MEETING NOTICE AND AGENDA

REGIONAL ENERGY WORKING GROUP
The Regional Energy Working Group may take action on any item appearing on this agenda.

Thursday, March 27, 2014
11:30 a.m. to 1 p.m.

SANDAG
7th Floor Conference Room
401 B Street, Suite 800
San Diego, CA 92101-4231

Staff Contact: Allison Wood
(619) 699-1973
allison.wood@sandag.org

AGENDA HIGHLIGHTS

- SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT CLIMATE CHANGE MITIGATION AND ADAPTATION WHITE PAPER

- ENERGY RELATED STATE LEGISLATION

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<table>
<thead>
<tr>
<th>ITEM #</th>
<th>RECOMMENDATION</th>
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<tbody>
<tr>
<td>1.</td>
<td>WELCOME AND INTRODUCTIONS</td>
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<td>+2.</td>
<td>APPROVAL OF MEETING MINUTES</td>
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<td>The Regional Energy Working Group (EWG) is asked to review and approve the minutes from its February 27, 2014, meeting.</td>
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<td>3.</td>
<td>PUBLIC COMMENTS/MEMBER COMMENTS</td>
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<td>Members of the public shall have the opportunity to address the EWG on any issue within the jurisdiction of SANDAG that is not on this agenda. Public speakers are limited to three minutes or less per person. EWG members also may provide information and announcements under this agenda item.</td>
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<td>4.</td>
<td>CHAIR’S REPORT</td>
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<td>RECOGNITION OF OUTGOING REGIONAL ENERGY WORKING GROUP CHAIR</td>
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<td>Ms. Carrie Downey has served as the Chair of the EWG since May 2008. The EWG would like to recognize Ms. Downey for her years of service and contributions to energy planning in the region.</td>
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<td>+5.</td>
<td>REPORTS (5 through 6)</td>
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<td>SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT CLIMATE CHANGE MITIGATION AND ADAPTATION WHITE PAPER</td>
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<td>Climate change mitigation and adaptation is one of the emerging issues for San Diego Forward: The Regional Plan. The EWG is asked to provide input on the draft white paper, which describes the State's climate strategy, the role of SANDAG and local governments in addressing climate change, and recommendations for inclusion in the Regional Plan.</td>
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<td>ENERGY RELATED STATE LEGISLATION</td>
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<td>A summary of relevant energy legislation is included. Staff will provide an overview of the bills. The EWG is asked to comment on the legislation and suggest other bills that may help implement the Regional Energy Strategy.</td>
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<td>7.</td>
<td>UPCOMING MEETINGS</td>
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<td>The next meeting of the EWG is scheduled from 11:30 a.m. to 1 p.m. on Thursday, April 24, 2014.</td>
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+ next to an agenda item indicates an attachment
ITEM #1: WELCOME AND INTRODUCTIONS

Vice Chair Scott Anders, Energy Policy Initiatives Center at University of San Diego (EPIC), called the meeting to order at 11:35 a.m.

ITEM #2: JANUARY 23, 2014 MEETING SUMMARY

Pamela Bensoussan, City of Chula Vista, motioned to approve the meeting summary from January 23, 2014, and Dave Weil, City of San Diego, seconded the motion. The motion carried without opposition.

Yes: Pamela Bensoussan (City of Chula Vista), Dave Weil (City of San Diego), Dave Roberts (County of San Diego), Brett Caldwell (San Diego County Regional Airport Authority), Michelle White (Unified Port District of San Diego), Eric Wolff (University of California San Diego [UCSD]), Jack Clark (California Center for Sustainable Energy [CCSE]), Josh Harman (CleanTECH San Diego), Gary Bosquet (San Diego County Water Authority), Scott Anders (EPIC). No: None. Abstain: Don Mosier (City of Del Mar), and Amanda Rigby (City of Vista). Absent: City of Santee, Metropolitan Transit System, SDG&E, San Diego Regional Clean Cities Coalition, Environmental Health Coalition, Sierra Club, San Diego Regional Chamber of Commerce, and North County Economic Development Council.

ITEM #3: PUBLIC COMMENTS/MEMBER COMMENTS

Supervisor Dave Roberts, County of San Diego, voiced that hearing Chair Downey’s update to the Regional Planning Committee on the Energy Working Group (EWG) prompted him to begin attending EWG meetings on behalf of the County.

Scott Anders welcomed Supervisor Roberts and three new alternates for the EWG: City of Vista Councilmember Amanda Rigby; Laura Shingles, San Diego Regional Chamber of Commerce; and Jack Clark, CCSE.

Carrie Downey, Regional Energy Working Group Chair, announced that the SANDAG Board of Directors adopted a new policy that requires all meetings at SANDAG to be chaired by first board members and not alternates. For that reason, the February EWG meeting is Chair Downey’s last meeting as chair. She plans to continue to attend future meetings and hopes to be of assistance to the new chair during the transition.
Ms. Bensoussan announced that the City of Chula Vista received the Organizational Leadership Award at the 2014 Climate Leadership Conference. Chula Vista was the only city in the country to receive such an award. Chair Downey added that the City of Chula Vista sets the standard in terms of their energy and climate work.

Mr. Roberts shared that he traveled with CleanTECH San Diego to the Microsoft headquarters in Seattle, Washington to discuss a systems approach to energy efficiency. The visit was in support of a new initiative, “San Diego 2030”, to connect private and public entities as a system to coordinate on energy reduction strategies. He added that a follow up meeting was being scheduled for April. Josh Harman, CleanTECH San Diego, offered to keep the EWG informed on the initiative and ways for the public and other cities to participate.

John Wotzka, member of the public, discussed energy-related news and provided written comments that are summarized here: Toshiba, Exelon, and Westinghouse will build nuclear plants for King Abdullah City for Atomic and Renewable Energy, in Saudi Arabia; Canada is extending the operating life of four additional Bruce units making it the largest nuclear facility in the world at 6.3-GW; SDG&E contracted for ten renewable energy facilities totaling 1.2-GW that includes Ocotillo Express Wind, CSolar South, and Campo Verde Solar which is under construction and partly delivers power; proposal to capture wave power off the coastal areas around the SONGS site; President Obama has ordered the government to triple the use of renewables by 2020 for electricity in federal buildings; 18 percent of the world’s electricity could be generated by wind energy by 2050, up from 2.6 percent today; Portuguese government is planning ten new dams with hydropower plants to in order to produce 60 percent of its annual electricity by 2020 with renewables and 7.0-GW of hydropower; SEMPR U.S. Gas and Power’s first solar plant, the 10-MW El Dorado Solar Plant, and the 48-MW Copper Mountain Solar 1 Plant were combined to form the 58-MW Copper Solar 1 Plant; France will be reducing the nuclear power capacity, France currently derives 75 percent of its electricity from 58 nuclear reactors, but may cap the nuclear share to 50 percent and invest in renewables as part of their energy transition; RusHydro Group is building a 570-MW Ust-Srednekanskaya hydropower plant on the Kolyma River in the Magadan Region in far East Russia; the V.C. Summer Nuclear Station in South Carolina is expected to be online in the next four to six years with two 1.107-GW Westinghouse AP 1000 Advanced Pressurized Water Reactors; the Navy said they may be using fuels made from biofuels such as grain, algae, or cooking oils in their warships and jets by 2015; the Earth’s axis has shifted from north to south by four inches each year since 1899, but in 2005 it jogged abruptly eastward and has moved four feet since then; the goal of the Agricultural Conservation Easement in the San Diego General Plan is to preserve open space and farmland; recent weather, “Coastal Eddy”, was caused by Arctic conditions blending into Catalina eddy condition is the cause of the May gray and June gloom conditions; new Mercury and Air Toxics Standard requires coal plants to remove more mercury from stack emissions in the U.S.

ITEM #4: REGIONAL ENERGY STRATEGY TECHNICAL UPDATE

Allison Wood, SANDAG, presented on the Regional Energy Strategy (RES) Technical Update. She explained that the purpose of the technical update is to ensure that San Diego Forward: The Regional Plan (the Regional Plan) has up-to-date information. The three components of the technical update are the goal summary reports, the update to the RES 2009 chapters, and the existing conditions and future projections. The goal summary reports include the progress on each goal since 2009, data and monitoring methods, and recommendations for continued progress. The update to the RES chapters reflect changes in state policies and programs. The existing
conditions and future projections will include the forthcoming greenhouse gas (GHG) emissions data that SANDAG staff is working on with Mr. Anders and his team at EPIC.

Ms. Wood shared the updated Key Policy Drivers chapter of the RES. She explained that the main edits to that chapter are focused on the largest drivers for clean energy supplies, energy efficiency, and GHG reductions. The key state documents helping to inform that chapter are the California Air Resources Board 2013 Assembly Bill 32 Scoping Plan Update, the California Energy Commission 2013 Integrated Energy Policy Report, and the California Long-Term Energy Efficiency Strategic Plan (2008, 2011) completed by the California Public Utilities Commission (CPUC). Ms. Wood shared that the next steps for the RES Technical Update are to complete the 2012 regional GHG inventory, update the existing conditions and future projections chapter, and use the RES technical update to help inform the Regional Plan.

Susan Freedman, SANDAG, provided more detail on the Key Policy Drivers chapter to the EWG. Ms. Freedman described the changes that were made to the chapter based on State policy changes. She welcomed input from the group on additional changes or policies to include. She added that not all energy measures and policies are addressed since additional detail is included in the sections on the RES goals.

EWG members offered the following comments:

- Chair Downey commented that the law on cap and trade currently ends in 2020. She suggested that the RES include a comment that the assumption is that the program will continue beyond 2020 one way or another in order to offer continuity to the industries that are regulated under cap and trade.

- Ms. Bensoussan suggested that the discussion on cap and trade investments include resources for local governments. Mr. Weil commented that it is important for the region to receive those resources. Mr. Clark added that local governments are included in several state plans and policies. Identifying those resources is absolutely critical to achieving the recommendations and goals that are put in place. Mr. Wotzka commented that the governor’s budget for FY 2015 includes funding from the cap and trade program to supplement the high-speed rail.

- Chair Downey commented that there has been some movement in Property Assessed Clean Energy (PACE) issues. PACE is constantly changing and she asked if that is something that should be highlighted.

- Mr. Roberts encouraged staff to highlight PACE extensively in the plan. He shared that the County sent a letter to SANDAG asking them to take on PACE. At least four North County cities have turned to Riverside County to run their PACE programs. He voiced that he thinks the region should have its own program. Mo Lahsaie, City of Oceanside, added his support for a regional program in order to support local jobs. Rob Rundle, SANDAG, shared that the SANDAG Executive Committee has discussed the issue and it will return for discussion in April.

- Mr. Roberts suggested that staff include consumer choice aggregation in the update. Chair Downey explained that they would need to have more discussion on those topics in order to include them since they are not embedded in the initial RES and this is just a technical update. However, they will
eventually be doing a comprehensive update of the RES and that would be a good time to discuss new topics. She encouraged EWG members to keep any changes in mind for when that time comes.

Ms. Wood briefly discussed the RES summary reports included in the agenda. Since the EWG last discussed the reports in October, SANDAG staff presented the technical update to RPC in November 2013, and met with Chair Downey to refine the reports. She shared that most edits were text-edits for clarity, but there were a few key edits in the charts and graphics.

