MEETING NOTICE
AND AGENDA

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

Thursday, April 24, 2014
11:30 a.m. to 1 p.m.

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

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

AGENDA HIGHLIGHTS

• 2012 SAN DIEGO REGIONAL GREENHOUSE GAS EMISSIONS INVENTORY

• REGIONAL ENERGY STRATEGY TECHNICAL UPDATE: EXISTING CONDITIONS AND FUTURE PROJECTIONS

• SAN DIEGO REGIONAL CLIMATE COLLABORATIVE

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1. WELCOME AND INTRODUCTIONS

2. APPROVAL OF MEETING MINUTES
   
   The Regional Energy Working Group (EWG) is asked to approve the March 27, 2014, meeting minutes.

3. PUBLIC COMMENTS/MEMBER COMMENTS
   
   Members of the public shall have the opportunity to address the Regional Energy Working Group on any issue within the jurisdiction of SANDAG that is not on this agenda. Anyone desiring to speak shall reserve time by completing a “Request to Speak” form and giving it to the meeting coordinator prior to speaking. Public speakers should notify the meeting coordinator if they have a handout for distribution to working group members. Public speakers are limited to three minutes or less per person. Working Group members also may provide information and announcements under this agenda item.

REPORTS (4 through 7)

4. 2012 SAN DIEGO REGIONAL GREENHOUSE GAS EMISSIONS INVENTORY
   
   In order to help inform San Diego Forward: The Regional Plan, SANDAG has contracted with the Energy Policy Initiatives Center (EPIC) to complete an updated 2012 San Diego Regional Greenhouse Gas Emissions Inventory. Staff from EPIC will present the updated inventory for discussion.

5. REGIONAL ENERGY STRATEGY TECHNICAL UPDATE: EXISTING CONDITIONS AND FUTURE PROJECTIONS
   
   As part of the Regional Energy Strategy Technical Update, the Existing Conditions and Future Projections Chapter has been updated with 2012 data and projections to 2050 where available. The updated chapter is attached for review by the EWG.

6. SAN DIEGO REGIONAL CLIMATE COLLABORATIVE
   
   The San Diego Regional Climate Collaborative is a network for public agencies that serve the San Diego region by sharing expertise, leveraging resources, and advancing comprehensive solutions to facilitate climate change planning and raise the profile of regional leadership. EWG members will hear more about the Climate Collaborative and membership opportunities.
+7. ENERGY RELATED STATE LEGISLATION

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.

8. UPCOMING MEETINGS

The next meeting of the EWG is scheduled from 11:30 a.m. to 1 p.m. on Thursday, May 22, 2014.

+ next to an agenda item indicates an attachment
The meeting of the Regional Energy Working Group was called to order by Chair Chris Orlando, City of San Marcos, at 11:33 a.m.

1. WELCOME AND INTRODUCTIONS

2. FEBRUARY 27, 2014, MEETING MINUTES (APPROVE)

Action: Dave Weil, City of San Diego, motioned to approve the meeting minutes from February 27, 2014, and Greg Newhouse, San Diego Clean Cities Coalition, seconded the motion. The motion carried without opposition.

Yes: Jack Clark (California Center for Sustainable Energy [CCSE]), Laura Shingles (San Diego Regional Chamber of Commerce), Dave Weil (City of San Diego), Greg Newhouse (San Diego Clean Cities Coalition), Chris Orlando (City of San Marcos), Brett Caldwell (San Diego County Regional Airport Authority), Thomas Brill (SDG&E), Rich Grudman (County of San Diego), Jason Anderson (CleanTECH San Diego), Don Mosier (City of Del Mar), and Scott Anders (Energy Policy Initiatives Center [EPIC]).
No: None. Abstain: None. Absent: City of Santee, Metropolitan Transit System, Environmental Health Coalition, Sierra Club, North County Economic Development Council, Unified Port District of San Diego, and University of California, San Diego.

3. PUBLIC COMMENTS/MEMBER COMMENTS

John Wotzka, member of the public, discussed energy-related news and provided written comments that are summarized here:

- NuScale is the winner of the second phase of the $452,000,000, grant program to support development of medium sized reactors technology;
- Electric Power Research Institute will study the safety of storing high-burn up used nuclear fuel in dry casks;
- European Pressurized Reactors in Finland, France, and China will have startups in 2014, 2015 and 2016;
- Hydro power is 96 percent of Quebec’s power supply and 50 percent of Canada’s total energy in hydro power;
- Carlsbad City Council approved an NRG-90-foot “peaker” plant and requires NRG to tear down the Encina Power Station;
- Mexico’s natural gas imports from the United States have doubled since 2010 to 2 billion ft³/day with an expanding network of pipelines;
- $8 billion in loans have been given out for “clean coal” projects using carbon capture and storage technology;
- China and India will be building 60 percent of all new generating in the next 20-years;
- World Energy Outlook says renewables will hold 30 percent share of global power mix by 2035;
- the San Joaquin Valley Air Pollution Control Agency reports the Central Valley winter air is so bad that even healthy people should avoid activities outside;
- United Nations global warming report says that greenhouse gases
continued to grow by 2.2 percent /yr between 2000 and 2010; Vietnam’s “Law of Electricity” Master Plan is out.

