SoCal REN) and complement LGPs.

Planning Needs Going Forward

- Support energy efficiency policies in local and regional plans, such as AB 758: CA Comprehensive Energy Efficiency Program for Existing Buildings
- Facilitate consistent permitting practices across the region
- Promote building energy ratings and disclosure
- Increase local availability and awareness of finance programs
- Support implementation of Proposition 39 and resulting energy and cost savings

Actual and Projected Impacts of Energy Efficiency Measures in the San Diego Region 1990-2024 (above and beyond business as usual)



Source: University of San Diego Energy Policy Initiatives Center, 2014

Monitoring

- Evaluate progress on statewide Zero Net Energy (ZNE) goals
- Track type and number of local building retrofits against program goals
- Track regional electricity and GHG reductions from energy efficiency programs

Resources

- [Statewide Energy Efficiency Strategic Plan](#)
- [California Center for Sustainable Energy](#)
- [San Diego Regional Climate Collaborative](#)

Recommendations

- Explore potential benefits of a San Diego Regional Energy Network.
- Assist local governments in retrofitting their own facilities.
- Identify and expand effective energy efficiency programs.
- Support business and residential retrofit opportunities, and identify successful outreach methods.

Renewable Energy

Support the development of renewable energy resources to meet a 33 percent renewable portfolio standard (RPS) by 2020 and exceed 33 percent beyond 2020.

Overview

After energy efficiency and demand response, the state's preferred loading order calls for meeting electricity needs and reducing GHG emissions with renewable resources. The renewable energy goal specifically focuses on utility-scale renewable energy projects, including wind energy, geothermal, biofuel, hydroelectricity, and large scale solar photovoltaics (PV). Small-scale renewable energy generation, such as rooftop solar PV, is addressed in the Distributed Generation goal.

Progress since RES Adoption

SDG&E Renewable Energy Procurement	During 2012, SDG&E served 20.3 percent of their retail electricity sales with utility-scale renewable power. The percentage is up from 10.2 percent in 2009.
County of San Diego	The County of San Diego updated its Strategic Energy Plan and adopted a Wind Energy Ordinance to help streamline the siting and permitting processes within the unincorporated portions of the County. The Board of Supervisors directed staff to prepare a comprehensive renewable energy plan to streamline the development of large scale renewable energy projects.
Desert Renewable Energy Conservation Plan	The purpose of the Desert Renewable Energy Conservation Plan (DRECP) is to conserve and manage plant and wildlife communities in the desert regions of California while facilitating the timely permitting of compatible renewable energy projects. The DRECP is being prepared by a collaboration of state and federal agencies, with input from local governments, environmental organizations, industry, and other interested parties.

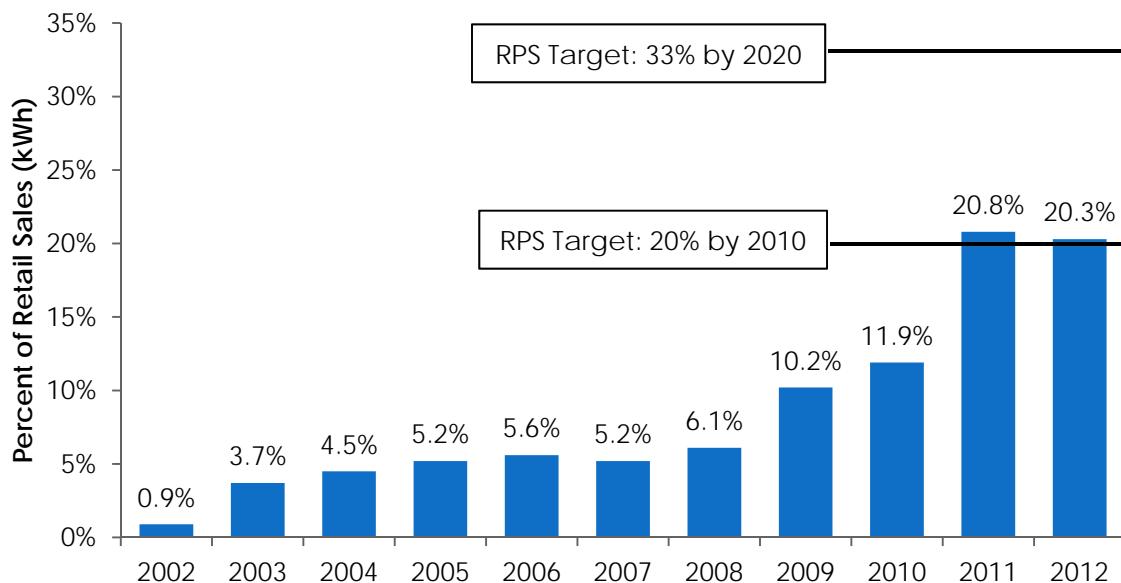
Planning Needs Going Forward

- Identify possible locations for utility-scale renewable energy projects within the San Diego region
- Consider energy storage technologies to advance renewable energy goals

Monitoring

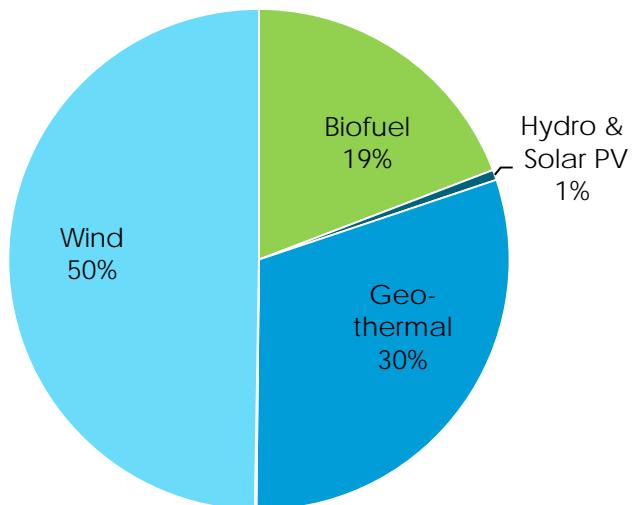
- Track SDG&E renewable energy procurement
- Monitor regional renewable energy projects deployed since 2009
- Monitor development and implementation of the DRECP and Senate Bill 618 regulations for solar-use easements on Williamson Act lands

SDG&E Renewable Energy Procurement



Source: SDG&E, 2013.