EWG members had the following comments and discussion:

- Ms. Bensoussan asked if community solar programs are still available. Ms. Wood said that she would follow-up with SDG&E on including information on their programs in the update.
- Chair Downey clarified that the SDG&E renewable resources that meet their obligations under the Renewable Portfolio Standard (RPS) do not include rooftop solar. EWG members followed with a discussion of the RPS, impacts of distributed generation to the electric grid, and energy storage.
- Gary Bousquet, San Diego County Water Authority (SDCWA), commented that SDCWA is considering a 500 MW pump storage unit project that is centrally located in San Diego. The unit uses off-peak or renewable energy to pump water up hill, and then can create energy during the peak periods. Mr. Bousquet explained that one of the reasons for the delay in getting the project online is that the state’s long term procurement plans do not currently have a place for this type of energy storage.
- Thomas Sepulvado, Office of Representative Juan Vargas (CA-51), commented that the renewable energy numbers from SDG&E are a good start. However, he wondered if someone could speak to whether or not the capacity exists to purchase geothermal from the Imperial Valley and bring that to San Diego. Chair Downey voiced that is an option and SDG&E’s current geothermal resources are coming from Imperial Irrigation District. Mr. Anders added that geothermal is limited out there, and there is more potential for solar and wind in southern California than geothermal.
- Ms. Bensoussan shared that she was most interested in the recommendations included in the goal summary reports. She asked what the framework is for monitoring implementation of those recommendations. Ms. Freedman commented that staff could create a table of recommendations and update the EWG periodically on progress.
- Mr. Clark commented that the chart for rooftop solar capacity includes data from California Solar Statistics information based on the California Solar Initiative (CSI). He explained that this industry is becoming more cost effective and moving forward, data from California Solar Statistics will not be a true representation of what is being installed in our communities. Mr. Anders added that SDG&E can provide more accurate data. Chair Downey added that it might be good to include an explanation on the chart of when CSI was available to show which years had incentives.

**ITEM #5: REGIONAL ENERGY NETWORK UPDATE**

Anna Lowe, SANDAG, provided an update on Regional Energy Networks (RENS) and shared a possible timeline for initiating communication with the existing RENs and preparing a potential
application to the CPUC. Communication with existing RENs would be to learn their organizational structure, how programs are being administered, overall staffing needs, and issues or concerns with programs. By the end of 2014, staff should determine what a possible REN structure could look like here in the region. By 2016 water and energy efficiency programs would be available.

Ms. Freedman added that the Bay Area REN has received $26 million for a collaborative of local agencies to run energy and water efficiency programs. The SoCalREN received $44 million in addition to their local government partnership to provide additional energy and water efficiency programs in the region. The CPUC is considering new REN applications from other regions to begin in 2016.

EWG Members had the following comments and discussion:

• Chair Downey encouraged SANDAG staff to go forward and conduct more research so that the region can work on a REN application. Dr. Mosier voiced his support for a REN in the San Diego region.

• Mr. Anders asked if the REN funding is in addition to the total funding currently available for energy efficiency programs in the region or if the money for RENs is being reallocated from other energy efficiency programs. Ms. Freedman shared that there might be some reallocation, but that is supposed to be additional not duplicative programs.

• Josh Brock, SDG&E, commented that the money for these programs must come from SDG&E ratepayers and that it would potentially be a combination of additional funding and reallocating funds.

• Mr. Clark added that the CPUC is trying to determine the most effective structure for energy efficiency programs.

• Ms. Bensoussan emphasized that the current REN programs are pilot programs and will still require some tweaking. She encouraged the EWG members to be enthusiastic about getting ready and moving forward toward an application. Mr. Weil echoed Ms. Bensoussan’s comments and shared that the City of San Diego sent a letter of support to SANDAG. Michelle White, Unified Port District of San Diego, shared that the Port also supports the effort.

Ms. Lowe emphasized that the funding would not be to compete with programs that SDG&E already has; a REN would complement existing programs to help support energy efficiency in the region.

ITEM #6: 2014 SANDAG LEGISLATIVE PRIORITIES

Ms. Wood commented that the SANDAG Legislative Priorities are included in the agenda and EWG members should send any legislation of interest to staff for inclusion in future agendas.

ITEM #7: UPCOMING MEETINGS

The next meeting of the EWG is scheduled from 11:30 a.m. to 1 p.m. on Thursday, March 27, 2014.

Chair Downey adjourned the meeting at 1 p.m.
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<th>NAME</th>
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<td>Len Hering</td>
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<td>Energy Policy Initiatives Center, University of San Diego School of Law</td>
<td>Scott Anders, Vice Chair</td>
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<td>Josh Harman</td>
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**OTHER ATTENDEES:**
Katie Benson, City of Del Mar
Josh Brock, SDG&E
Kim Burke, SDG&E
Mike Grim, City of Carlsbad
Amanda Jenison, SDG&E
Mo Lahsaie, City of Oceanside
Elizabeth McCollum, TRC
Craig Owens, Willdan
Thomas Sepulvado, Representative Juan Vargas
John Wotzka, member of public
Jeff Wyner, City of Escondido
Susan Freedman, SANDAG
Anna Lowe, SANDAG
Sarah McCutcheon, SANDAG
Rob Rundle, SANDAG
Debbie Snaith, SANDAG
Sarah Strand, SANDAG
Allison Wood, SANDAG
SAN DIEGO FORWARD: THE REGIONAL PLAN:
DRAFT CLIMATE CHANGE MITIGATION AND ADAPTATION WHITE PAPER

Introduction

The purpose of the climate change mitigation and adaptation white paper is to inform San Diego Forward: The Regional Plan (Regional Plan). There are five Regional Plan white papers that cover emerging topics since the Regional Comprehensive Plan was adopted in 2004, including: climate change mitigation and adaptation, public health, economic prosperity, emerging technologies, and parking strategies.

Staff has prepared the draft climate change mitigation and adaptation white paper (Attachment 1) based on input from SANDAG working groups and policy committees, stakeholders in the region, and the general public, through the series of Regional Plan public workshops last summer. EWG members are asked to review and provide feedback on the draft white paper.

Discussion

The climate change mitigation and adaptation white paper begins with an overview of regional greenhouse gas (GHG) emissions and potential climate impacts in the San Diego region. The main portion of the white paper describes the state’s strategy and the role of SANDAG and local governments in reducing GHG emissions (mitigation) and addressing impacts of climate change (adaptation). Next, the paper describes the interrelationships between climate change and other policy areas and offers recommendations for regional approach and consistency. The paper concludes with a summary of existing climate change planning efforts in the region.

Next Steps

The draft climate change mitigation and adaptation white paper, as well as the economic prosperity and emerging technologies white papers, will be available at www.sdforward.com for a 45-day public review period closing on May 19, 2014. The white papers will support and provide background information to the development of the Regional Plan. Following the public review period, the updated white papers will be re-posted to the website.

Attachment: 1. Draft Climate Change Mitigation and Adaptation White Paper

Key Staff Contact: Allison Wood, (619) 699-1973, allison.wood@sandag.org
DRAFT Climate Change Mitigation and Adaptation White Paper

A. INTRODUCTION

Climate change is expected to have significant and widespread impacts on California’s environment and economy. Limiting the impacts of climate change requires collaboration and action throughout all sectors of California’s economy and governmental agencies. California has taken a proactive stance toward addressing climate change. The State’s approach includes strategies that reduce greenhouse gas (GHG) emissions and prepare for climate change impacts through adaptation and resiliency, while also supporting economic prosperity, improving public health and social equity, protecting infrastructure investments, and conserving natural habitat and open space.

Climate change is a global issue, and while California alone cannot halt climate change, the State is joined in its efforts by several states and countries. The United Nations Framework Convention on Climate Change is an international treaty, signed by 196 countries, that sets an overall framework for intergovernmental efforts to address the challenge posed by climate change. At the national level, President Obama released his Presidential Climate Action Plan in June 2013, which describes a strategy to cut GHG emissions, to prepare the United States for impacts of climate change, and to lead international efforts to address global climate change.

Many local and regional governments throughout California, and beyond our international border, are working to create innovative policies, plans, and programs to address climate change. In the San Diego region, local governments, SANDAG, and other regional public agencies are working collaboratively with local non-profits, universities, and businesses to prepare plans and implement programs that complement efforts at the state, federal, and international level.

The purpose of the Climate Change Mitigation and Adaptation White Paper is to inform the development of San Diego Forward: The Regional Plan. The paper includes an inventory of regional GHG emissions, recommendations for a regional approach to address climate change, and a summary of current efforts in the San Diego region.

Greenhouse Gas Emissions in the San Diego Region

The draft 2012 GHG emissions inventory for the San Diego region identifies and quantifies the sources of GHG emissions in the region. In 2012, emissions totaled 33.2 million metric tons of carbon dioxide equivalent (MMTCO₂e), this represents a 12.5 percent increase compared to 1990 emissions levels (29.5 MMTCO₂e). Transportation makes up the largest source of GHG emissions in the region, followed by electricity, then natural gas. This inventory was developed using the best available data and following the U.S. Community Protocol for Accounting and Reporting of GHG Emissions.
California Governor’s Office of Planning and Research participated as a steering committee member and technical advisor for the protocol and recommends its use in local government planning efforts.

DRAFT GHG Emissions Inventory for the San Diego Region 2012

- Transportation: 40%
- Electricity: 22%
- Natural Gas: 8%
- Other Fuels: 5%
- Industrial: 4%
- Cogeneration: 4%
- Aviation: 4%
- Off-Road: 3%
- Wildfire: 2%
- Water: 2%
- Development: 2%
- Rail: 1%
- Solid Waste: 1%
- Wastewater: <1%
- Agriculture: <1%
- Marine Vessles: <1%
- Off-Road: 3%
- Water: 2%
- Development: 2%
- Rail: 1%
- Solid Waste: 1%
- Wastewater: <1%
- Agriculture: <1%
- Marine Vessles: <1%

Source: Energy Policy Initiatives Center (EPIC) at University of San Diego, March 2014. GHG emissions in 2012 total 33.2 MMTCO2e.
Climate Change Impacts in the San Diego Region

Even with efforts to reduce GHG emissions, the San Diego region will experience impacts due to climate change and some of these impacts are already occurring at varying degrees. The potential impacts identified in the SANDAG Climate Action Strategy (2010) are summarized in the diagram below, and include direct impacts from increased temperatures such as sea level rise and associated high surf events, constrained water supplies, wildfires, loss of native plant and animal species, and severe weather, as well as secondary effects on public health and economics. The section on Interrelationships with Other Policy Areas includes additional information on the connections climate change has with public health and economics.

Preparing the region for the effects of climate change requires measures to adapt to these changes and create resilient communities. Adaptation is adjusting in response to climate impacts, while resiliency is the ability to understand potential impacts and take action before, during, and after a particular event. At the state level, California has developed policy guidance for decision makers, planning resources for local and regional governments, and technical tools to assist governments at every level with climate change adaptation and resilience.
B. STRATEGIES TO ADDRESS CLIMATE CHANGE

Addressing climate change consists of two categories of planning: mitigation, which is reducing GHG emissions, and adaptation, which is preparing communities for impacts of climate change. California has set targets for reducing GHG emissions and strategies to prepare the State for the impacts of climate change. As a metropolitan planning organization (MPO), SANDAG is working with the State and with member agencies, neighboring counties, Mexico, the military, and the tribal nations on climate change.

Mitigation - Reducing Greenhouse Gas Emissions

Several Executive Orders related to climate change have been issued since 2004. All Executive Orders, laws, and regulations are listed on the State’s Climate Change Portal. Executive Order S-03-05, which was issued by Governor Schwarzenegger in June 2005, calls for state agencies to work toward reducing GHG emissions as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. The goals in Executive Order S-03-05 as well as the other climate change Executive Orders are ambitious and will require efforts from all sectors in California for implementation.