Carrie Downey, member of the public, shared that the California Public Utilities Commission (CPUC) just announced two workshops to discuss ways that alternative transportation will fit with the update of the California Air Resources Board (CARB) scoping plan. The workshops will also discuss the funding opportunities. She asked if anyone from SANDAG was scheduled to present at the workshop since the San Diego Region leads the way in alternative fuels and transportation. Susan Freedman, SANDAG, informed her that no one was scheduled to present. Ms. Downey believed that it would be worthwhile for someone from the region to present at the workshop to share lessons learned, if nothing else.

REPEATS (4 through 6)

4. RECOGNITION OF OUTGOING REGIONAL ENERGY WORKING GROUP CHAIR

Chair Orlando recognized outgoing EWG chair, Carrie Downey. The EWG accomplished many things during her six years as chair. From 2008 to 2010, Ms. Downey oversaw the completion of the partnership with the California Energy Commission (CEC), which included the 2009 Regional Energy Strategy (RES), the first of its kind climate action strategy, and a regional alternate fuels report. During the 2009 RES development she led the EWG though the establishment of the guiding principles and RES goals to address water, energy, and borders. In 2009 SANDAG was awarded $1.9 million in funding from the CPUC for a local government partnership with SDG&E. This created the energy roadmap program, which every city now participates in. Ms. Downey’s leadership also helped SANDAG receive a grant from the CEC for electric vehicle infrastructure planning in 2012, which led to the development of the San Diego Regional Electric Vehicle Infrastructure Working Group (REVI), and a Plug-in Electric Vehicle Readiness Plan for the San Diego region.

Ms. Downey commented that she looks forward to participating in future EWG meetings and contributing to future EWG accomplishments.

5. SAN DIEGO FORWARD: THE REGIONAL PLAN: DRAFT CLIMATE CHANGE MITIGATION AND ADAPTATION WHITE PAPER (DISCUSSION)

Allison Wood, SANDAG, presented the Climate Change Mitigation and Adaptation White Paper. Ms. Wood shared the adopted vision and goals for San Diego Forward: The Regional Plan. She also shared the five emerging topics that will become policy white papers. She explained that this white paper looks at climate change mitigation, or reducing greenhouse gas (GHG) emissions, and adaptation, or ways to address impacts of climate change, and presented the draft updated 2012 regional GHG emissions inventory.

EWG Members had the following questions regarding the updated GHG emissions inventory:

- Pamela Bensoussan, City of Chula Vista, asked when the updated GHG emissions inventory would be available. Ms. Wood informed that EWG will hear a presentation on the GHG inventory at the April meeting. Ms. Bensoussan asked if there will be any trends shown for the years between the inventories. Scott Anders, EPIC, will explain the trends over time at the April EWG meeting.
• Thomas Brill, SDG&E, asked about the emissions related to water movement. Mr. Anders answered that that the 2 percent water piece illustrated in the emissions inventory graph is for the emissions associated with the water outside of the county that is not captured in natural gas and electricity. The biggest amount of energy associated with water is at the end use, which is captured in electricity and natural gas. Mr. Brill shared that the CPUC will be evaluating the energy water nexus this year, which gives this group an opportunity to weigh in on the issue.

• Dave Weil, City of San Diego, asked what counted as “other fuels” in the inventory. Mr. Anders answered that the category covered propane, wood, tires, etc. He added that he will give further details at the April EWG meeting.

• Greg Newhouse, San Diego Clean Cities Coalition, asked if electric vehicle charging was included in the “electricity” or “transportation” portion of the inventory. Mr. Anders informed him that it was included in electricity portion.

• Ms. Downey asked if the emissions inventory chart could be broken into sub-categories for the next EWG meeting. Mr. Anders answered that he could break it down into more detail for the April meeting.

• Mo Lahsaie, City of Oceanside, asked what category water transfer fit into for the inventory. Mr. Anders answered that, looking at the life cycle of water, there is the conveyance of water and then, once in the region, water is treated, distributed, consumed, and treated again. The only part of that process that is not captured in the “natural gas” and “electricity” categories is the upstream portion which is included in the category for water supply and conveyance.