SDG&E 2012 Renewable Sources



Resources

- [County of San Diego Energy Management Program](#)
- [Renewable Energy on Contaminated Lands Project](#)
- [CPUC Renewable Portfolio Standard Implementation](#)
- [Desert Renewable Energy Conservation Plan](#)

Recommendations

- Advance efforts to site utility-scale renewable energy resources and associated infrastructure in the San Diego region.
- Participate in County of San Diego renewable energy planning.

Distributed Generation

Increase the total amount of clean distributed generation (renewable and non-renewable) to reduce peak demand and diversify electricity resources in the San Diego region.

Overview

Distributed generation (DG) includes resources on the customer side of the meter including: solar, combined heat and power (CHP), fuel cells and energy storage.

Progress since RES Adoption

Project Financing	Financing programs have increased the uptake of both residential and commercial DG installations: <ul style="list-style-type: none">• Self-Generation Incentive Program and California Solar Initiative• Property Assessed Clean Energy programs• California Energy Commission loans
Net Energy Metering	Net Energy Metering (NEM) allows customers with solar electric or wind systems (under 1 MW) to earn credit for excess power they produce. In 2010, NEM caps were raised from 2.5% to 5% of each utility's aggregate customer peak demand. For SDG&E, the NEM cap is 606 MW and 184 MW is installed.
Feed-in Tariff	As of July 2013, the state's Renewable Market Adjusting Tariff (RE-Mat) implements the renewable resource feed-in tariff (FIT) program for up to 750 MW of renewable resources from qualifying facilities (QF) no larger than 3 MW. The program cap for SDG&E's RE-Mat and related programs is 48.8 MW--SDG&E's allocated share of the total statewide program cap of 750 MW.
Solar PV Installations	As of December 2013, the San Diego region has over 14,000 rooftop solar installations producing nearly 150 MW. This is triple the 49 MW of installed solar PV in 2008.
UC San Diego Microgrid	The microgrid at UC San Diego serves over 45,000 people, 13 million square feet in 450 buildings across 1,200 acres. It generates 90 percent of the campus' electricity using two 13.5 MW gas turbines, a 3 MW steam turbine, 1.2 MW of solar and a 2 MW power purchase agreement (PPA) for fuel cell power that uses methane from a wastewater treatment plan.

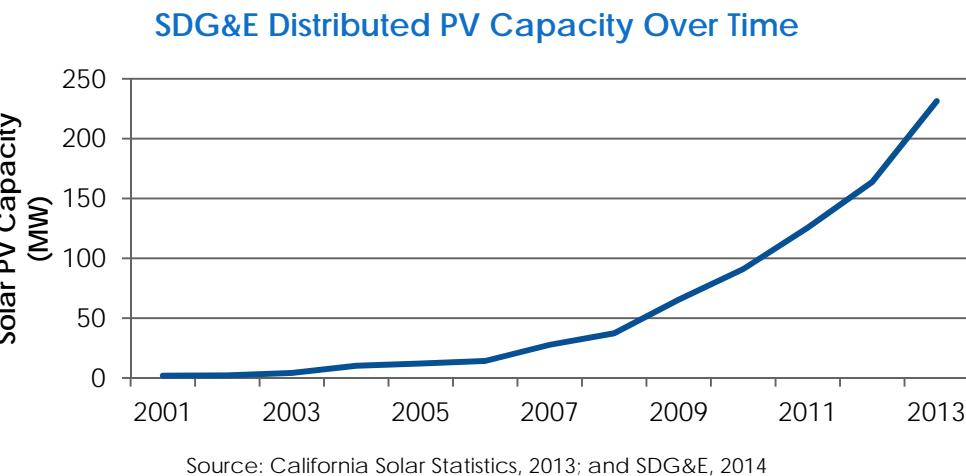
Regional Needs

- Planning for DG systems in the context of zero net energy buildings
- Incorporation of DG policies into local government plans
- Identify project opportunities for innovative DG combinations such as energy storage and plug-in electric vehicles using smart communication technologies

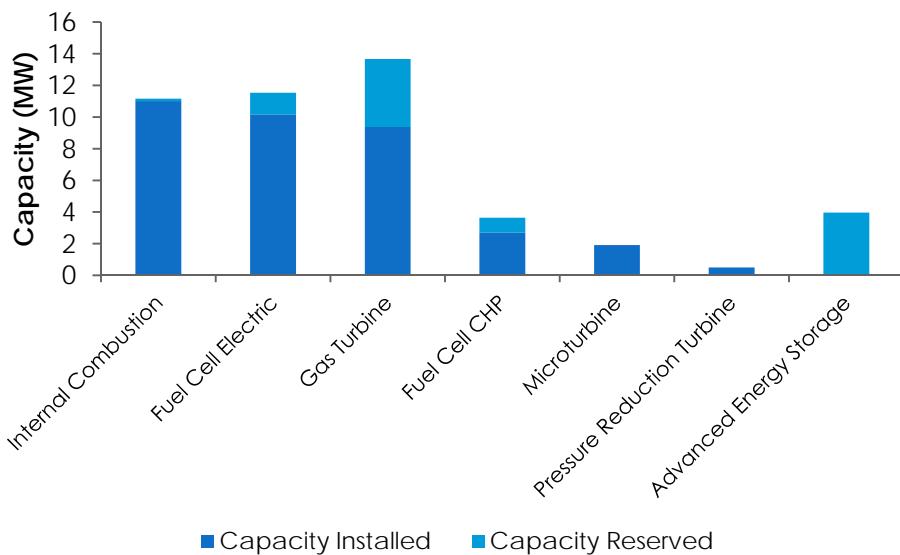
Monitoring

- Implementation of rate design changes and impacts to DG installations
- Electric Program Investment Charge (EPIC) program

Distributed Generation



Self-Generation Incentive Program Capacity Installed and Reserved by Technology (SDG&E Territory)



Source: CA Center for Sustainable Energy, as of December 2013

Resources

- [Draft San Diego Distributed Solar PV Impact Study, 2013](#)
- [Best Practices for Permitting Process: Southern California Rooftop Solar Challenge, CCSE and USD's EPIC, 2013](#)
- [2012 IEPR Update](#) (CHP Assessment and Renewable Action Plan)

Recommendations

- Support integration of DG goals into local government plans.
- Support policies to increase cost-effective installations of customer-side DG systems.
- Support state targets for CHP and energy storage.