In 2006, Governor Schwarzenegger signed into law Assembly Bill 32 (AB 32), The Global Warming Solutions Act, which legislates the 2020 target in Executive Order S-3-05 and calls for California to reduce GHG emissions back to 1990 levels by the year 2020. AB 32 also directed the California Air Resources Board (CARB) to develop a Scoping Plan that details the strategies for attaining the 2020 target. The Scoping Plan was completed in 2008, and is currently undergoing an update that is scheduled for adoption in 2014. The key reduction measures outlined in the AB 32 Scoping Plan, and currently being implemented, include:

- CARB’s GHG Cap-and-Trade Program
- Low Carbon Fuel Standard (LCFS)
- Pavley Clean Car Standards (AB 1493) and Advanced Clean Cars Program
- Transportation-Related GHG Targets and Sustainable Communities Strategies for MPOs (SB 375)
- Renewables Portfolio Standard (RPS)
- Conservation and Energy Efficiency in New and Existing Buildings

The reductions associated with each of these measures and contributions toward the statewide 2020 reduction target are displayed in the chart below. The largest source of GHG reductions is expected to come from the Cap-and-Trade program. The program establishes a declining cap on approximately 85 percent of total statewide GHG emissions. Under the regulations, CARB issues allowances equal to the amount of allowable emissions over a given compliance period and distributes these to regulated entities. One allowance equals one metric ton of GHGs. Each regulated entity must hold allowances equal to its emissions. Electric generating utilities, electricity importers and large industrial facilities became subject to the program beginning in 2013, and fuel distributors will be added to the program in 2015. Proceeds from the auctions of allowances under Cap-and-Trade will provide a significant source of new revenue to support GHG reduction measures; activities are currently underway to develop a framework and investment plan for allocating the proceeds.

2 California Climate Change Portal website: http://www.climatechange.ca.gov/
These AB 32 reduction strategies focus on the areas where the State can have the greatest impact; however, the Scoping Plan also describes the critical role that regional and local governments play in implementing these and other measures in order to meet the 2020 GHG reduction target. SB 375 is the only mandated GHG reduction requirement for MPOs, but SANDAG plays a role in reducing GHG emissions in other ways. The following table summarizes the roles that the State, SANDAG, and local governments each play in implementing the key AB 32 reduction strategies and while not exhaustive, provides an overview.

### Roles in AB 32 Reduction Strategies

<table>
<thead>
<tr>
<th>State Role</th>
<th>SANDAG Role</th>
<th>Local Government Role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Carbon Fuel Standard (LCFS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• LCFS regulations</td>
<td>• Provide forum to address barriers to alternative fuel vehicles and infrastructure</td>
<td>• Expand availability of alternative fuels</td>
</tr>
<tr>
<td>• Alternative and Renewable Fuel and Vehicle Technology Program (AB 118)</td>
<td>• Energy Roadmap Program: fleet assessments</td>
<td>• Integrate alternative fuel vehicles into gov’t and contracted fleets</td>
</tr>
<tr>
<td><strong>Pavley Clean Car Standards (AB 1493) and Advanced Clean Cars Program</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Vehicle emissions standards</td>
<td>• Regional readiness planning for electric vehicles</td>
<td>• Streamline permitting for electric vehicle charging stations</td>
</tr>
<tr>
<td>• Clean Vehicle Rebate Project incentives for consumers</td>
<td>• Installation of electric vehicle charging at transit facilities</td>
<td>• Integrate electric vehicles into gov’t fleet</td>
</tr>
<tr>
<td>• Alternative and Renewable Fuel and Vehicle Technology Program (AB 118)</td>
<td>• Energy Roadmap Program: fleet assessments</td>
<td>• Improve traffic flow and efficient driving</td>
</tr>
</tbody>
</table>

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3 Source: California Air Resources Board, *Annual Report to the Joint Legislative Budget Committee on Assembly Bill 32*, January 2013. Note: The Draft 2013 Scoping Plan Update proposes to update the 2020 limit from 427 to 431 MMTCO2e and modifies the GHG reductions associated with these strategies. The new 2020 limit is based on updated global warming potentials of GHGs in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.
<table>
<thead>
<tr>
<th><strong>State Role</strong></th>
<th><strong>SANDAG Role</strong></th>
<th><strong>Local Government Role</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation-Related GHG Targets and Sustainable Communities Strategies for MPOs (SB 375)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Set regional targets for per capita GHG reductions from passenger vehicles</td>
<td>• Develop SCS in accordance with SB 375 reduction targets</td>
<td>• Implement smart growth principles in targeted areas</td>
</tr>
<tr>
<td>• Accept SCSs developed by MPOs</td>
<td>• Provide VMT data to support local climate action planning</td>
<td>• Expand active transportation facilities</td>
</tr>
<tr>
<td></td>
<td>• Offer smart growth incentives and resources</td>
<td>• Implement TDM strategies</td>
</tr>
<tr>
<td></td>
<td>• Energy Roadmap Program: reducing energy through planning and development</td>
<td>• Use parking strategies to reduce VMT</td>
</tr>
</tbody>
</table>

| **Renewable Portfolio Standard (RPS)** | | |
| | | • Identify/remove barriers to large-scale renewables |
| • RPS targets for utilities: | • Coordinated planning with variety of stakeholders via the Regional Energy Working Group | • Support grid modernization |
| o 20% by 2010 | • Regional Energy Strategy Goals and actions | |
| o 33% by 2020 | | |

| **Conservation and Energy Efficiency in New and Existing Buildings** | | |
| | • Energy Roadmap Program: custom management plans, implementation assistance, technical resources | |
| • Update building energy codes | • Coordinated planning with variety of stakeholders via the Regional Energy Working Group | • Retrofit gov’t facilities |
| • Comprehensive Energy Efficiency Program for Existing Buildings (AB 758) | • Regional Energy Strategy Goals and actions | • Green business networks |
| • Long-Term Energy Efficiency Strategic Plan | • Energy Roadmap Program: custom management plans, implementation assistance, technical resources | • Staff training |
| | | • Revise building codes |
| | | • Perform energy audits |
| | | • Offer financing programs |

In the San Diego region, all 19 jurisdictions have completed inventories of GHG emissions from government operations and from the community as a whole. In addition, the Border Environment Cooperation Commission (BECC) has worked with the Center for Climate Strategies to complete GHG inventories for all six Mexican border states. Each inventory identifies sources of emissions, and sets a baseline for evaluating potential reductions. More than half of the local jurisdictions, representing over 75 percent of the region’s population, are developing or have adopted a climate action plan (CAP). A CAP typically includes mitigation measures to reduce GHG emissions toward an identified target, and offers streamlining opportunities for future development projects under the California Environmental Quality Act (CEQA). The table below summarizes each jurisdiction’s climate planning efforts. In addition to the efforts of the 18 cities and the County of San Diego, the Port of San Diego and the San Diego County Water Authority also have developed GHG inventories and CAPs.
### Local Climate Planning Efforts

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>% of 2012 Regional Population</th>
<th>GHG Inventory</th>
<th>Climate Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chula Vista</td>
<td>7.9</td>
<td>✓</td>
<td>2000, 2008</td>
</tr>
<tr>
<td>Encinitas</td>
<td>1.9</td>
<td>✓</td>
<td>2011</td>
</tr>
<tr>
<td>Escondido</td>
<td>4.6</td>
<td>✓</td>
<td>2012</td>
</tr>
<tr>
<td>National City</td>
<td>1.9</td>
<td>✓</td>
<td>2011</td>
</tr>
<tr>
<td>San Diego</td>
<td>42.0</td>
<td>✓</td>
<td>2005 Update underway</td>
</tr>
<tr>
<td>County of San Diego (unincorporated)</td>
<td>15.8</td>
<td>✓</td>
<td>2012</td>
</tr>
<tr>
<td>Vista</td>
<td>3.0</td>
<td>✓</td>
<td>2012</td>
</tr>
<tr>
<td>Carlsbad</td>
<td>3.4</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Del Mar</td>
<td>0.1</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>La Mesa</td>
<td>1.9</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>San Marcos</td>
<td>2.7</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Santee</td>
<td>1.7</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Solana Beach</td>
<td>0.4</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Coronado</td>
<td>0.7</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>El Cajon</td>
<td>3.2</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Imperial Beach</td>
<td>0.8</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lemon Grove</td>
<td>0.8</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Oceanside</td>
<td>5.4</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Poway</td>
<td>1.5</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

The following sections further describe the State strategy, the current and potential role of SANDAG, and the role of local governments in reducing emissions from the following sectors: transportation, land use, electricity, natural gas end use, water, and solid waste.

**Reducing Emissions from Transportation Sector**

As illustrated in the regional GHG inventory, the transportation sector represents the largest source of GHG emissions (40 percent in the San Diego region). The AB 32 Scoping Plan outlines three key strategies for reducing emissions from the transportation sector:

- Reduce the miles driven by vehicles
- Increase the efficiency of the vehicles used
- Reduce the carbon content of the fuels used in the vehicles
California’s Strategy for Reducing Emissions from Transportation

The State’s three strategies for reducing transportation emissions are supported by three main policies: Senate Bill (SB) 375, Advanced Clean Cars program, and Low Carbon Fuel Standard (LCFS).

SB 375 addresses the strategy to reduce vehicle-miles traveled (VMT) by setting targets for MPOs to reduce their region’s GHG emissions from passenger vehicles and light-duty trucks. Each MPO must prepare a “Sustainable Communities Strategy” as part of their federally-mandated Regional Transportation Plan to demonstrate how the region would coordinate land use and transportation planning to meet the targets assigned by CARB.

The Advanced Clean Cars program works to increase vehicle efficiency by combining the control of GHG emissions and other air pollution requirements into a single package of standards. Under the program, by 2025, 1.5 million zero-emission vehicles (ZEVs) will be operating in California and 15 percent of new car sales will be ZEVs. The chart above demonstrates how California’s on-road passenger vehicle fleet is planned to change overtime. In order for the State to meet its clean vehicle goals, new fueling infrastructure to power ZEVs and alternative fuel vehicles must be deployed where little to none exists today.

The LCFS calls for a reduction of at least 10 percent in the carbon intensity of California’s transportation fuels by 2020. The LCFS program is performance-based and allows fuel providers and regulated parties to choose from a mix of strategies to achieve compliance. Strategies include investing in production of low carbon-intensity (low-CI) fuels, purchasing low-CI fuels for blending, purchasing credits from other regulated parties, and banking credits for use in future years.

SANDAG Role in Reducing Emissions from Transportation Planning

In accordance with SB 375, SANDAG developed a Sustainable Communities Strategy (SCS) as an element of the 2050 Regional Transportation Plan (RTP). Although the State’s estimate is that only three percent of GHG reductions are expected to come from all of the California MPOs’ SCSs, SANDAG understands its efforts are an important piece of the overall reduction strategy. The 2050 RTP/SCS describes how the region will meet the per capita GHG reduction targets for passenger vehicle emissions set by CARB. It is important to note that CARB’s targets for MPOs are focused only on the reductions that could come from transportation planning for passenger vehicles, not those reductions that can come from technology improvements made by vehicle manufacturers or cleaner fuels. The passenger vehicle GHG targets for SANDAG are a reduction of 7 percent by 2020 and 13 percent by 2035 from a 2005 baseline year. The five building blocks of the 2050 RTP/SCS, which was adopted by the SANDAG Board of Directors in 2011, are:
1. A land use pattern that accommodates the region’s future employment and housing needs while protecting habitat and resource areas;
2. A transportation network of public transit, managed lanes and highways, local streets, bikeways and walkways;
3. Transportation demand management strategies to reduce traffic during peak periods;
4. Transportation system management to maximize efficiency of the transportation network; and
5. Innovative pricing policies and other measures to reduce VMT.

The 2050 RTP/SCS lays out the strategy to reduce passenger vehicle GHG emissions through several SANDAG programs. These programs include iCommute commuter services and planning studies, San Diego Regional Bicycle Plan and early action program implementation, transit planning, TransNet Smart Growth Incentive Program and Active Transportation Grant Program, a regional transit-oriented development strategy, and a regional complete streets policy. These programs also help local governments implement their CAPs.