Ms. Wood went on to describe the state framework for reducing GHGs and the history of the SANDAG energy and climate planning efforts, which includes the RES, the Climate Action Strategy, the Energy Roadmaps, and the Plug-In Electric Vehicle Readiness Plan. Ms. Wood also highlighted the components of local government climate change planning, which includes GHG inventories, climate action plans, and adaptation planning. Ms. Wood explained the different sectors of reductions that are outlined in the white paper: transportation, land use, electricity, natural gas, water, and waste.

Next, Ms. Wood described the adaptation strategies discussion of the white paper. She shared the state’s framework for addressing climate impacts (e.g. sea level rise, drought) and discussed SANDAG’s role in adaptation, which includes considering impacts on transportation infrastructure, shoreline preservation, and habitat conservation. She added that local governments are beginning to address adaptation in their Climate Action Plans and are participating in collaborative efforts, such as the Sea Level Rise Adaptation Strategy for San Diego Bay and climate change considerations in the County of San Diego’s Multi-Jurisdictional Hazard Mitigation Plan.

Ms. Wood shared that the white paper includes a section on interrelationships with other policy areas, such as economics, social equity and public health. Ms. Wood detailed the recommendations included in the white paper for reducing GHG emissions and preparing for climate change impacts.
The questions and comments of the EWG members are summarized below:

- Chair Orlando asked if the recommendations were prioritized or weighted. Ms. Wood answered that they were not, but that recommendations related to transportation were listed first since those are most relevant to SANDAG.

- Jason Anderson, CleanTECH San Diego, suggested strengthening the economics and climate change portion of the document. He commented that there was an opportunity to add more information from the business perspective, which would help to address the questions and arguments against climate change regulations.

- Mr. Brill echoed Mr. Anderson’s comments and added that different types of solutions have different economic consequences. He commented that it would be important to cover that range solutions.

- Dr. Don Mosier, City of Del Mar, commented that there was a white paper released by the American Association for the Advancement of Science that reflects the overwhelming sense that GHGs are causing global climate change. He will send the white paper to Ms. Wood for circulation. He emphasized the need to strengthen the education and outreach component. He also suggested that behavioral change and education should be near the top of the list for recommendations to reduce GHG emissions. He added that there needs to be a sense of urgency among the community that things need to change. Mr. Anderson commented that the San Diego Foundation is working to address this issue as well.

- Dennis Larson, Krout and Associates, commented that in considering the socio-economic impacts it is important to identify the indirect benefits as well as costs. He added that people want to know how climate action planning will affect them on a daily basis.

- Mr. Brill encouraged the group to think in broader terms about the economic impact, including employment growth and economic growth that is driving environmental improvements.

- Mr. Anders shared that EPIC has done some work analyzing the individual measures, but the region is missing a comprehensive economic evaluation. He commented that one way to do this is to evaluate the mid to long-term broad economic impacts of the various climate action scenarios.

- Mr. Newhouse commented that there are many entities in the region (e.g. community colleges, labor unions, SDG&E, etc.) that provide various types of workforce training. However, the need for those institutions and industries to provide the necessary training and skillsets to support these new technologies.

- Jack Clark, CCSE, shared that he found the climate change impacts in the report incredibly sobering. He suggested that staff forecast the market trends to reflect what would occur if some of the recommended actions were not put in place. He thought that this would really emphasize the impacts and drive the issue home. Mr. Anderson commented that part of the San Diego Foundation 2050 study is to look at the impacts of inaction.
• Mr. Anders shared that the County of San Diego put out a Request for Proposals looking at renewable energy planning issues. One part of that was an economic analysis on the effects of renewable energy on the region. The state has funding available for conservation and renewable energy planning at the county level.

• Mr. Brill informed that there is a lot of good data available that staff could tap into to get a good perspective on the different costs of the various options out there. This would help to prioritize efforts.

Ms. Wood informed that the first draft of the white paper will be on www.sdforward.com for a 45-day review period, concluding on May 19, 2014. She encouraged everyone to look at it closely and provide feedback. The white paper will be finalized in the summer and integrated into the Regional Plan.

6. ENERGY RELATED STATE LEGISLATION (INFORMATION)

Ms. Wood included an initial list of bills that are relevant to or of interest to the working group. She asked people to share with her any legislation that their organization is tracking that they think would be of interest to the EWG.

7. UPCOMING MEETINGS (INFORMATION)

The next meeting of the Regional Energy Working Group is scheduled from 11:30 a.m. to 1 p.m. for Thursday, April 24, 2014.