Energy and Water

Reduce water-related energy use.

Overview

In the San Diego region, water and energy resources are closely connected. The amount and ways water is supplied and used in the region require large amounts of energy. Water-related energy uses include:

- End uses: heating, cooling, on-site pumping
- Upstream uses: surface conveyance, pumping, treatment, distribution
- Downstream uses: waste water pumping, treatment, recycling

Progress since RES Adoption

State Water-Energy Nexus Initiatives	The Public Utilities Commission authorized programs to determine energy savings that may be realized through water conservation measures and how cost effectiveness should be analyzed for water-energy programs. Research by the Energy Commission found that water and energy resources are inextricably connected, and termed it as the Water-Energy Nexus.
San Diego County Water Authority	The San Diego County Water Authority (SDCWA) is working on long-term actions to ensure efficient energy use at SDCWA facilities. SDCWA completed a Climate Action Plan in conjunction with its 2013 Master Plan to address climate change as it relates to activities within its jurisdiction.
SDG&E-SDCWA programs	Collaborative SDG&E and SDCWA activities include: <ul style="list-style-type: none">• High-efficiency clothes waster rebates (over 100,000 residential and 9,100 commercial installs)• Energy efficiency assessments for water agencies (103 facilities)• Showerhead distributions (more than 500,000)• Pre-rinse spray valve installations at more than 300 restaurants
Direct Potable Reuse Law	SB 322 (Senator Hueso, San Diego) established a process to expand the state's water recycling program. Signed into law October 8, 2013, the Act requires the State Department of Public Health, in consultation with the State Water Resources Control Board, to address development of uniform water recycling criteria for direct potable reuse.

Planning Needs Going Forward

- Inclusion of water-energy nexus measures in Climate Action Planning
- Identification and support for water reuse policies that reduce energy needs
- Collaboration with water agencies on water-energy nexus programs and climate change efforts

Energy and Water

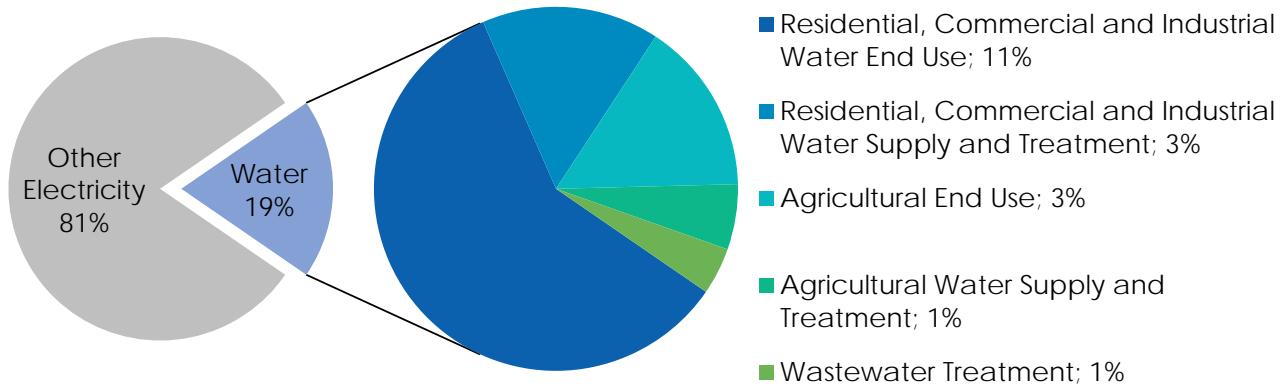
Water Supply	Average Energy Intensity to Supply Southern California (kWh/Acre Feet)
Groundwater	593
Central Plant Recycled Water	1,129
Colorado River Aqueduct	1,976
State Water Project	2,839
Desalination	4,000

Source: GEI Consultants and Navigant for CPUC, 2010. *Embedded Energy in Water Studies – Study 1: Statewide and Regional Water-Energy Relationship*.

Monitoring

- Total annual water use and water-related energy use
- Total local water supplies and energy intensity of each
- Water-energy program metrics
- Water reuse demonstration projects

Water-Related Energy Use in CA



Source: Refining Estimates of Water-Related Energy Use in California, CEC

Resources

- [City of San Diego Recycled Water Study \(2012\) and Water Supply Resources](#)
- [San Diego County Water Authority](#)
- [California Sustainability Alliance Water-Energy Toolkit \(2013\)](#)
- [California Public Utilities Commission Water-Energy Nexus Programs](#)

Recommendations

- Support water conservation measures that reduce energy use.
- Evaluate water reuse policies that local governments can consider.
- Coordinate planning and evaluate intersections among energy, water and climate change.

Peak Demand

Implement cost-effective steps and incentives to utilize demand response and energy efficiency measures to reduce peak demand.