In addition to activities to reduce VMT, the 2050 RTP/SCS addresses SANDAG’s role in supporting the State’s strategies for efficient vehicles and low-carbon fuels in the region. Since 2012, SANDAG has provided a forum for local governments and other regional stakeholders to address barriers to deploying alternative fuel vehicles and siting necessary fueling stations. In 2014, SANDAG completed a regional readiness plan for plug-in electric vehicles and charging stations. This effort has expanded to planning for all alternative fuels with a regional alternative fuel plan to be completed in 2016. Through the Energy Roadmap Program, SANDAG has partnered with the San Diego Regional Clean Cities Coalition to offer member agencies customized fleet assessments that evaluate alternative fuel vehicle options available as well as monetary and environmental implications.

Local Government Role in Reducing Emissions from Transportation

Local governments have the ability to influence transportation-related GHG emissions through land use authority, community investments, and municipal operations. In local CAPs, local governments have identified measures to reduce VMT and promote efficient vehicles and alternative fuel use in government operations and throughout the community. Even though emissions from government operations make up a small percentage of a jurisdiction’s overall emissions, the local government can be a leader and help to influence changes in the community by taking steps to reduce internal emissions.

To date, seven jurisdictions in the San Diego region have completed a CAP, while an additional six jurisdictions are in the process of developing one. All of the completed CAPs include one or more measures to reduce VMT in the community. Measures from adopted CAPs in the San Diego region include:

- Expand and improve the transit network and accessibility;
- Promote bicycle use by preparing a bicycle master plan and encourage employers to offer bicycle lockers and other facilities;

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• Work with employers to promote iCommute services and TDM strategies including telework and alternative work schedule options, the guaranteed ride home program, and incentives for alternative commuters;
• Reduce parking requirements in smart growth areas and prioritize parking for high-occupancy vehicles; and
• Implement improvements to smooth traffic flow, reduce idling, and encourage efficient driving techniques.

In addition to the measures to reduce VMT with the community, several local governments include measures to reduce VMT associated with employee commutes. These measures include:
• Offer car sharing and/or bike sharing for employees;
• Promote the use of the iCommute Guaranteed Ride Home program;
• Offer the use of telework or alternative work schedules; and
• Offer incentives to employees that use alternative commutes.

Beyond VMT reduction measures, local government CAPs also address ways to support the State goals for efficient vehicles and alternative fuels. These measures include:
• Replace vehicles in government fleets and fleets of contractors with alternative fuel and hybrid vehicles;
• Streamline permitting for electric vehicle charging stations; and
• Expand the availability and use of alternative fuel vehicles and fueling infrastructure.

Reducing Emissions from Land Use
Land use decisions impact nearly all sources of GHG emissions. Smart growth development brings people closer to more destinations and supports low-carbon travel choices (public transit, carpooling, walking, and biking). Mixed use, compact developments also result in reduced per capita demand for electricity, heating, and cooling. There are also co-benefits of land use and transportation strategies beyond GHG reductions, including preservation of agricultural land, open space, and habitat; improved water quality from reduced development-related pollutant sources; positive health effects; and the reduction of smog forming pollutants. This section also includes land use strategies to expand tree planting and other urban greening efforts, which have benefits of carbon sequestration, meaning trees uptake and store carbon from the atmosphere as they grow.

California’s Strategy for Reducing Emissions from Land Use
AB 32 and SB 375 emphasize the need for more compact land use patterns to achieve GHG reductions, but recognize that land use planning and urban growth decisions are areas where implementation of the Scoping Plan relies on local governments. Given local land use authority, the State’s primary strategy for influencing land use and transportation planning to reduce GHG emissions is to support the MPOs and local jurisdictions’ efforts to meet the SB 375 targets. Additionally, the Scoping Plan outlines a strategy to promote sustainable forests by using sustainable management practices and investing in tree-planting.

SANDAG Role in Reducing Emissions from Land Use
The SANDAG Regional Comprehensive Plan (RCP), adopted in 2004, is based on principles of smart growth and sustainability, which focuses on better urban design, walkability, and compact growth
near transit. A key goal of RCP implementation is to provide incentives and assistance to local member agencies with land use authority to encourage smart growth development in areas on the Smart Growth Concept Map. Through the Smart Growth Tool Box, the TransNet Smart Growth Incentive Program, the TransNet Active Transportation Grant Program, and transportation investments included in regional transportation plans, SANDAG provides planning and financing tools to local jurisdictions. Grant funding criteria addresses several project elements, including sustainability, which encourages energy conservation and sustainable landscaping in project design. Additionally, through the Energy Roadmap Program, SANDAG provides resources to reduce energy use through planning and development.

Local Government Role in Reducing Emissions from Land Use

Local governments have the authority to decide how and where land is developed to accommodate population growth. The figures below show the region’s projected housing and job growth based upon local general plans in 1999 (left) and 2013 (right). Over 14 years, local plans have been updated to concentrate growth within the urbanized areas of the region, closer to existing and planned transportation infrastructure, while increasing land area dedicated to open space and habitat preservation. These land use changes implement the vision and goals set in the RCP, adopted by SANDAG in 2004, collectively moving the region toward more compact development, more open space preservation, and reduced GHG emissions.

Comparison of Housing and Job Growth Projected in 1999 vs. 2013

In local CAPs, several jurisdictions have highlighted land use-related strategies to reduce GHG emissions, many of which overlap with strategies to reduce VMT described in the previous section. Examples of strategies from adopted CAPs include:

- Implement smart growth design principles in targeted areas, such as transit stations, mixed use areas, and near retail and employment centers;
- Revise zoning designations, development standards, and design guidelines to promote sustainable and smart growth land use patterns;

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5 Projected housing and job growth in 1999 (left) and 2013 (right) based upon the SANDAG Series 9 and 13 Regional Growth Forecasts.
• Develop and offer incentives, such as reduced parking requirements or expedited permit processing, for mixed use, transit-oriented, and affordable housing projects in designated SANDAG Smart Growth Opportunity Areas; and
• Preserve and increase the amount of urban forest and tree planting.

Reducing Emissions from Electricity

Electricity use is responsible for 22 percent of the San Diego region’s GHG emissions. Even prior to climate change policy, California has long been a leader in improving building energy efficiency and promoting the use of renewable energy sources. California’s per capita energy consumption is among the lowest in the country and has remained relatively constant since 1974; this has been achieved through building codes and appliance standards, incentive programs, design and installation training, and public outreach. In 1996, the State began incentivizing customer-side renewable energy technologies, and in 2002, established the first Renewable Portfolio Standard (RPS) for the investor-owned utilities (IOUs). In order to achieve energy and climate goals, Californians at all levels will need to play a part. The key strategies to reduce GHG emissions from electricity are consistent with the State’s loading order, and include:

• Conservation and energy efficiency in new and existing buildings
• Low carbon distributed generation
• Large scale renewable energy sources

California’s Strategy for Reducing Emissions from Electricity

The State’s strategy to reduce electricity-related GHG emissions involves the coordination of several State agencies including the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), and CARB. To improve energy efficiency, the AB 32 Scoping Plan calls for maximizing building and appliance standards, pursuing new technologies and policy mechanisms, and continuing investments from electricity providers in energy efficiency programs.

In 2008, the CPUC led the development of the California Long-Term Energy Efficiency Strategic Plan (LTEESP) to achieve maximum energy efficiency savings across all sectors, including local government. Updated in 2011, LTEESP identifies four “Big Bold Energy Efficiency Strategies” to help meet AB 32 GHG reduction targets:

1. All new residential construction in California will be zero net energy (ZNE) by 2020;
2. All new commercial construction in California will be ZNE by 2030;
3. Heating, ventilation, and air conditioning (HVAC) will be transformed to ensure that its energy performance is optimal for California’s climate; and
4. All eligible low-income customers will be given the opportunity to participate in the low income energy efficiency program by 2020.

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6 California Energy Commission, Comprehensive Energy Efficiency Program for Existing Buildings: http://energy.ca.gov/ab758/
7 California IOUs are San Diego Gas & Electric (SDG&E), Pacific Gas & Electric (PG&E), Southern California Electric (SCE) and Southern California Gas (SCG).
The State’s IOUs, regulated by the CPUC, implement energy efficiency programs that target both residential and non-residential sectors in support of LTEESP. Additional programs that support the LTEESP include AB 758 (Skinner, 2009) and the State’s Building Energy Efficiency Standards. AB 758 requires the CEC to develop and implement a comprehensive energy efficiency plan for all existing residential and commercial buildings. The Building Energy Efficiency Standards are updated on a roughly three-year cycle and become more stringent and closer to ZNE buildings with each revision. Additional funding to support energy efficiency came in 2012 when voters approved the California Clean Energy Jobs Act (Proposition 39). Proposition 39 money will be used to support energy efficiency and clean energy projects in California’s K-12 public schools and community colleges pursuant to SB 73 (Skinner, 2013).

California’s renewable energy activities have targeted both small-scale, distributed generation as well as larger, utility-scale renewable generation. Expansion of small-scale distributed generation, including rooftop solar photovoltaic (PV), fuel cells, gas turbines, and advanced energy storage, has been primarily driven by incentive programs. Programs include California Solar Initiative, New Solar Homes Partnership, and Self-Generation Incentive Program. Governor Brown has set a goal for 12,000 megawatts (MW) of distributed renewable generation by 2020; so far, 4,400 MW has come online. The Renewable Portfolio Standard (RPS) is another key measure for achieving the AB 32 target; it required California utilities to serve 20 percent of their customers’ electricity needs with large-scale, clean renewable energy by 2010, which has been achieved, and 33 percent by 2020.

**SANDAG Role in Reducing Emissions from Electricity**

While state agencies have significant authority over electricity programs, SANDAG focuses on opportunities that SANDAG and its member agencies could take advantage of to influence electricity savings and GHG reductions in the region. SANDAG does this through coordinated planning with a variety of stakeholders through the Regional Energy Working Group and providing resources to member agencies through a Local Government Partnership (LGP) with San Diego Gas & Electric (SDG&E). The SANDAG Regional Energy Strategy (RES) outlines several goals that support the State’s efforts to reduce electricity-related GHG emissions while considering other factors such as cost effectiveness and impacts to the power grid. Three of the six Priority Early Actions from the RES are related to electricity:

- Pursue a comprehensive building retrofit program to improve efficiency and install renewable energy systems
- Create financing programs to pay for projects and improvements that save energy
- Utilize the SANDAG-SDG&E LGP to help local governments identify opportunities and implement energy savings at government facilities and throughout their communities

The SANDAG LGP, the Energy Roadmap Program, is one component of SDG&E’s portfolio of energy efficiency programs. Through the Energy Roadmap Program, SANDAG offers custom energy management plans for member agencies that do not have an LGP. Nearly all member agencies have a completed Roadmap, and several are working on implementation. To support cities with implementation of the energy conservation measures identified through the Roadmap program,

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8 Title 24, Part 1, Chapter 10 and Part 6, and affected provisions in Part 11 (Cal. Green Building Standards Code)
9 A megawatt is equal to 1,000 kilowatts or one million watts. One megawatt is enough electrical capacity to power about 1,000 average homes in California.
SANDAG has an energy engineering firm under contract to offer assistance to cities with energy efficiency project specifications, procurement, and applications for rebates, incentives, and financing. SANDAG serves as a resource for local governments that do not have energy or climate change staff.

Local Government Role in Reducing Emissions from Electricity

The State’s LTEESP describes goals for local governments to be leaders in energy efficiency by leveraging their authorities and opportunities to lead by example and influence their communities. These goals have been supported by investment in LGPs from utility energy efficiency programs. In the San Diego region, the following agencies have an LGP with SDG&E: cities of San Diego and Chula Vista, County of San Diego, Port of San Diego, and SANDAG (offering services to non-LGP member agencies). Through their LGPs, public agencies retrofit their facilities, facilitate green business networks, train government staff on energy concepts and building code updates, develop electricity components of CAPs, and participate in regional collaborative programs.