8. ADJOURNMENT

Chair Orlando adjourned the meeting at 12:50 p.m.
## March 27, 2014 ENERGY WORKING GROUP MEETING ATTENDANCE

<table>
<thead>
<tr>
<th>REPRESENTATION</th>
<th>JURISDICTION / ORGANIZATION</th>
<th>NAME</th>
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<td>City of San Marcos</td>
<td>Hon. Chris Orlando, Chair</td>
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<td>San Diego County Regional Airport Authority</td>
<td>Paul Manasjan</td>
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<td>Unified Port District of San Diego</td>
<td>Michelle White</td>
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<td>John Dilliot</td>
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<td>Thomas Brill</td>
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<td>California Center for Sustainable Energy</td>
<td>Len Hering</td>
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<td>Charlie Buck</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>Kayla Race</td>
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<td>Sierra Club</td>
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<td>David Lloyd</td>
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<td>CleanTECH San Diego</td>
<td>Jason Anderson</td>
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<td>Josh Harman</td>
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OTHER ATTENDEES:
Crystal Crawford, Ygrene
David Engel, Stay Cool
Steve Ferguson, Honeywell
Lindsey Hawes, CCSE
Mo. Lahsaie, City of Oceanside
Elizabeth McCollum, TRC
Brendan Reed, City of Chula Vista
Dustin Reilich, HERO
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
Sarah Strand, SANDAG
Allison Wood, SANDAG
Existing Conditions and Future Projections

This section presents existing conditions and future projections to 2050 for electricity, natural gas use, transportation fuel, and greenhouse gas (GHG) emissions.

4.1 Electricity

4.1.1 Statewide and Regional Electricity Supply

Figure 4-1 illustrates the types of resources that make up the total electricity production for California in 2009 and 2012. Over the last 3 years, electricity generation from natural gas and renewables has increased while coal has declined significantly, due to the California Energy Commission (CEC) banning utilities from signing new contracts with out-of-state coal fired power plants in 2007, and nuclear has declined due to the shutdown of the San Onofre Nuclear Generating Station (SONGS). The percentage of generation from renewable sources has increased from 12 percent in 2009 to 17 percent in 2012. Figure 4-2 shows the Statewide mix of renewable resources, which are largely geothermal, followed by wind, biomass, small hydroelectric, and solar.

Figure 4-1: Statewide Total Electricity System Power Mix, 2009 and 2012

Source: California Energy Commission
Figure 4-2: Statewide Renewable Power Mix, 2009 and 2012

Source: California Energy Commission

Figure 4-3 shows 2009 and 2012 electricity production for the SDG&E service area, which includes all of San Diego County and a small portion of southern Orange County. (San Diego County accounts for approximately 91 percent of the SDG&E service area.) Much like statewide figures, the SDG&E power mix is dominated by natural gas. In 2012, renewable resources comprised about nineteen percent of supply, with wind as the largest component of the renewable portfolio, as illustrated in Figure 4-4.

Figure 4-3: SDG&E Power Mix, 2009 and 2012

Source: San Diego Gas and Electric

Note: The Power Source Disclosure Program was modified in 2009 to allow for “unspecified power,” which is generally comprised of short-term market purchases from out-of-state power plants that do not have a contract with the utility.

2 SANDAG Regional Energy Strategy
In 2012, total system power for California was 302,000 Gigawatt-hours (GWh), which is up from 298,000 GWh in 2009. In the San Diego region, total annual system power for the SDG&E service territory has remained relatively constant at around 20,000 GWh, which accounts for about 7 percent of the State’s total system power. One Gigawatt-hour is enough electricity to power about 95 homes for one year. Under a business-as-usual scenario (i.e., no change in existing policy, programs, or behavior), the region’s total actual electricity consumption in 2010 (20,297 GWh) is expected to increase by about 14 percent by 2020 (to 23,203 GWh) and 55 percent by 2050 (to 31,583 GWh). This increase in total consumption assumes that existing levels of funding for energy efficiency programs administered by the utility continue. Figure 4-5 shows actual electricity consumption for 2005 and 2010 and forecasted consumption for the region by sector through 2050. Residential and commercial sectors are expected to continue to use the most electricity in the San Diego region (and the State). The electricity used to power electric vehicles is accounted for in the electricity end use categories for residential and commercial consumption. For information on the factors that contribute to electricity consumption, refer to the energy efficiency section of Chapter 5 on RES Goals.
Figure 4-5: Existing and Projected Electricity Consumption for SDG&E Service Territory (GWh), 2005-2050