Overview

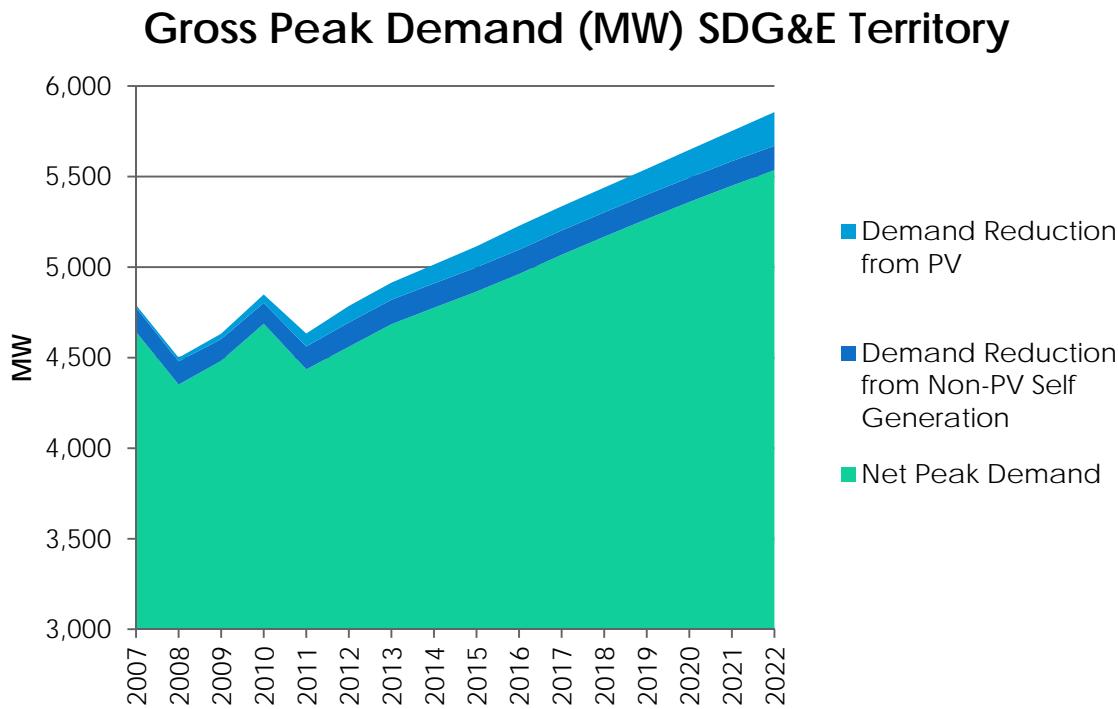
After energy efficiency, demand response is the next priority in the state's preferred loading order for meeting new energy needs and reducing GHG emissions. Addressing peak demand can offer additional consumer benefits like cost savings and little or no environmental impact. Several of the RES goals also address peak demand; see goals for Energy Efficiency and Conservation, Renewable Energy, Distributed Generation, Smart Energy, and Natural Gas Power Plants.

Progress since RES Adoption

SDG&E Demand Response Programs	SDG&E has programs to encourage residences and businesses to reduce use during peak hours (between 11 A.M. and 6 P.M.) on high demand days including Reduce Your Use, Summer Saver Program and Critical Peak Pricing.
Time-of-Use Rates for EV Charging	SDG&E offers two plug-in electric vehicle time-of-use (EV-TOU) rates for customers to receive lower rates for charging their vehicles during off-peak hours, between midnight and 5 A.M. Customers that sign up for the EV-TOU can either use their existing household meter to track electricity of both the home and EV, or they can install a separate meter for the EV.
Energy Storage Targets	Assembly Bill 2514 (Skinner, 2010) directed the CPUC to establish an energy storage procurement target to be achieved by each load-serving entity. In October 2013, the CPUC adopted a target of 1,325 MW for PG&E, SCE and SDG&E by 2020, with installations required by the end of 2024. Energy storage is to contribute to grid optimization including peak reduction, reliability, renewables integration, and GHG reductions.

Needs Going Forward

- Support retrocommissioning projects to reduce peak demand
- Utilize green business networks to advance demand response and reduce GHG emissions
- Utilize smart communication technology to advance demand response programs and reduce peak demand
- Increase deployment of energy storage, distributed generation, and plug-in electric vehicles to address peak demand



Source: California Energy Commission. California Energy Demand 2012-2022 Staff Final Forecast - Mid Demand Case, SDG&E Planning Area

Monitoring

- Annual changes to peak demand, average demand, and load factor
- Changes to peak demand due to the onset of renewable resources
- Peak demand energy used and supplied by plug-in electric vehicle charging
- Demand reduction programs that save energy and reduce consumer costs

Resources

- [SDG&E Demand Response Programs](#)
- [SDG&E Electric Vehicle Time-of-Use Rates](#)
- [CPUC Demand Response and Smart Technologies](#)
- [CPUC Electric Energy Storage Programs and Proceedings](#)

Recommendations

- Identify and explore investments that help address the variability of generation resources and other changes to peak demand.
- Expand the deployment of energy storage and distributed generation to reduce peak demand.
- Support siting of distributed generation with plug-in electric vehicle chargers to avoid negative peak demand impacts.

Smart Energy

Modernize the electricity grid with smart meters, smart end-use devices, and interactive communication technologies.

Overview

The smart grid enables two-way communication between an electricity user and the utility. Newer appliances and communication networks can give the consumer control over their appliances when away from home. Smart technologies and utility programs can enable consumers to know their electricity costs based on the time of use, and utilities can electronically communicate with end users and/or their equipment to power them down when the grid is in high use. Smart communications can improve reliability and reduce outages, as well as enable electric vehicles, renewable energy, and distributed generation technologies to be effectively integrated into the electric grid. Collectively, these policies are referred to here as "smart energy."

Progress since RES Adoption

SDG&E Smart Grid Deployment	SDG&E completed region wide installation of smart meters for all electricity customers, along with education and outreach. Its Smart Grid Deployment Plan estimates smart grid deployment costs at \$3.5 to \$3.6 billion and total benefits, including societal and environmental benefits, at \$3.8 to \$7.1 billion for 2006-2020.
Demonstration Projects	Projects to better understand smart energy applications with EV charging and solar PV are at the San Diego Zoo, UC San Diego, and transit facilities.
SDG&E Local Area Networks	Local area networks (LANs) operate through devices available for residents and businesses to connect with smart meters to manage appliances and monitor energy use.
UC San Diego Microgrid	The microgrid at UC San Diego generates over 90 percent of the electricity used on campus annually in 450 buildings across 1,200 acres. Smart communication networks and devices efficiently operate the campus generators (solar, gas turbines, steam turbine and fuel cell power from methane) and the end use heating, cooling and electricity.
SANDAG Activities	During the rollout of smart meters in the County, SANDAG provided information to local governments and stakeholders through the Regional Energy Working Group and Energy Roadmap Program about smart energy.