Local CAPs recognize the role that energy efficiency and renewable energy play in reaching GHG reduction goals. Examples of strategies from CAPs to reduce electricity-related emissions include:

- Revise building codes to require new and renovated buildings to increase their energy efficiency and meet statewide green building standards;
- Encourage solar PV on new homes and commercial buildings;
- Perform energy audits of existing buildings by utilizing key trigger points such as time of sale;
- Offer financing programs to help offset upfront cost of energy retrofit and renewable energy projects;
- Support modernization of the power grid to provide more real-time information to consumers;
- Establish requirements for energy efficiency and renewable energy at municipal facilities;
- Promote SDG&E rebate and incentive programs for all customers; and
- Identify and remove barriers to large-scale renewable energy production.

Reducing Emissions from Natural Gas End Use

Natural gas end uses account for 8 percent of GHG emissions in the San Diego region, the third largest source after transportation and electricity. These emissions primarily come from natural gas combustion for hot water, space heating, cooling, cooking, and other uses in residential and commercial buildings. GHG emissions associated with power generation from natural gas power plants are accounted for in the electricity sector data.

California’s Strategy for Reducing Emissions from Natural Gas End Use

In the AB 32 Scoping Plan, the State sets a target for reducing natural gas use by 800 million therms from business as usual through energy efficiency. Several of the strategies described above for improving electricity efficiency in buildings also apply to natural gas savings. One key source of natural gas emissions is heating hot water. Solar hot water heating is one technology that has been identified to implement the State’s targets for ZNE buildings. Solar hot water heating systems offset the use of natural gas and typically reduce the need for conventional water heating by about two-thirds. The Solar Hot Water and Efficiency Act of 2007 authorized a ten year, $250-million incentive program with a goal of 200,000 systems installed by 2017.
Combined heat and power (CHP), or cogeneration, is another state priority for reducing GHG emissions and using natural gas as efficiently as possible. CHP systems, which generate on-site electricity and heat in a single system, are typically used in industrial, commercial, and institutional applications where both electricity and steam are required. Governor Brown set a goal for 6,500 MW of additional CHP capacity by 2030, which builds upon the Scoping Plan’s goal of 4,000 MW of new CHP by 2020.

**SANDAG Role in Reducing Emissions from Natural Gas End Use**

The RES has a goal related to efficiency of natural gas power plants; however, the goal does not currently address natural gas end uses. In the 2014 technical update of the RES, one of the recommendations is to broaden the natural gas goal to address end-user energy efficiency and other pertinent issues. Through the Energy Roadmap Program, SANDAG works with local governments to identify strategies to reduce natural gas use in their own facilities and in the community.

**Local Government Role in Reducing Emissions from Natural Gas End Use**

For reducing emissions from natural gas end-uses, strategies are similar to those described above for electricity efficiency. Measures from local CAPs include:

- Revise building codes to require new and renovated buildings to increase their energy efficiency and meet statewide green building standards;
- Perform energy audits of existing buildings by utilizing key trigger points such as time of sale;
- Offer financing programs to help offset upfront cost of energy retrofit and renewable energy projects;
- Promote SDG&E rebate and incentive programs for all customers; and
- Support increased use of solar hot water heating in residential, pool, and commercial uses.

**Reducing Emissions from Water Sector**

Emissions generated from water use account for 2 percent of overall emissions in the region, largely from electricity used for transport, distribution, treatment, and pumping of water, and natural gas used for heating water. Because of the close relationship between energy and water, strategies that save water generally save energy as well. This is especially true for the San Diego region since most of the region’s water is imported from either the Colorado River or from northern California via the State Water Project; both sources require large amounts of energy to transport the water across long distances.

**California’s Strategy for Reducing Emissions from Water Sector**

The State’s overall goal is to promote efficient use of water and use cleaner energy sources to move and treat water. The AB 32 Scoping Plan recognizes that water conservation is critical to making the State’s water supply more reliable and drought resistant. California’s 2009 Water Conservation Act (Senate Bill x7-7) sets a goal to reduce per capita water use by 20 percent by 2020. The State has also set goals for increasing recycled water and stormwater usage, which have been supported by over $1.15 billion in infrastructure grant and loan programs. Additional investments from the State have supported regional collaborative efforts to develop water management plans, diversify regional water portfolios, and increase self-reliance. The State also recognizes that efforts to
conserve water are critical for both reducing GHG emissions and building resilience to impacts of climate change, such as high temperatures and severe drought.

**SANDAG Role in Reducing Emissions from Water Sector**

The San Diego County Water Authority (SDCWA) is the agency responsible for ensuring reliable supplies of water to the San Diego region. SANDAG coordinates with SDCWA to ensure consistency among the various regional planning efforts. Through the Energy Roadmap Program, SANDAG also provides resources to local governments on the water-energy nexus and ways to save water and energy. The RES has a goal to reduce water-related energy use, and the SDCWA has participated in discussions on the topic at Regional Energy Working Group meetings.

**Local Government Role in Reducing Emissions from Water Sector**

Local governments can leverage their authority and encourage residents and businesses to conserve water by adopting building codes with increased water efficiency, coordinating with the local water district and/or SDCWA on programs and incentives available to residents and businesses, and demonstrating leadership by saving water in government facilities. Some cities already require residents to update water fixtures to low-flow models at point-of-sale. Other measures to reduce water-related GHG emissions in local CAPs include:

- Promote use of low-flow fixtures, dual flush toilets, and water efficient appliances;
- Encourage water rate structures that support water conservation;
- Promote water conserving landscaping such as turf lawn conversion and drought tolerant plants;
- Coordinate with local water districts on outreach programs and use of rain barrels and gray water systems; and
- Expand reclaimed water use in landscaping.

**Reducing Emissions from Solid Waste**

Solid waste contributes 1 percent to the San Diego region’s total GHG emissions, which comes from methane emissions at landfills and wastewater treatment. The State has a goal (set by AB 341 in 2011) for diverting 75 percent of waste from landfills (through recycling, composting, or source reduction) by the year 2020 and capturing methane from landfills to further reduce GHG emissions. The role that SANDAG plays in waste management is limited, as it is not responsible for any landfills in the region. In keeping with State waste reduction goals, SANDAG has established internal measures to significantly lessen the amount of paper printed for internal and external meetings and works with the building owner to implement a comprehensive recycling program. Local governments can adopt codes and standards that increase construction waste diversion, recycling, green waste programs, and composting. Many local governments have contracted waste services for their jurisdiction and can work with the waste service provider on strategies to reduce GHG emissions.
Adaptation - Preparing for Impacts of Climate Change

Even with the mitigation measures described in the previous sections, the current levels of GHGs in the atmosphere have already resulted in changes to the climate and will continue to do so. California has recognized the need to prepare communities for the effects of climate change by identifying ways to adapt and make communities resilient to climate impacts. The State has taken a leadership role in providing guidance for identifying vulnerabilities and addressing the major impacts of climate change at the state, regional, and local level. The sections below describe California's climate adaptation planning efforts, the role that SANDAG plays in preparing for climate change, and the ways local governments are considering adaptation in their climate action planning efforts.

California Climate Adaptation Planning

In 2008, Governor Schwarzenegger issued Executive Order S-13-08 which directed the California Natural Resources Agency, in coordination with other state agencies, to complete the first California Sea Level Rise Assessment Report, develop a state Climate Adaptation Strategy, and coordinate with the Governor’s Office of Planning and Research (OPR) to provide land use planning guidance related to sea level rise and other climate change impacts. The 2009 California Climate Adaptation Strategy was the result of a coordinated effort among several state agencies and used the best available science to describe the impacts, risks, and strategies for climate adaptation in the following sectors:

- Ocean and Coastal Resources
- Public Health
- Biodiversity and Habitat
- Water Management
- Agriculture
- Forestry
- Transportation and Energy Infrastructure

In December 2013, the Natural Resources Agency released an update to the 2009 strategy called Safeguarding California: Reducing Climate Risk. After the public review process, the Safeguarding California Plan is expected to be adopted in 2014. In addition to the Natural Resources Agency, other State agencies have prepared guidance documents for considering climate change adaptation in planning and decision making at the local and regional level. The following sections describe the best practices identified by the State for climate adaptation with regards to ocean and coastal resources, extreme heat, wildfire, biodiversity/habitat, and water management.

Ocean and Coastal Resources

In March 2013, the Coastal and Ocean Working Group of the California Climate Action Team released guidance and policy recommendations for incorporating sea level rise (SLR) projections into planning and decision making for projects. The guidance is based on the findings of the June 2012 National Research Council (NRC) report: Sea-Level Rise for the Coasts of California, Oregon, and Washington, which include the following ranges over three time horizons for areas south of Cape Mendocino:

- 2000-2030: 4 to 30 cm (0.13 to 0.98 ft)
- 2000-2050: 12 to 61 cm (0.39 to 2.0 ft)
- 2000-2100: 42 to 167 cm (1.38 to 5.48 ft)
In coordination with the other state adaptation strategies, the California Coastal Commission (CCC) released *Draft Sea-Level Rise Policy Guidance* in October 2013 that recommends steps for addressing SLR in CCC planning and regulatory actions. The Policy Guidance describes the best available science on SLR and provides step-by-step guidance on how to address SLR in new and updated Local Coastal Programs and Coastal Development Permits, which are the fundamental land use planning and regulatory governing mechanisms in the coastal zone.

*Extreme Heat*

The *State of California Extreme Heat Adaptation Interim Guidance Document* provides projections for increased temperatures and extreme heat events in California. Most of the research on climate change and extreme heat for California has come from the Scripps Institute of Oceanography at University of California, San Diego. Projections include annual temperature increases of up to 5 degrees by 2030 and up to 10 degrees by the end of the century. The historic average for urban regions across the state is 4 extreme heat days per year. The report indicates that San Diego is expected to be impacted more severely than other cities with 76 extreme heat days in 2050 and 129 extreme heat days in 2099. These heat events will have considerable health risks to the population. In order to prepare and safeguard the community for extreme heat events, the report offers the following recommendations:

- Incorporate cooling strategies for indoor and outdoor environments into building design, including porous materials and green infrastructure
- Consider potential heat health risks posed by climate change in state and local hazard mitigation plans, improve heat alerts, improve community resiliency (ability to withstand climate impacts), particularly in vulnerable communities, and protect the energy grid
- Increase preparedness of the health care system and protect workers at risk of extreme heat

*Wildfire*

Southern California already experiences wildfire, and changes to the frequency and severity will depend on factors including shifts in vegetation, Santa Ana wind behavior, temperature increases, and decreased moisture due to longer periods of drought. The *CA Climate Adaptation Strategy* recommends firefighting agencies include climate change impact information in fire program planning. The enhanced wildfire risk from climate change will likely increase public health and safety risks, property damage, fire suppression and emergency response costs, and impacts to water quality and vegetation/habitat.

*Biodiversity/Habitat*

Impacts of climate change such as sea level rise, loss of wetlands, wildfire, warmer temperatures, and drought can dramatically alter terrestrial and freshwater aquatic habitats and the species that depend on them. The *CA Adaptation Planning Guide* identifies several strategies for addressing climate impacts on biodiversity and habitat. The guide recommends that local jurisdictions work with their communities to:

- Identify and protect locations where native species may shift or lose habitat
- Collaborate with agencies managing public lands to identify, develop, or maintain corridors and linkages between undeveloped areas

Use purchase of development rights or conservation easements to protect vulnerable habitats

**Water Management**

Climate impacts on water management include altered timing and amount of precipitation as well as increased temperatures that influence the availability of water supply. The *CA Adaptation Planning Guide* describes strategies for limiting community exposure to threats such as flooding or landslides as well as measures to reduce local water use in response to water supply limits from reduced snowpack, reduced precipitation, or drought. The guide recommends that local jurisdictions update general plan safety elements and local hazard mitigation plans to reduce potential losses of life and property from flooding and landslide risk. Strategies to conserve water work as both mitigation and adaptation strategies and include implementing a recycled water program, using pricing to reduce consumption demand, and restoring natural groundwater supplies for water storage.