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

Though current trends indicate that total regional electricity consumption will grow by up to 55 percent by 2050, per capita consumption is projected to remain flat through 2020, then grow by approximately 15 percent by 2050 (as shown in Figure 4-6). Consumers are using more electronic products and appliances today, but energy-saving measures like conservation and energy efficiency standards have been effective in maintaining per capita consumption. The main reason for overall growth in electricity consumption is population growth, anticipated to be on the order of nearly one million additional people between now and 2050 according to the SANDAG regional growth forecast. The region will need sufficient energy supply resources to accommodate this future growth.
Figure 4-6: Existing and Projected Per Capita Electricity Consumption for SDG&E Service Territory (kWh), 2005-2050

Source: California Energy Commission and SANDAG Series 13 Regional Growth Forecast

The RES uses the California Energy Commission 2013 Integrated Energy Policy Report (IEPR) as the basis for electricity and natural gas consumption figures. SDG&E also relies on the Energy Commission IEPR forecast for resource planning. Figure 4-7 demonstrates the energy reductions anticipated by various energy saving measures.

Figure 4-7: Regional Electricity Consumption and Reductions Derived by Energy Saving Measures, 1990-2012

4.2 Natural Gas

The San Diego region consumed approximately 560 million therms (MMTh) of natural gas in 2010 (not including gas used for electricity generation, which is accounted for in the electricity section above). At present, California imports 85 percent of its natural gas needs from out of state. Figure 4-8 shows natural gas consumption delineated by end use sector and similar to electricity consumption, the majority of natural gas end-use consumption is in the residential and commercial sectors. The natural gas used to power alternative fuel vehicles is accounted for in the natural gas end-use category.

Under a business-as-usual scenario, regional natural gas consumption is not expected to grow significantly over the next several decades as shown in Figure 4-8.

Figure 4-8: Existing and Projected Natural Gas Consumption by Sector (Million Therms), 2005-2050

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

4.3 Transportation

4.3.1 On-Road Transportation

The on-road transportation sector is a large consumer of energy, and is almost entirely dependent on petroleum-based fuels (gasoline and diesel). As shown in Figure 4-9, passenger cars and light-duty trucks are by far the largest consumers of transportation fuel, accounting for about 1.6 billion gallons of gasoline and diesel per year, or 85 percent of total consumption by on-road vehicles. Wherever possible, data known
about alternative transportation fuels is displayed in the transportation fuels section of Chapter 5: Regional Energy Goals; but the existing conditions and projections only pertain to gasoline and diesel. SANDAG will try to track alternative fuels consumed in the San Diego region to the extent possible.

**Figure 4-9: San Diego Regional Existing and Projected On-Road Fuel Consumption, 2005-2050**

Light-duty trucks represent only about 35 percent of vehicle miles traveled, but due to their relatively low efficiency, account for about half of fuel consumption.

Heavy-duty trucks and buses account for most of the remaining consumption by on-road vehicles, about 170 million gallons or about 11 percent of total on-road fuel consumption. While heavy-duty trucks mostly use diesel fuel, the region’s transit agencies operate a substantial number of CNG buses, including CNG-electric hybrids. Passenger cars and light-duty trucks are the largest contributors, generating about 91 percent of emissions from on-road vehicles, while heavy-duty vehicles account for the remainder.

Source: Energy Policy Initiatives Center, University of San Diego, 2014.
4.3.2 Other Transportation: Aviation, Rail, Watercraft, and Off-Road Equipment

Although small relative to fuel use by passenger cars and heavy-duty vehicles, energy consumed by the civil aviation, rail transportation, water-borne equipment, and off-road sectors is significant. Fuel consumption in these sectors accounts for about 7 percent of GHG emissions in the San Diego region and is primarily petroleum-based.

In 2007, the civil aviation sector, which comprises commercial flights and ground operations at San Diego International Airport (SDIA), consumed about 210 million gallons of jet fuel, 28,000 gallons of aviation gasoline, and 53 million cubic feet of natural gas. International flights and aviation at other airports and military facilities are not included in this analysis because data could not be obtained. Fuel use in this sector combined to account for about four percent of total GHG emissions in the region. The off-road vehicle and equipment category is the next largest consumer of fuel in this sector (primarily gasoline and diesel), accounting for about 3 percent of total GHG emissions. The largest fuel users in this category are construction and mining, industrial, pleasure craft, and agricultural.

The rail transportation category consumes diesel fuel for freight and goods movement, the Coaster commuter rail line, and the Sprinter light-rail line. The light-rail San Diego Trolley is powered by electricity. The diesel consumption accounts for about one percent of the region’s carbon footprint, while electricity to power the Trolley accounts for a very small amount of GHG emissions from the region’s electricity consumption.