Regional Needs

- Demonstration projects that integrate energy storage, distributed generation, electric vehicle charging and smart communications
- Understanding of interactive communication technologies to best utilize smart grid capabilities
- Consumer outreach and education on making best use of smart meters and technologies



Source: SDG&E Presentation, Borrego Springs Microgrid Demonstration Project, 2012

Monitoring

- Investments in the region to modernize the electricity grid, undertake demonstration projects, and develop and deploy smart technologies
- State and local reports on smart energy impacts to grid reliability, integration of distributed generation and energy consumption

Resources

- [SDG&E Smart Grid Deployment Plan, 2011.](#)
- [Sustain UC San Diego](#)
- [Borrego Springs Microgrid factsheet](#)

Recommendations

- Utilize the smart grid and advanced technologies to better inform decision making at the utility level and consumer level.
- Consider broadening RES goal to include microgrids.
- Continue to explore opportunities for emerging technology demonstration projects.

Natural Gas Power Plants

Increase overall efficiency of electricity production and support replacement of inefficient power plants consistent with the state's preferred loading order.

Overview

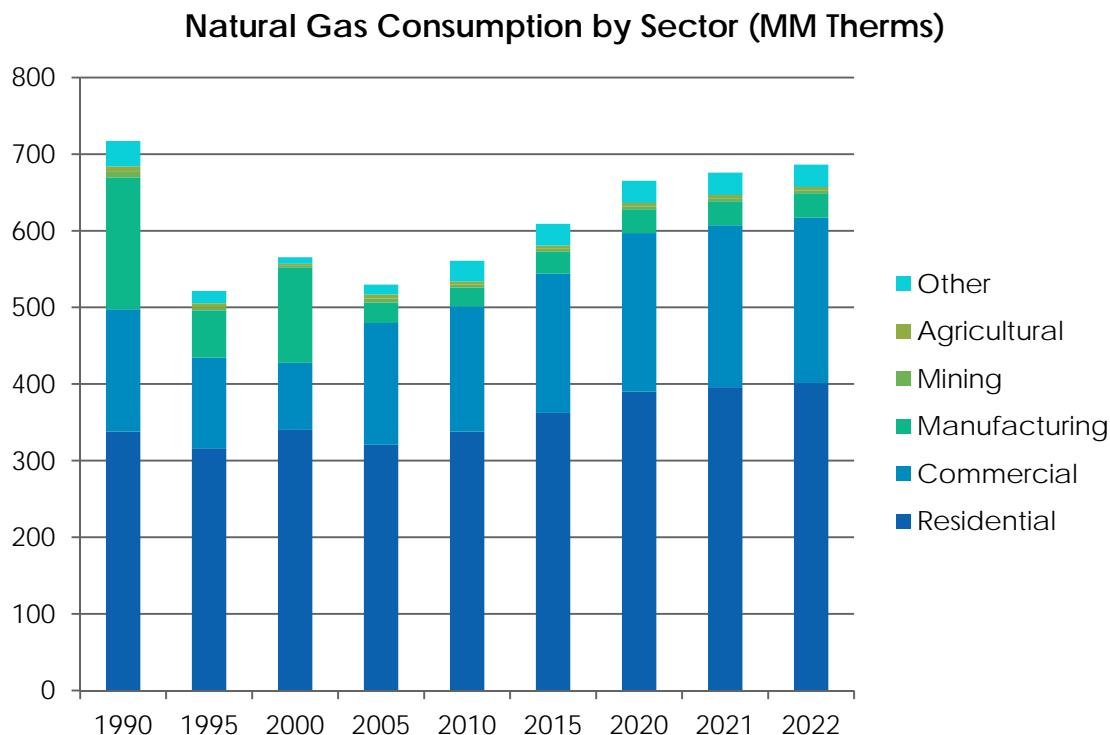
The RES goal for natural gas power plants is focused on using natural gas in electricity generation most efficiently. Natural gas power plants remain an important source of electricity generation for the San Diego region and continue to serve a role in the state's loading order. Natural gas use can become more efficient through measures in energy efficiency, demand response, distributed generation, and renewable energy. Natural gas power supports grid reliability as intermittent renewable resources and energy storage are integrated into the grid.

Progress since RES Adoption

Natural Gas Plants in the Region	<ul style="list-style-type: none">Calpine's Otay Mesa combined cycle natural gas plant (590 MW) became operational in 2009 as the RES was considered for adoption.J-Power's Orange Grove single cycle natural gas plant (96 MW) became operational in May 2010 as a peaker plantNRG's Carlsbad combined cycle gas plant (558 MW) was approved by California Energy Commission in 2012 to replace the less efficient Encina plant on the same site.Chula Vista and the Port demolished the South Bay Power Plant in 2013.
Natural Gas Vehicles	Compressed natural gas (CNG) and liquefied natural gas (LNG) are used as transportation fuels primarily in buses, commercial vans, shuttles and trucks. The natural gas demand for transportation fuel has grown 146% in the San Diego region, from 785,256 therms in 2009 to 1,928,079 therms in 2012. Growth is expected to continue as more natural gas vehicles are used to meet state alternative fuel and climate change goals.

Regional Planning Needs

- Evaluate infrastructure needs for natural gas storage and distribution, including refueling stations and the existing pipeline system
- Assess natural gas supply and cost impacts from the shutdown of the San Onofre Nuclear Generating Station (SONGS)
- Explore need of natural gas peaker plants as more energy storage and renewable resources are integrated in the electric grid
- Identify natural gas issues with local impacts and policy measures for local governments to address them



Source: California Energy Commission. California Energy Demand 2012-2022 Staff Final Forecast – Mid Demand Case, SDG&E Natural Gas Planning Area

Monitoring

- Annual cost, supply and demand changes to natural gas for electricity and transportation
- Pipeline and storage capacity for the region
- Energy efficiency and alternative fuel programs

Resources

- [California Energy Commission Natural Gas Resources](#)
- [California Public Utilities Commission Natural Gas Resources](#)
- [San Diego Regional Clean Cities Program](#)

Recommendations

- Broaden RES goal to address end-user energy efficiency, regional access to supplies, transportation and/or other pertinent issues.
- Assess cost, supply, demand and GHG changes to natural gas from electricity and transportation uses.