**SANDAG Role in Adaptation Planning**

The 2050 RTP/SCS recognizes that the region is and will continue to be affected by the impacts of climate change. Specifically, the SCS chapter identifies the following actions to support implementation:

- To the extent possible, address climate adaptation issues in the design of new projects, and when improvements are made to existing infrastructure.
- Evaluate the feasibility of developing preliminary maps that identify transportation infrastructure that could be vulnerable to environmental changes to climate change, including precipitation, heat, and sea level rise.

Recognizing that climate impacts extend beyond jurisdictional and international boundaries, the 2009 and 2010 binational seminars, supported by the Committee on Binational Regional Opportunities (COBRO) focused on climate change and opportunities for crossborder collaboration. The seminars resulted in recommendations on ways to continue collaborative work on climate change by agreeing on priority actions and sharing information on local and regional efforts.

**Considering Climate Change Impacts on Transportation Infrastructure**

SANDAG has begun to consider impacts of climate change as projects are designed, built, and maintained, recognizing the importance of protecting infrastructure investments. In order to inform the North Coast Corridor Program, SANDAG and Caltrans commissioned a *San Diego Region Coastal Sea Level Rise Analysis Report*. The Report describes future scenarios for SLR along the region’s coastline based on the latest and most relevant scientific reports and guidance, offers design water level guidance for local projects, an adaptive management strategy, and general conclusions and recommendations.

In February 2013, Caltrans released a guide for MPOs and RTPAs in *Addressing Climate Change Adaptation in Regional Transportation Plans*. The guide describes the need for considering long-term impacts of climate change on transportation infrastructure projects, which typically have long service life, as well as condition and vulnerability of existing facilities. The guide identifies impacts to transportation infrastructure of SLR, increase in intense precipitation events, and higher temperatures and extreme heat events. The SLR impacts include coastal erosion, coastal and inland tidal zone road flooding, bridge scour, and railway flooding. Impacts from intense precipitation...
events comprise railway and roadway flooding, landslides, and bridge scour. Impacts from higher temperatures and extreme heat include highway asphalt rutting, asphalt and rail buckling, concrete deterioration, limits on periods of construction activity, increased thermal expansion of bridges, vegetation/biodiversity changes, and increase in wildfires and mudslides. Caltrans recommends that MPOs identify locations of roadway, bridges, and railway vulnerable to these impacts and address the vulnerabilities in transportation plans, design, and operations/maintenance.

**Shoreline Preservation**

Recognizing the need for regional coordination to address beach erosion issues along the coastline, SANDAG facilitates collaboration on beach building and maintenance through the shoreline management program. The Shoreline Preservation Working Group helps to inform SANDAG on issues related to the implementation of the Shoreline Preservation Strategy and beach replenishment opportunities. The CCC Draft Sea Level Rise Policy Guidance identifies beach replenishment and nourishment as an adaptation strategy for addressing impacts of SLR on shorelines.

**Habitat Conservation**

The TransNet Environmental Mitigation Program (EMP) funds habitat-related environmental mitigation activities required to implement projects from the RTP including purchasing, conserving, and restoring native habitats as offsets to disturbances caused by transportation projects. The EMP is also helping to fund research and regional coordination on ways to build resiliency among species and habitats. The San Diego Management and Monitoring Program recently completed a *Management Strategic Plan (MSP) for Conserved Lands in Western San Diego County*, providing a comprehensive approach for management of multiple plant and animal species. A component of the MSP addresses regional threat and stressor management, including fire, invasive species, urban edge, habitat fragmentation, human use of preserves, nitrogen deposition, and cumulative stressors. Many of these threats and stressors are either directly or indirectly related to climate change and the MSP offers goals and objectives for building resiliency to these effects of climate change.

**Local Government Role in Adaptation Planning**

Local governments play a key role in assessing vulnerabilities to climate change in their communities and identifying and implementing strategies to prepare communities for these impacts. While most CAPs are focused on strategies to reduce GHG emissions, some local governments are recognizing that preparing for inevitable impacts of climate change is equally important. Strategies included in CAPs related to adaptation include:

- Reduce urban heat island impacts through cool paving, shade trees, green/cool roofs, and reflective materials;
- Decrease water use through low impact development, water recycling, landscape ordinances, and education for residents;
- Prevent stormwater pollution through landscape and construction site water waste reductions and designing stormwater structures to accommodate future precipitation regimes;
- Prepare for wildfires through outreach and education to residents, updating emergency response plans and hazard mitigation plans to consider climate change, encourage fire retardant materials and plants, and improve development standards to reduce fire risk at the urban/wildland interface;
• Prepare the public for extreme heat events through air quality and extreme heat notifications, targeting vulnerable communities, and offering cool zones for residents;
• Use existing species conservation planning processes to protect biodiversity and habitats that are threatened by climate change; and
• Update environmental review procedures to consider sea level rise in coastal developments.

In addition to individual CAP measures, local governments have worked collaboratively to address impacts of climate change. Specifically, the local governments that border the San Diego Bay worked together to complete the Sea Level Rise Adaptation Strategy for San Diego Bay in January 2012. The steering committee for the study included representatives from the five cities around the Bay (Chula Vista, Coronado, Imperial Beach, National City, and San Diego) as well as the Port of San Diego and the San Diego County Regional Airport Authority. The Strategy includes a vulnerability assessment and list of comprehensive strategies to assess the vulnerabilities.

Interrelationships to Other Policy Areas

Climate change is related to several other policy areas of the Regional Plan, and these interrelationships offer co-benefits where strategies to address climate change also benefit other policy goals, however, there are some areas where strategies to address climate change could conflict with other policy goals. The following sections describe how climate change is interrelated to economics, public health, and social equity considerations.

Economics and Climate Change

Taking steps to mitigate climate change can assist with many of the other objectives in The Regional Plan, and can result in substantial economic benefits. For example, changes in land use regulations, zoning, and transportation infrastructure intended to reduce transportation GHG emissions can create denser, mixed-use, multi-modal communities that can serve the growing populations of younger professionals, singles, and seniors. These changes can also lead to better health outcomes, and to easier access to schools, jobs, and recreation, increasing economic opportunities for those with limited resources. Efforts to improve energy and water efficiency can have substantial positive benefits to the San Diego economy, by saving money and stimulating job creation in the energy contractor and engineering fields since the improvements must be installed and maintained by a local workforce. Benefits to job growth also come from the “Cleantech” sector, which produces products and services related to renewable energy, energy efficiency, clean transportation, and smart grid. In the San Diego region roughly 8,000 jobs, with an average wage of over $87,000, are in the “Cleantech” sector.12

Assessing and preparing for vulnerabilities of drought and severe weather now can have substantial economic benefits in the future. Climate change has the potential to present substantial costs to the San Diego region, from severe impacts of SLR and increased storm activity on the region’s oceanfront, to the impact on energy-needs, agricultural disruption, and public health. There is considerable uncertainty as to the timing and severity of these impacts, and to our ability to avoid or mitigate them, and/or adapt to them should they occur to any substantial degree. Technological and engineering solutions, of varying cost and effectiveness, could mitigate many of the effects, but it is likely that behavioral changes may be required as well.

12 SANDAG, Traded Industry Clusters in the San Diego Region, July 2012
Public Health, Social Equity, and Climate Change

Public health, social equity, and climate change are policy areas that are closely connected. Goals and objectives for creating a healthy community and improving quality of life for all residents closely align with those for addressing climate change. Many of the key strategies for reducing GHG emissions can also improve health and have the potential to increase quality of life for all people regardless of age, race, color, national origin, income, or physical agility. These strategies and co-benefits are summarized in the following table.

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<th>GHG Reduction Strategies and Potential Co-Benefits</th>
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<td>Strategy to Reduce GHG Emissions</td>
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<td>Reduce vehicle miles traveled</td>
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<td>Increase fuel efficiency and use of cleaner fuels in vehicles</td>
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<td>Reduce emissions through land use changes such as more compact growth</td>
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<td>Reduce residential building energy and water use</td>
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While there are many co-benefits among strategies that reduce GHG emissions, improve public health, and address social equity, there are some important considerations that must be made in order to avoid negative impacts on public health and social equity:

- Use of zero-emission or fuel efficient vehicles reduces GHG emissions, but has no change on sedentary lifestyles that contribute to chronic disease and does not address the needs of the populations that do not drive or cannot afford to own and operate a vehicle

¹³ California Department of Public Health, Integrating Public Health into Climate Action Planning, February 2012
Increasing density must be coupled with addressing green space and tree canopy needs in order to avoid the unintended consequence of increasing urban heat island effects, as well as increased housing costs and gentrification of existing communities.

Implementation of building efficiency standards must also consider adequate ventilation and other components of healthy housing.

Increasing renewable energy sources for electricity must also consider impacts to electricity costs, particularly on low-income residents.

Impacts to public health from climate change include increased heat-related illnesses; increased asthma, allergies, and other cardiovascular and respiratory diseases due to poor air quality; disruption in food and water supply due to drought and severe weather; and population displacement due to wildfire or sea level rise. Impacts from climate change will not affect all communities in the same way; in particular, the health impacts of climate change may disproportionately affect vulnerable populations including: children, the elderly, people with chronic illness, low-income, and those unable to afford food or fuels for cooling and transportation. Working to create healthy communities builds a foundation for resiliency to climate impacts that benefits all segments of the population, including vulnerable populations.

Auction proceeds from CARB’s Cap-and-Trade program will help to benefit disadvantaged communities. SB 535 requires that CARB identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria, and that at least 25 percent of auction proceeds be allocated to projects that benefit these communities. Additionally, at least 10 percent of the proceeds must be allocated to projects located in the disadvantaged communities.

Recommendations

Based on the State’s strategy and the roles that SANDAG and local governments have in addressing climate change, there are opportunities for regional collaboration on strategies to coordinate on a consistent approach to climate change in the San Diego region. The following recommendations describe ways that SANDAG can work together with member agencies and other stakeholders to reduce GHG emissions, prepare for climate impacts, and increase education and awareness.

Reducing GHG Emissions

- Ensure that efforts to reduce VMT at the regional and local level are done in a coordinated manner and that the SCS and local CAPs are complementary.
- Make jurisdictional VMT data accessible to local governments and assist in identifying VMT reduction strategies for local CAPs that are consistent with the SCS and leverage other SANDAG plans and programs.
- Integrate regional planning for plug-in electric vehicles and alternative fuels into local CAPs.
- Continue to provide planning resources to support local governments’ efforts to implement smart growth and technical support for demonstrating associated GHG emission reductions.
- Continue and expand the Energy Roadmap Program to offer resources to local governments on ways to save energy in government operations and in the community.
- Coordinate with SDCWA to provide resources for local governments on the water-energy nexus and strategies to save water and energy that implement CAPs.
- Collaborate on education, outreach, and consistent messaging on ways residents and businesses can help reduce GHG emissions.
Preparing for Climate Impacts

- Use the Caltrans guide, Addressing Climate Change Adaptation in Regional Transportation Plans, to identify locations of infrastructure vulnerable to climate impacts and address the vulnerabilities in transportation plans, design, and operations/maintenance.
- Replicate the process that was used to create the Sea Level Rise Adaptation Strategy for the San Diego Bay for other areas of adaptation and resiliency, such as sea level rise along the shoreline, wildfires in inland areas, and water conservation.
- Partner with other regional entities such as the SDCWA, bordering counties, Mexico, military, and tribal nations on adaptation and resiliency, and agree on priority aspects of climate change collaboration, including mitigation, adaptation, and education strategies.
- Integrate climate change considerations into existing planning processes, such as habitat planning, emergency response, hazard mitigation, and public health planning.
- Collaborate on education and outreach for the general public on impacts of climate change in communities and on ways to prepare for impacts.