There are many types of water-borne navigation in the San Diego region, but the largest sources of fuel consumption are ocean going vessels (OGVs) and harbor operating within San Diego Harbor. It should be noted that like rail, OGVs are among the most efficient mode of goods movement. The majority of fuel use from OGVs is due to automobile shipments, refrigerated vessels, and passenger cruise ships. The majority of harbor craft fuel use is due to commercial and charter fishing boats. Water-borne navigation accounts for less than one percent of total GHG emissions.
4.4 Greenhouse Gas Emissions

4.4.1 Greenhouse Gas Emissions in the San Diego Region

Energy use (including electricity, natural gas, and transportation fuels) in the San Diego region is the largest source of GHG emissions. Table 4-1 shows emissions in the four principal categories established by the United Nations Intergovernmental Panel on Climate Change (IPCC). As it shows, 90 percent of all GHG emissions in the region are related to the production and consumption of energy.

<table>
<thead>
<tr>
<th>Intergovernmental Panel on Climate Change Category</th>
<th>2012 Emissions (MMT CO₂e)</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>29.84</td>
<td>90%</td>
</tr>
<tr>
<td>Industrial (non-fuel)</td>
<td>1.46</td>
<td>4%</td>
</tr>
<tr>
<td>Waste</td>
<td>1.63</td>
<td>5%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Land Use</td>
<td>0.24</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>33.17</td>
<td>100%</td>
</tr>
</tbody>
</table>

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

Greenhouse Gas Emissions by End-Use Category

Although many activities consume energy, most of the region’s energy consumption and related GHG emissions are caused by three end-use categories of energy consumption: the movement of people and goods in the on-road transportation sector, electricity generation that provides power to homes and businesses, and natural gas for end uses like space heating and cooking (Figure 4-10).
Figure 4-10: Summary of Greenhouse Gas Emissions by Category, 2012

Transportation Fuels

The largest GHG emissions category in the region is on-road transportation, which accounts for nearly half of emissions (42 percent). Moreover, energy consumed by passenger cars and light-duty vehicles (pick-up trucks, sport utility vehicles), primarily gasoline for personal automobile transportation, accounts for about 90 percent of on-road transportation emissions, and about 39 percent of total emissions in the region.

The high level of GHG emissions from on-road transportation is due to the region’s dependence on petroleum-based gasoline and diesel fuel, average vehicle efficiency, and levels of driving. On-road transportation also comprises a significant proportion of GHG emissions statewide. In response, the state has enacted several transportation-related laws and regulations calling for petroleum reduction, development of low-
carbon and alternative fuels, increased vehicle fuel efficiency, and improved land use and transportation planning to reduce vehicle miles traveled (VMT).

**Electricity and Natural Gas End-Use Sectors**

Electricity and natural gas end-uses account for about one-third (32 percent) of GHG emissions in the region. The GHG emissions from electricity generation are influenced by both overall consumption and sources of generation. About two-thirds (63 percent) of the fuel used to generate the electricity consumed in the region is natural gas. Older and relatively inefficient natural gas power plants, buildings, and end-use equipment also are factors that contribute to the level of emissions from electricity and natural gas.

**4.4.2 Greenhouse Gas Emission Projections**

Under a business-as-usual scenario in which current energy use trends and policies do not change, total GHG emissions in the region will be approximately 35.8 MMTCO₂e in 2020, approximately 8 percent greater than the 2012 level.

While the near-term goal of reducing statewide GHG emissions to the 1990 level by 2020 is ambitious but likely achievable with available policy measures and technology options, the long-term goal described in Executive Order S-3-05 to reduce statewide GHG emissions to 80 percent below the 1990 level by 2050 will require fundamental changes in policy, technology, and behavior.

The projected increases in GHG emissions for on-road transportation, natural gas, and electricity are shown in Figures 4-11, 4-12, and 4-13. Because the following figures are business-as-usual projections depicting the consequences of not taking action, the effect of new federal, state, and local policies is not shown.
Figure 4-11: Total Projected Regional Greenhouse Gas Emissions from Transportation, 2010-2050

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

Figure 4-12: Total Projected Regional Greenhouse Gas Emissions from Natural Gas End-Uses, 2010-2050

Source: Energy Policy Initiatives Center, University of San Diego, 2014.
Figure 4-13: Total Projected Regional Greenhouse Gas Emissions from Electricity Generation, 2010-2050

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

4.4.4 The Effect of Climate Change on Energy Needs

Environmental changes caused by climate change are expected to impact energy production and demand. In the San Diego region and statewide, climate change is projected to increase the risk of drought or water shortages during summer months. In addition, winter runoff may increase resulting in heightened risk of flooding. As a result of precipitation changes, hydroelectric power generation may be adversely affected. Lower runoff flows would decrease hydropower generation while higher flows often must be spilled past dams without generating any electricity.