Transportation Fuels

Substantially increase the deployment of alternative transportation fuels and vehicles.

Overview

Fuel conservation, efficiency, and increases in clean alternative fuels have the largest impact on greenhouse gas (GHG) emissions. Support of alternative fuel vehicles (AFVs), stations and supplies help meet climate change goals and expand choices for drivers. Alternatives fuels include biofuels, electricity, hydrogen, natural gas, and propane.

Progress since RES Adoption

Ecotality and U.S. Department of Energy's The EV Project	In Winter 2010, the all-electric Nissan Leaf car was released in San Diego and deployment of plug-in electric vehicle (PEV) chargers through the EV Project began. As of March 2013, PEV chargers from the EV Project totaled 731 residential Level 2 (L2) chargers, 64 nonresidential L2, 302 publicly available L2, and 3 DC Fast chargers in the region. The EV Project will collect data on charging behavior into 2014. SANDAG and many local stakeholders participated in EV Project planning.
San Diego Airport Clean Vehicle Conversion Program	The Airport adopted a policy to convert all ground transportation to AFVs by 2017. The California Center for Sustainable Energy (CCSE) developed the Airport Clean Vehicle Rebate Program (AVRP) to provide incentives to assist ground transportation providers in switching to AFVs. AVRP helped fund 181 vehicles conversions totaling 12% of the ground fleet. The Airport, Miramar College and SANDAG were project partners.
San Diego Regional Electric Vehicle Infrastructure Working Group (REVI)	The California Energy Commission awarded grants to MPOs to create working groups to address barriers to PEV deployment. SANDAG and CCSE formed the REV1 that developed best practices and a Regional Readiness Plan for use by public agencies and regional stakeholders.
State AB118 Program and Grants	The Air Resources Board and Energy Commission offer over \$100 million in alternative transportation grants and rebates annually through 2015 via the AB118 Program. The Clean Vehicle Rebate Program, Hybrid Truck and Bus Voucher Incentive Project, and planning through groups like REV1 are part of AB118 funding.
Energy Roadmap Program's Green Fleets for Local Governments	Basic fleet assessments that considered high efficiency and alternative fuel options were provided to 12 local governments via the Energy Roadmap program. SANDAG partnered with CCSE and San Diego Regional Clean Cities Coalition to provide economic and petroleum reduction assessments based on a jurisdiction's vehicle replacement and procurement protocols.

Planning Needs Going Forward

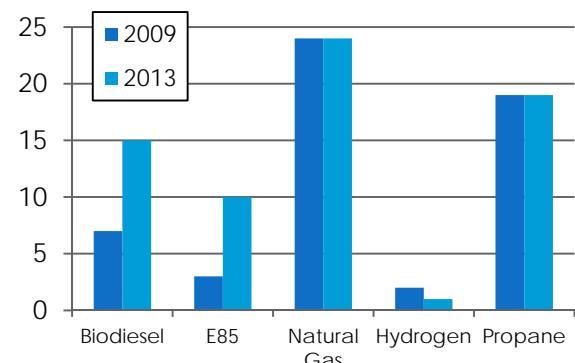
- Facilitate public-private partnerships to plan and deploy alternative fuel stations
- Evaluate clean fuel opportunities for goods movement projects
- Support the continuation of AB118 incentives for local alternative fuel stations, vehicles and production
- Support education and outreach on the economic and environmental benefits of alternative fuels
- Assess barriers to the installation, operation and maintenance of PEV chargers and alternative fuel infrastructure for public agencies

San Diego Region's Electric Vehicle Landscape

Plug-In Electric Vehicles (PEV)	Rebates Issued	Rebate Funding
Zero Emission Vehicles (battery electric)	2,748	\$7,673,133
Plug-in Hybrid Electric Vehicles	1,331	\$1,994,317
TOTAL	4,079	\$9,667,450
PEV Chargers	Home/Fleet	Public Use
Level 2 Chargers	975	488
DC Fast Chargers	1	8

Sources: California Clean Vehicle Rebate Project by CCSE; SDG&E Clean Transportation, June 2014

Alternative Fueling Stations in San Diego Region



Source: DOE Alternative Fuels Data Center

Monitoring

- Annual gasoline, diesel and alternative fuel use and/or sale in region
- CARB Low Carbon Fuel Standard and state petroleum reduction goals
- CEC Transportation Energy Forecasts for Integrated Energy Policy Reports
- California Energy Almanac

Resources

- [Alternative Fuels Data Center Station Locator](#)
- [San Diego Regional Clean Cities Coalition](#)
- [California Energy Commission Transportation Division](#)
- [The EV Project documents](#)
- [San Diego Regional PEV Readiness Plan](#)

Recommendations

- Support local government measures to transition municipal and contracted fleets to AFVs.
- Continue to support public-private partnerships to fund and deploy regional alternative fuel vehicles and infrastructure.
- Support measures that enable public agencies to install, operate and maintain alternative fuel infrastructure at public sites.

Land Use and Transportation Planning

Reduce the energy demand of the built environment through changes in land use and transportation planning

Overview

Land Use and Transportation Planning (LUTP) was a new goal in the 2030 Regional Energy Strategy (2009). SANDAG's Sustainable Communities Strategy (SCS) is the primary planning mechanism to reduce the region's LUTP related energy and fuel consumption. SCS strategies include smart growth, walking, biking, public transit, carpooling, telecommuting, and congestion pricing. The primary local government mechanisms are Climate Action Plans (CAPs) and General Plan Updates (GPUs).