C. ADDRESSING CLIMATE CHANGE IN THE SAN DIEGO REGION

There are many efforts underway in the San Diego region that are planning and implementing strategies to address climate change. This section further describes the ways SANDAG and local governments are addressing climate change in the San Diego region, both individually and collaboratively. In addition to the plans and programs described below, there are numerous private and non-profit organizations that are taking action on climate change.

SANDAG Plans and Programs

2050 Regional Transportation Plan/Sustainable Communities Strategy (2011)

The 2050 RTP/SCS demonstrates how development patterns and the transportation network, policies, and programs can work together to achieve the GHG emission targets for cars and light trucks established by CARB. The SCS also contains additional energy and climate actions that go beyond the transportation emission reductions required by SB 375.

Regional Energy Strategy (2009, 2014 Technical Update)

The RES establishes goals for the San Diego region to be more energy efficient, to increase use of renewable energy sources, and to enhance the region’s energy infrastructure so that we are able to meet growing energy demand. The San Diego region has a history of developing an energy strategy going back to 1979, with updates occurring through the 1980s, 1990s, and in 2003. The 2009 RES was developed in response to increasing scientific and policy focus on global climate change and in light of the significant policy changes and implementation programs affecting the electricity, natural gas, and transportation sectors. In order to inform the San Diego Forward: The Regional Plan, SANDAG undertook a technical update of the RES, which demonstrates progress since 2009 toward RES goals, identifies data and monitoring methods for each goal, and provides recommendations for continued progress.

Climate Action Strategy (2010)

The Climate Action Strategy is a guide for SANDAG on climate change policy. The Strategy identifies a range of potential policy measures – “tools in the toolbox” – for consideration as SANDAG
updates long-term planning documents like the Regional Transportation Plan and Regional Comprehensive Plan, and as local jurisdictions update their General Plans and other community plans. The Strategy helped SANDAG identify land use, transportation, and related policy measures and investments that could reduce greenhouse gases from passenger cars and light-duty trucks as part of the development of a Sustainable Communities Strategy for the 2050 RTP/SCS in compliance with Senate Bill 375. Potential policy measures also are identified for buildings and energy use, protecting transportation and energy infrastructure from climate impacts, and to help SANDAG and local jurisdictions reduce greenhouse gases from their operations.

*Riding to 2050, the San Diego Regional Bicycle Plan (2010) and Bike Early Action Program*

The San Diego Regional Bicycle Plan is a strategy for making the bicycle a more useful form of transportation for everyday travel. The Plan describes the regional bicycle network as a component of the multimodal regional transportation system included in the RTP/SCS as well as the programs that are necessary to support the network. Implementation of the plan is key to achieving the GHG reduction goals of the SCS and supporting improved public health through active transportation.

When the SANDAG Board of Directors adopted the 2050 RTP/SCS, it committed to developing an early action program for projects included in the Regional Bicycle Plan. In September 2013, the Board approved the Regional Bike Plan Early Action Program with the overall goal to implement Bike Plan Network High Priority Projects within 10 years, and execute programs to support the network investments.

*Transportation Demand Management Program, iCommute Commuter Services*

Transportation Demand Management (TDM) refers to programs and strategies that manage and reduce traffic congestion by encouraging the use of transportation alternatives. SANDAG coordinates a number of programs that are increasing the number of commuters who carpool, vanpool, take transit, bike, walk, and telework. These activities are facilitated through the iCommute program. The goal of iCommute is to manage and reduce traffic congestion, as well as reduce GHG emissions and other environmental pollutants that result from commuters driving alone each day. Managing the demand for our roadways is a cost-effective method for improving the daily commute while also improving the quality of life across the region.

SANDAG works closely with Caltrans, the Metropolitan Transit System, North County Transit District, and all 19 jurisdictions within the region. Programs and services provided by iCommute include free, online ridematching, a vanpool subsidy program, transit solutions, bicycle encouragement programs, the Guaranteed Ride Home program, SchoolPool, and support for teleworking. Public outreach increases awareness about the variety of transportation choices through events such as Bike to Work Day, Rideshare Week, Dump the Pump, and through direct outreach to employers, community groups, schools, and agencies.

*San Diego Region Intelligent Transportation Systems (ITS) Strategic Plan (2011)*

The San Diego Region ITS Strategic Plan defines a ten-year vision for the effective use of technology to support intelligent transportation operations and management goals, and identifies key strategies that the region can implement to address critical technical and institutional needs. The purpose of the Plan is to provide policy guidance and a common vision for ITS applications to improve mobility, safety, efficiency, and reliability. One guiding principle of the plan is to prioritize
funding for projects that help the region achieve GHG reduction targets and preserve natural resources.

Regional Alternative Fuel Planning

One of the six priority early actions identified in the Regional Energy Strategy and actions included in the SCS are to support planning for electric vehicle charging and alternative fueling infrastructure. Strong regional support for alternative fuels can communicate to the market that the San Diego region is committed to, and seeks to attract, investment in alternative fuel vehicles and infrastructure.

Infrastructure needs were identified in a 2009 assessment of how to accelerate deployment of alternative fuel vehicles in and around San Diego entitled the Regional Alternative Fuels, Vehicles and Infrastructure Report. The report recommended public–private partnerships and collaborative approaches to infrastructure planning and increasing alternative fuels in fleets. Its findings were incorporated into the regional energy and climate strategies, and informed actions for implementation identified in the 2050 RTP/SCS. In 2014, SANDAG began a regional planning effort to address infrastructure needs for alternative fuels, expanding on the electric vehicle planning described next.

Regional Plug-in Electric Vehicle Planning

The San Diego region is at the forefront of plug-in electric vehicle (PEV) deployment, and the region’s early PEV experiences identified barriers to widespread PEV adoption. In order to address these barriers, the California Energy Commission awarded SANDAG a grant to form the San Diego Regional Electric Vehicle Infrastructure Working Group (REVI) and develop a Regional PEV readiness plan. REVI held its kick-off meeting in March 2012 and members include representatives from local governments, regional agencies, EV charging manufacturers, local colleges and universities, workforce training programs, and non-profits. The San Diego Regional PEV Readiness Plan was accepted by the SANDAG Board of Directors on January 24, 2014. Efforts begun by REVI will be continued through another grant from the CEC for SANDAG to develop a regional readiness plan for all alternative fuels.

Energy Roadmap Program

The Energy Roadmap Program is a collaboration between SANDAG and San Diego Gas & Electric that began in 2010. It is funded primarily by California utility customers under the auspices of the California Public Utilities Commission, while SANDAG funds the transportation components. The Energy Roadmap Program provides free energy assessments and energy management plans, or “energy roadmaps,” to SANDAG member agencies. Each energy roadmap provides a framework for a local government to reduce energy use in municipal operations and in the community, and can result in economic savings and environmental benefits. The Energy Roadmap Program also offers cities support towards achieving the energy savings identified within their Roadmaps. Implementation activities include:

- Project analysis and selection
- Project feasibility studies
- Development of product/technology specifications
- Support for contractor procurement
- Completion and submittal of financing requirements
- Planning support for plan, policy, and regulatory needs
- Assistance with community outreach events
- Identify available staff training opportunities

**SANDAG Green Operations Manual (2014)**

The SANDAG Green Operations Manual, completed in March 2014, examines programs and projects that the agency oversees or influences, office space, and internal operations, as well as actions that employees can take to reduce GHG emissions and help implement the 2050 RTP/SCS. Development of the manual was made possible through the SANDAG Local Government Partnership with SDG&E. GHG reductions can come from energy efficiency measures, renewable energy options, alternative fuel use, petroleum reduction practices, and active transportation efforts.

**TransNet Smart Growth Incentive Program and Active Transportation Grant Program**

The TransNet Smart Growth Incentive Program (SGIP) funds transportation-related infrastructure improvements and planning efforts that support smart growth development. The SGIP awards two percent of the annual TransNet revenues ($9.6 million in 2013) to local governments through a competitive grant program to support projects that will help better coordinate transportation and land use in the San Diego region.

The goal of the Active Transportation Grant Program is to encourage local jurisdictions to plan and build facilities that promote multiple travel choices for residents and connectivity to transit, schools, retail centers, parks, work, and other community gathering places. The grant program provides both capital funding for projects and non-capital funding for plans, bicycle parking, education, encouragement, and awareness programs that support pedestrian and bicycle infrastructure.

**Local Government Plans and Programs**

**Local Government Partnerships**

SDG&E, along with the other IOUs in California, have included local government partnerships (LGPs) as part of their energy efficiency portfolios since 2006. The IOUs have formed LGPs with local governments, regional governments and public agencies. They also offer institutional partnerships to colleges, universities and other institutions. The LGP proposals are submitted by SDG&E to the CPUC as part of its overall portfolio of energy efficiency programs. SANDAG, the City and County of San Diego, the City of Chula Vista, and the San Diego Unified Port District (Port) currently have LGPs with SDG&E. The city and county LGPs with SDG&E were established in 2006 while the SANDAG and Port programs began in 2010. Since then the LGPs have provided municipal and community energy-saving programs. The existing LGP programs are to be extended through 2015.

**South Bay Energy Action Collaborative**

Since 2013, SANDAG has partnered with the City of Chula Vista to offer an additional method for Energy Roadmap implementation to the South Bay cities of Coronado, Imperial Beach, and National City. Chula Vista is leading this pilot program, called the South Bay Energy Action Collaborative (SoBEAC). SoBEAC offers a “peer to peer” or “neighboring city to neighboring city” approach to Roadmap implementation. SoBEAC objectives are focused on three categories: municipal energy
management, building and development processes, and community outreach. SANDAG plans to share and expand successful components of SoBEAC efforts with all Roadmap cities.

**Collaborative Regional Efforts**

*San Diego Regional Climate Collaborative*

The San Diego Regional Climate Collaborative (Climate Collaborative) is a multi-agency initiative to create a web-based outreach tool for increasing local, state and national awareness of this region’s many energy and climate activities. The Climate Collaborative has been established as part of the California Public Utilities Commission funded LGPs among SDG&E and the Cities of Chula Vista and San Diego, County of San Diego, Port of San Diego, University of San Diego, and SANDAG. The Web portal describes the State polices driving action at the local level, and serves as a clearinghouse of adopted regional policies, plans, and actions demonstrating what the San Diego region is doing to reduce energy use and address climate change. The Climate Collaborative includes links to public agency GHG inventories, adopted CAPs, Energy Roadmaps, and other local and regional sustainability efforts.

*San Diego Regional Energy Partnership*

SANDAG coordinates with other SDG&E LGPs, including the Cities of San Diego and Chula Vista, County of San Diego, and San Diego Unified Port District on regional energy efficiency programs through the San Diego Regional Energy Partnership. This partnership includes the continuation and expansion of the San Diego Regional Climate Collaborative, the Regional Energy Mapping Project, and other Energy Upgrade California or similarly related efforts.

*Sea Level Rise Adaptation Strategy for the San Diego Bay (2012)*

The Adaptation Strategy was prepared by ICLEI Local Governments for Sustainability through a collaborative, regional stakeholder process that included most of the public agencies and private sector representatives with a major interest in the future of San Diego Bay. Over the course of multiple workshops, stakeholders and technical advisors developed common assumptions and consensus-based recommendations that should form the basis of the region’s climate adaptation planning going forward. The Adaptation Strategy is a living document that can be implemented by local agencies and re-evaluated as new information becomes available in the coming years.