In addition, increased average temperatures and longer and more extreme heat events associated with climate change are expected to increase peak demand for electricity. As a result, demand response strategies will become an even more important part of the region’s energy strategy as a result of climate change.

More discussion of the connection between how we use energy, the deep GHG reductions required to address climate change, and the regional impacts of climate change is included in Chapter 3: Key Policy Drivers and in the Climate Change Mitigation and Adaptation White prepared for San Diego Forward: The Regional Plan.
ENERGY RELATED STATE LEGISLATION

**Introduction**

The Regional Energy Working Group (EWG) was presented with the SANDAG 2014 Legislative Program in February 2014. Goals 2B and 10B prioritized energy and climate change planning legislation. The following bills have been identified as relevant or of interest for the EWG. A short description and status of each bill 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.

**Discussion**

**Greenhouse Gas Reduction/Climate Change**

**AB 2202 (Logue) Greenhouse Gas Reduction**
Requires the State Air Resources Board to exempt small independent fuel marketers from the regulations adopted by the state board regarding greenhouse gas emission limits and emission reduction measures.
*Status: 4/28/14; 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 Assembly Bill 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: Pending; Senate Rules Committee*

**SB 1125 (Pavley) Global Warming Solutions Act: Emissions Reduction**
Requires the State Air Resources Board to develop reduction targets for greenhouse gas emissions and short-lived climate pollutants. Requires the Board to report to the Legislature on those targets.
*Status: Pending; Senate Environmental Quality 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.
*Status: Pending; Senate Governance and Finance Committee AND Senate Rules 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: Pending; Senate Environmental Quality Committee

Transportation

AB 1813 (Quirk) Global Solutions Act of 2006: Low Carbon Fuel Standard
Establishes the Fuel Producer Capital Assistance program to distribute moneys to liquid-transportation-fuel producers who wish to locate within the state a large-scale production facility that produces more than 3,000,000 gallons per year. Establishes the Fuel producers Capital Assistance Fund to implementation the program.
Status: Pending; Assembly Natural Resources Committee

AB 2390 (Muratsuchi) Low Carbon Fuel Standard: Green Credit Reserve
Requires the Governor to designate a state agency to establish and administer a Low Carbon and Renewable Fuels Credit Reserve, the Green Credit Reserve or Reserve, to facilitate and encourage the development of renewable and low carbon transportation fuel projects in the state by providing stability and predictability for the value of credits generated by the production of those fuels. Relates to contracts by the Reserve for projects to produce renewable transportation fuels that qualify for credits.
Status: Pending; Assembly Appropriations 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: 4/28/2014; Senate Appropriations Committee

SB 1077 (DeSaulnier) Vehicles: Vehicle-Miles-Traveled Charges
Requires the Department of Motor Vehicles to develop and implement a pilot program designed to assess specified issues related to implementing a vehicle miles traveled fee. Requires the department to prepare and submit a specified report of its findings.
Status: 4/29/2014; Senate Transportation and Housing Committee

SB 1204 (Lara) Clean Truck, Bus and Off-Road Vehicle: Equipment
Creates the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program to be funded from cap and trade revenues, to fund near-zero emission truck, bus, and off-road vehicle and equipment technology and related projects, with preference to be given to projects in disadvantaged communities.
Status: Pending; Senate Transportation and Housing Committee

SB 1275 (De León) Vehicle Retirement: Charge Ahead California Initiative
Amends existing law that creates an enhanced fleet modernization program. Requires the updated guidelines ensure there is a mobility option and 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. Establishes the Charge Ahead California Initiative to fund programs and projects; provides programs for electric transportation for certain communities.

**Status:** 4/30/14; Senate Environmental Quality Committee

**Electricity**

**AB 1935 (Campos) Electricity: Clean Distributed Energy Resources**
Requires the Public Utilities Commission, on a biennial basis, to study and submit a report to the Legislature and the Governor on the impacts of clean distributed energy resources on the state’s distribution and transmission grid. Relates to a greenhouse emission factor, credits for waste heat recovery and a demandside reduction resource.

**Status:** 4/21/14; Assembly Natural Resources Committee

**SB 1078 (Jackson) Electricity: Emissions of Greenhouse Gases**
This bill would require the Public Utilities Commission and the State Energy Resources Conservation and Development Commission, by July 1, 2015, to calculate and identify an anticipated target for reducing emissions of greenhouse gases for the electrical industry to be achieved statewide by 2030, in order to reach anticipated statewide targets to be established for reducing emissions of greenhouse gases from the electrical industry by the year 2050. The bill would require that the targets be established consistent with 2 specified executive orders. The bill would require the State Energy Resources Conservation and Development Commission and the Public Utilities Commission to develop joint long-term electrical demand and generational resource portfolio forecasts to develop scenarios to achieve the anticipated targets.