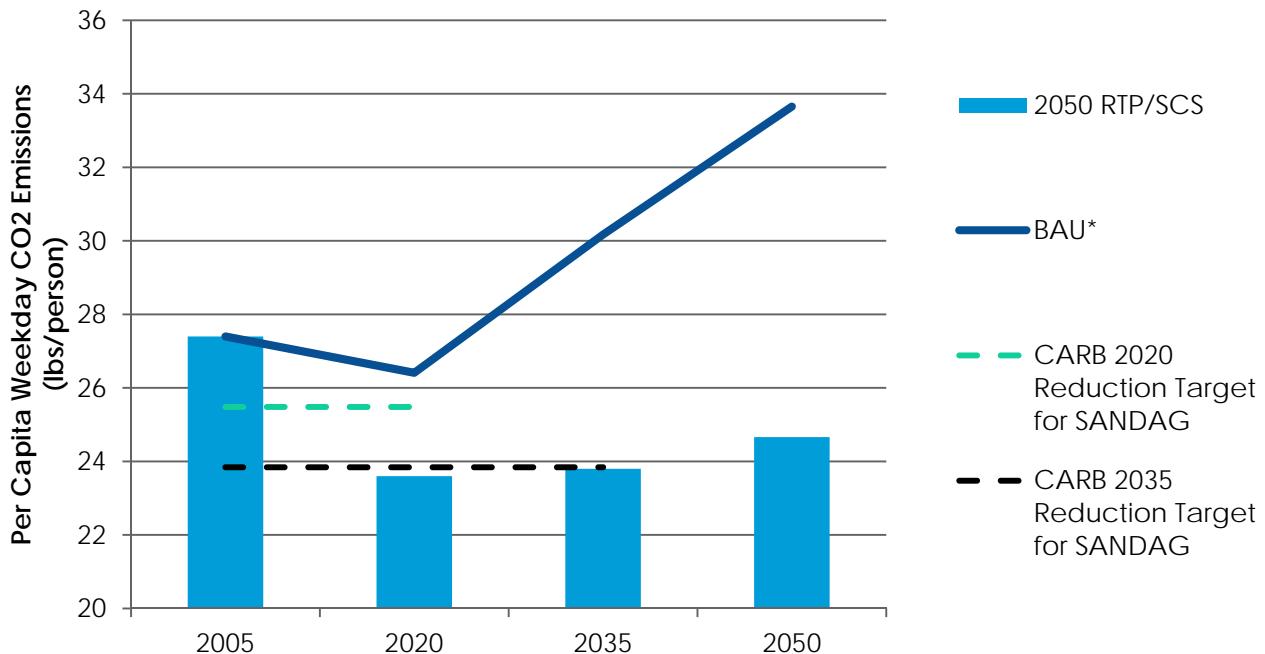
Progress since RES Adoption

Regional Lead	SANDAG SCS	Describes how to meet greenhouse gas reduction targets for 2020 and 2035 set by the California Air Resources Board (CARB). Places priority on mixed uses, smart growth and mobility.
	Energy Roadmaps	As of October 2013, SANDAG has completed 13 Roadmaps with local governments and 5 are underway. LUTP is a primary piece of each and can be used in General Plan updates and CAPs.
Local Lead	General Plan Updates	As local jurisdictions update their General Plans, energy demand reduction in land use and transportation planning has become a component.
	Climate Action Plans	19 local governments completed GHG inventories, 7 adopted CAPs, and 5 are under development.
Collaboration and Outreach		The San Diego Foundation's Climate Network provided peer to peer forums, and now operates as the San Diego Regional Climate Collaborative.
Regional and Local Active Transportation		SANDAG created the Bike EAP to implement high-priority projects from the Regional Bike Plan within 10 years. Local governments are also hiring active transportation staff and developing local bike plans.

Planning Needs Going Forward

- Local climate planning assistance
 - Climate Action Plans, CAP Implementation Plans, and Projects
 - Accessible energy and emissions data for GHG inventories
 - Climate considerations for local Housing Elements
 - Funding opportunities to support climate action planning
- Regional climate planning
 - Develop or make available guidance materials for above needs
 - Prepare or share CEQA thresholds guidance for development projects

Per Capita GHG Reductions from 2050 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS)



*BAU (Business as Usual) = CO₂ emissions under status quo scenario, without implementation of 2050 RTP/SCS

Monitoring

- GHG reductions from local CAPs and GPUs, and from regional LUTP in the SCS
- State measures and targets for GHG reductions from LUTP

Resources

- [Adopted SANDAG Sustainable Communities Strategy](#)
- [Riding to 2050: the San Diego Regional Bike Plan](#)
- [Local Climate Action Plans](#)
- [Energy Roadmap Planning Chapter and Appendices](#)
- [San Diego Regional Climate Collaborative](#)
- [The Governor's Office of Planning and Research \(OPR\)](#)

Recommendations

- Expand SANDAG data warehouse to include jurisdictional data to support climate action planning.
- Provide forum to address consistency on CEQA thresholds for GHG emissions in the region.
- Support mobility options to reduce GHG emissions.
- Identify and secure long term funding sources for land use and transportation planning to reduce energy use.

Energy and Borders

Integrate energy considerations into existing and future collaborative border initiatives.

Overview

Energy supply, usage and conservation in the San Diego region are impacted by actions of its neighbors and vice versa. San Diego County borders include Orange, Riverside and Imperial Counties, Mexico, 17 tribal governments and the military. Collaborative projects on congestion management, goods movement and Ports of Entry (POEs) are ongoing. Energy, transportation fuels, and climate change are growing areas of mutual interest for SANDAG's Borders Committee and Military Working Group.