*Climate Understanding and Resilience in the River Valley (CURRV) – Tijuana River National Estuarine Research Reserve*

The overarching goal for CURRV is to begin a regionally committed process of adapting to climate change within the context of other environmental and socioeconomic changes. In order to achieve this goal, the Tijuana River National Estuarine Research Reserve (TRNERR) is collaborating with a diverse stakeholder group from San Diego and Baja California, Mexico to conduct a vulnerability assessment that informs the development of an Adaptation Strategy addressing the impacts of climate change, specifically sea level rise and river flooding.

*The San Diego Foundation Climate Initiative*

The San Diego Foundation educates and supports all of the region’s communities in addressing climate change through research, strategic investments, and collaborations with community leaders.

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14 San Diego Regional Climate Collaborative website: [www.sdclimatecollaborative.org](http://www.sdclimatecollaborative.org)
and policymakers. The Foundation participates in several regional projects including the San Diego Regional Climate Collaborative and Climate Education Partners. The Foundation also helps to fund research to build a scientific foundation for effective public policy, reports include:

- Focus 2050 Study for the San Diego Region (2008)
- Regional Public Opinion Research on Climate Change (2010)
- Climate Action Planning Progress in the San Diego Region (2013)

Energy Policy Initiatives Center at University of San Diego

The Energy Policy Initiatives Center (EPIC) is a non-profit academic and research center of the University of San Diego’s School of Law that studies energy policy issues affecting the San Diego region and California. EPIC has developed several reports and tools to aid local governments in their climate planning efforts, including an Excel-based climate planning tool that allows local governments to calculate GHG emissions in their jurisdiction and evaluate the GHG reduction potential of various mitigation measures. EPIC completed the 2008 regional GHG emissions inventory for the 2050 RTP/SCS and completed the updated 2012 GHG emissions inventory for San Diego Forward: The Regional Plan.

Climate Education Partners

Climate Education Partners is a project funded by the National Science Foundation to develop climate change education strategies. Climate Education Partners is a collaboration of partners that bring together expertise in climate science, social psychology, law, policy, and communications from University of San Diego, EPIC, California State University San Marcos, Scripps Institution of Oceanography, The San Diego Foundation, and The Steve Alexander Group. The project has conducted public opinion surveys as well as interviews with influential people in the San Diego region in order to understand their views of climate science and the impacts of climate change. With funding for an additional five years, Climate Education Partners are working to develop education materials and implement educational programs.
Additional References

Presidential Climate Action Plan (2013)  
http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

Executive Order – Preparing the United States for the Impacts of Climate Change (2013)  

Executive Order S-03-05 http://gov.ca.gov/news.php?id=1861

- 2013 Scoping Plan Update http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm  
- Cap and Trade http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

Senate Bill 375 – Sustainable Communities and Climate Protection Act (2008)  
http://www.arb.ca.gov/cc/sb375/sb375.htm


http://www.energy.ca.gov/ab758/

http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/eesp/

- California Climate Adaptation Strategy (2009, 2013)  
  http://www.climatechange.ca.gov/adaptation/strategy/index.html  
- California Adaptation Planning Guide  
  http://resources.ca.gov/climate_adaptation/local_government/adaptation_policy_guide.html  


http://www.coastal.ca.gov/climate/SLRguidance.html

Governor’s Office of Planning and Research Environmental Goals and Planning Report: “California’s Climate Future” (2013)  
http://opr.ca.gov/s_egpr.php
ENERGY RELATED STATE LEGISLATION

Introduction

At the February meeting, the Regional Energy Working Group (EWG) was presented with the SANDAG 2014 Legislative Program, which includes priorities related to energy and climate change legislation. The following bills have been identified as relevant or of interest for the EWG. A short description and status of each assembly bill (AB) and senate bill (SB) is included. The EWG is asked to comment on the legislation and inform staff of additional bills to monitor. The Regional Energy Strategy (RES) offers guidance for legislative considerations; the RES priority actions and broad strategies for implementation have been included as Attachment 1.

GREENHOUSE GAS REDUCTION/CLIMATE CHANGE

SB 64 (Corbett) Clean Technology Investment Account

Creates the Clean Technology Investment Account within the Greenhouse Gas Reduction Fund. Requires appropriations of moneys in the fund or other funds to the account in the Budget Act. Makes such funds available for grants to nonprofit public benefit corporations and regional technology alliances to design and implement programs that accelerate the development, demonstration, and deployment of technologies that would reduce greenhouse gas emissions and foster job creation in the state.

Status: Pending; Assembly Natural Resources Committee

SB 1122 (Pavley) Sustainable Communities: Strategy Growth Council

Requires the Strategic Growth Council to provide financial assistance funded from moneys from the Greenhouse Gas Reduction Fund, for development, adoption, or implementation of regional plans that achieve greenhouse gas reductions in support of AB 32 implementation. Requires the regional plan or other planning instrument to meet the requirements of an applicable sustainable communities strategy, alternative transportation plans, or other regional greenhouse gas emission reduction plans within a developed area. Authorizes grants for agricultural, natural resource, and open space land protection plans.

Status: 4/2/14; Senate Environmental Quality Committee
**SB 1125 (Pavley) Post-2020 Greenhouse Gas Emissions Reduction Target**

Requires the State Air Resources Board to develop and submit to the Governor and the Legislature a report containing recommendations on a timetable of reduction targets of greenhouse gas emissions and short-lived climate pollutants with high global warming potentials beyond 2020.

*Status: Pending; Senate Rules Committee*

**SB 1156 (Steinberg) Carbon Tax Law of 2014**

Imposes a carbon tax, effective January 1, 2015, of an unspecified amount per ton of carbon-dioxide-equivalent emissions on suppliers of fossil fuels. The bill would require the State Board of Equalization to administer and implement the carbon tax, and would require revenues from the tax to be deposited in the Carbon Tax Revenue Special Fund in the State Treasury. The bill would exempt suppliers of fossil fuels subject to the tax from regulations imposed by the State Air Resources Board under the California Global Warming Solutions Act of 2006 relative to the cap-and-trade program. The bill would state the intent of the Legislature that revenues from the carbon tax be rebated to taxpayers, particularly low- and medium-income taxpayers, of other taxes, and for implementation of the carbon tax to be revenue neutral.

*Status: Pending; Senate Governance and Finance Committee*

**SB 1268 (Beall) Natural Resources Climate Improvement Program**

Establishes the Natural Resources Climate Improvement Program, to assist in the development and implementation of highly-leveraged, regionally integrated natural resources projects that maximize greenhouse gas emissions reductions or sequestration. Authorizes moneys from the Greenhouse Gas Reduction Fund to be available to implement the program.

*Status: 4/8/14; Senate Natural Resources and Water Committee*

**TRANSPORTATION**

**AB 2415 (Ting) Electric Vehicle Charging Stations**

Requires the Energy Commission to develop and administer an electric vehicle charging station matching grant program to provide financial assistance to cities, counties, or a city and county for the installation of electric vehicle charging stations at public on-street parking locations.

*Status: Pending; Assembly Natural Resources Committee*

**AB 2597 (Ting) Electric Vehicle Grid Impacts**

Requires the Energy Commission, on or before December 1, 2015, to submit a report to the Legislature on the feasibility, potential benefits, and electrical grid impacts of using electric vehicles as an energy storage device for meeting load demands placed on the electrical grid.

*Status: Pending; Assembly Utilities and Commerce Committee*
**SB 913 (DeSaulnier) Vehicular Air Pollution: Vehicle Retirement**

Requires the guidelines for the retirement of high polluting vehicles adopted by the State Air Resources Board to additionally include specific goals for retirement and replacement of passenger vehicles and light and medium-duty trucks that are high polluters. Requires the Board, in the issuance of a specified number of replacement vouchers through the Enhanced Fleet Modernization Program for specified fiscal years and a specified number of retirement vouchers through the Consumer Assistance Program.

*Status: 4/1/2014; Senate Transportation and Housing Committee*

**SB 1204 (Lara) Clean Truck and Bus Program**

Creates the California Clean Truck and Bus Program (to be funded from cap and trade revenues) to fund zero- and near-zero emission truck and zero-emission bus technology and related projects, with preference to be given to projects in disadvantaged communities.

*Status: 4/1/14; Senate Transportation and Housing Committee*

**SB 1275 (De León) Charge Ahead California Initiative**

Requires the updated guidelines for the vehicle retirement and replacement program to ensure there be a mobility option, defined as a voucher for public transit or car sharing, and that the compensation for a mobility option be no less than the combination of what the motor vehicle owner would have received as compensation toward a replacement vehicle and the amount of a specified incentive available for a qualified plug-in battery electric vehicle. The bill also would require the updated guidelines to ensure the inclusion of car sharing. This bill would also establish the Charge Ahead California Initiative to be administered by the Air Resources Board (ARB), in consultation with the Energy Commission, air pollution control and air quality management districts, and public stakeholders. The bill would require the ARB to adopt, no later than June 30, 2015, a 9-year funding plan, commencing in the 2016–17 fiscal year, to fund specified programs and projects; to adopt, no later than June 30, 2015, specified revisions to the criteria and guidelines for the Clean Vehicle Rebate Project and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project; and to establish programs that further increase access and direct benefits for disadvantaged and low- and moderate-income communities from electric transportation.

*Status: 4/1/14; Senate Transportation and Housing*

**ELECTRICITY**

**SB 1078 (Jackson) Independent System Operator**

Relates to maximizing the availability of existing electric generation resources necessary to meet the needs of the state’s electricity consumers. Requires that in managing the transmission grid and related energy markets, the Independent System Operator do so consistent with maximizing utilization of existing electrical resources, including all cost-effective demand-side and renewable energy resources connected to the distribution or transmission grid.

*Status: Pending; Senate Energy, Utilities and Communications Committee*
**SB 1090 (Fuller) Electricity Rates: Default time-of-use Pricing**

Requires the Public Utilities Commission to make specified findings before it could require or authorize an electrical corporation to employ default time-of-use pricing to residential customers and to submit its findings to the Legislature not less than 12 months prior.

*Status: 4/1/14; Senate Energy, Utilities and Communications Committee*

**FINANCING**

**SB 1121 (De Leon) The California Green Bank**

States the intent of the Legislature to enact legislation that would establish the California Green Bank to coordinate, align, and enhance the state's efforts to provide energy finance programs for advanced energy technologies and projects throughout the state.

*Status: Pending; Senate Rules Committee*

**ENERGY PLANNING**

**AB 1079 (Bradford) Economic Development: Energy Management Plans**

Authorizes a city, county, or city and county to collaborate with specified utilities to designate an energy management area. Authorizes the city, county, or city and county to propose energy management plans. Relates to energy management plans for the development of economic development. Requires a report on the progress of plan implementation. Relates to funding from the Infrastructure and Economic Development Bank.

*Status: Pending; Senate Appropriations Committee*

Attachment 1: Regional Energy Strategy Priority Early Actions and Broad Strategies

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## SANDAG Regional Energy Strategy Priority Early Actions and Broad Strategies

### Regional Energy Strategy (RES) Priority Early Actions

1. Pursue a comprehensive building retrofit program to improve efficiency and install renewable energy systems
2. Create financing programs to pay for projects and improvements that save energy
3. Utilize the SANDAG-SDG&E Local Government Partnership to help local governments identify opportunities and implement energy savings at government facilities and throughout their communities
4. Support land use and transportation planning strategies that reduce energy use and GHG emissions
5. Support planning of electric charging and alternative fueling infrastructure
6. Support use of existing unused reclaimed water to decrease the amount of energy needed to meet the water needs of the San Diego region

### Broad Strategies to Implement the RES

1. Identify, secure, or develop funding mechanisms to pay for energy-related projects and programs
2. Educate and engage the general public or other stakeholders
3. Support enabling legislation or policy changes from state or federal government
4. Take early actions that set examples for residents and businesses
5. Develop standardized approaches and programs that can be implemented by all member agencies