Progress since RES Adoption

Tribal Policy Summit and Workshop	In April 2010, a Tribal Summit was convened by SANDAG, Southern California Tribal Chairmen's Association (SCTCA), Reservation Transportation Authority (RTA), Caltrans, County of San Diego, and the 17 federally recognized tribal governments in the San Diego region to identify policy issues and priorities that could be jointly addressed. Energy was identified as a priority. In November 2013, SANDAG and SCTCA held a Tribal Policy Workshop at the Sycuan Reservation to address energy and other policies.
2010 Binational Event: Crossborder Climate Change Strategies	In June 2010, SANDAG, Caltrans, Metropolitan Planning Institute of Tijuana (IMPLAN), USD's EPIC and other experts discussed climate change and adaptation strategies being considered in the San Diego region and Baja California, Mexico. Subsequent crossborder meetings and events have occurred to share experiences and promote climate collaboration.
CARB New Truck Regulations	SANDAG collaborated with California Air Resources Board (CARB) to conduct information sessions on new clean truck regulations impacting border truckers.
Intelligent Transportations System Pre-Deployment Strategy	SANDAG is conducting an Intelligent Transportations System Pre-Deployment Strategy to enhance the efficiency of truck flows across the border and reduce GHG emissions. The strategy investigates a congestion pricing system for the proposed Otay Mesa East POE and accompanying State Route 11, and a wait time detection system for all three ground POEs.
SCTCA Energy Cooperative	The Southern California Tribal Chairmen's Association is creating an energy cooperative for tribes located in the San Diego region.

Planning Needs Going Forward

- Continued communication among border communities and military on energy, fuel and climate change
- Collaboration as possible on energy, alternative fuels and climate adaptation
- Integrated planning for electric and alternative fuel vehicles along transportation corridors like the I-5 and I-15
- Public and private partnership on energy and climate change planning efforts

Military and City of San Diego Collaborative Clean Energy Project

MIRAMAR LANDFILL GAS POWER PLANT PROJECTS (MP3)

A PARTNERSHIP BETWEEN
THE CITY OF SAN DIEGO,
FORTISTAR METHANE GROUP, LLC
AND THE MARINE CORPS AIR STATION MIRAMAR (MCASM)

February 2010

FORTISTAR
Methane Group, LLC



- Miramar Energy Project
- Operational June 2012
- Converts methane gas from landfill waste into renewable energy
- Reduced MCAS's energy pull from the San Diego grid by 45%

Monitoring

- Fuel and energy use from goods movement at Ports of Entry and inter-county
- Climate adaptation studies that cross regional borders
- Tribal energy planning and initiatives
- Local military net zero energy policies and practices
- Renewable energy projects in Mexico and tribal lands

Resources

- [SANDAG Borders Committee](#)
- [SANDAG Regional Military Working Group](#)
- [SANDAG Projects with Neighboring Jurisdictions](#)

Recommendations

- Expand the RES Goal to include actions that support coordination with border military sites and tribal nations.
- Support stakeholder coordination on opportunities to integrate plug-in electric vehicle charging and other alternative fuel infrastructure.
- Explore public-private and joint border agency partnerships for energy and climate change planning efforts.

Clean Energy Economy

Collaborate with workforce entities, employers, technical and vocational schools, and labor unions to identify and expand local job placement mechanisms in the Clean Energy Sector.

Overview

The Clean Energy Economy goal has focused on training and development for the local workforce to perform sought after green services for local homes, businesses, and the public sector. In 2009, the clean energy programs received an injection of investment dollars from the American Recovery and Reinvestment Act (ARRA) to support workforce training on the installation, operation and maintenance of green buildings, distributed generation, and clean fuel vehicles and infrastructure. The California Center for Sustainable Energy (CCSE) implemented training programs related to green building for several public entities.

Progress since RES Adoption

ARRA Clean Energy Workforce Training Programs	From 2009-2012, ARRA funded several state and local workforce training programs including Energy Upgrade California (EUC) and Alternative and Renewable Fuel and Vehicle Technology Program: <ul style="list-style-type: none">• EUC - County of San Diego GETUP Program• EUC - Regional contractor trainings by CCSE and SDG&E• EUC - Home Energy Rater and building performance trainings• CEC - Allocated \$16 million to train workers for long-term employment in the alternative fuel and vehicle market.
CleanTECH San Diego Cluster Database	CleanTECH San Diego focuses on stimulating innovation and advancing the adoption of clean technologies and sustainable industry practices. It maintains a Cluster Database that catalogs over 800 clean tech companies in the San Diego region. Having this database for the region helped to establish the clean tech sector as an industry cluster for regional economic analyses.
CleanTECH-SANDAG Economic Studies	In 2011, CleanTECH San Diego commissioned SANDAG to prepare economic impact reports for six key clean tech sectors: Biofuels, Clean Transportation, Clean Energy Storage, Energy Efficiency, Smart Grid and Solar Energy Generation.

Planning Needs Going Forward

- Consider impacts of the clean energy sector on the regional economy
- Support job placement and training programs for clean energy sector
- Identify economic costs and benefits of energy-related climate change mitigation and adaptation measures

San Diego Regional Economic Impact Studies

Clean Tech Sector	Direct Jobs	Direct Wages	Direct and Indirect Economic Activity
Algal Biofuels	466	\$41.1 million	\$80.9 million
Clean Transportation	1,050	\$92.6 million	\$311.3 million
Clean Energy Storage	561	\$56.3 million	\$133.9 million
Energy Efficiency	1,013	\$89.6 million	\$299.8 million
Smart Grid	460	\$37.2 million	\$91.5 million
Solar Energy Generation	1,133	\$143.2 million	\$517.6 million

Source: CleanTECH San Diego and SANDAG Service Bureau

Monitoring

- Job creation and placement by energy sector, California Community Colleges Economic and Workforce Development
- Economic impact of clean tech industry
- Reports to the Joint Legislative Budget Committee on AB 32

Resources

- [CleanTECH-SANDAG San Diego Economic Development Studies](#)
- [SANDAG Traded Industry Clusters in the San Diego Region Report](#)
- [California Workforce Education & Training Needs Assessment for Energy Efficiency, Distributed Generation and Demand Response, UC Berkeley](#)
- [Workforce Needs for Green Industries, California Community Colleges](#)

Recommendations

- Broaden RES Goal to include economic impacts of the clean energy sector.
- Support green job training and placement mechanisms in absence of ARRA funded programs.
- Explore and promote collaborative economic development activities to attract clean technology industries to the region.