**Status:** 4/29/14; Senate Energy, Utilities and Communications Committee

**SB 456 (Padilla) Disclosure of Sources of Electrical Generation**
Amends existing law that requires retail suppliers of electricity to disclose accurate, reliable, and simple to understanding information on the sources of energy that are used to provide electrical services. Requires that the information disclosed include the total electricity purchases derived from generation sources within the state and total electricity purchases derived from generation sources that are located outside the state as well as annual sales of electricity from an energy storage system.

**Status:** Passed - Senate; Pending - Assembly

**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:** 4/28/14; Senate Appropriations Committee

**Financing**

**AB 1499 (Skinner) Electricity: Self-Generation Incentive Program**
Relates to existing law that requires the Public Utilities Commission to administer a self-generation incentive program for distributed generation resources and to separately administer solar technologies pursuant to the State Solar Initiative. Extends the authority of the Public Utilities Commission to authorize electrical corporations to continue making the annual collections.

**Status:** 4/21/14; Assembly Utilities and Commerce Committee
AB 1624 (Gordon) Self-Generation Incentive Program
Authorizes the Public Utilities Commission to authorize the annual collection of not more than the amount authorized for the self-generation incentive program in the 2008 calendar year. Requires the Commission to require electrical corporations to administer the program for distributed energy resources originally established pursuant to the former law to provide repayment of all unallocated funds collected for the self-generation incentive program to reduce taxpayer costs.
*Status: 4/21/14; Assembly Utilities and Commerce Committee*

AB 1953 (Skinner) Higher Education Energy Efficiency Act: Grants
Enacts the Higher Education Energy Efficiency Act. Creates the Higher Education Energy Efficiency Fund to make grants to University of California and State University campuses for building retrofits to reduce the demand for energy.
*Status: Pending; Assembly Appropriations Committee*

AB 1970 (Gordon) Global Warming Solutions Act: Community Investment
Creates the Community Investment and Innovation Program and requires moneys to be available from the Greenhouse Gas Reduction Fund for purposes of awarding grants and other financial assistance to eligible applicants who submit plans to develop and implement integrated community level greenhouse gas emissions reductions in their region. Requires the Strategic Growth Council to administer the program.
*Status: 4/23/14; Assembly Local Government Committee*

AB 2017 (Muratsuchi) Energy Financing for Rental Properties
Authorizes the Public Utilities Commission to require an electrical or gas corporation with service connections to develop and implement an on bill repayment program providing financial assistance for energy efficiency improvements for rental properties by allowing for the repayment of such assistance to be included in the utility bill.
*Status: 4/21/14; Assembly Utilities and Commerce Committee*

AB 2045 (Rendon) Energy Improvements and Financing
Enacts the Non Residential Real Property Energy Retrofit Financing Act of 2014. Provides financial assistance through the issuance of revenue bonds, to owners of eligible real properties. Requires that the bonds be secured by the recording of an energy remittance repayment agreement lien. Requires the Energy Resources Conservation and Development Commission to collect installment payments from owners of eligible real properties whose applications it has approved.
*Status: Pending; Assembly Utilities and Commerce Committee*

AB 2137 (Quirk) Small Business Energy Efficiency Incentive Program
Requires the Small Business Energy Efficiency Incentive Program to provide rebates to small business for eligible equipment that meets the appliance efficiency standards established by the commission and reduces the electricity usage of the small business. Requires the commission to identify excess moneys available for energy efficiency programs that it administers and would require those excess moneys be transferred to the fund. Relates to an electric or gas product.
*Status: 4/21/14; Assembly Utilities and Commerce Committee*

AB 2348 (Stone) 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 Natural Resources Climate Improvement Program.
*Status: Pending; Assembly Appropriations Committee*
AB 2597 (Ting) Energy: PACE Program
Amends existing law requiring the establishment of a Property Assessed Clean Energy Reserve Program to assist local jurisdictions in financing the installation of distributed generation renewable energy sources or energy or water efficiency improvements on residential projects, and which requires a specified authority, in considering the eligibility of a public agency's program for assistance, to consider whether the program provides a specified loan. Makes changes concerning that loan.
Status: 4/21/14; Assembly Natural Resources Committee

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 2188 (Muratsuchi) Solar Energy Permits
Requires a city or county to process and approve any permit application for a residential rooftop solar energy system of up to 10kW on the same day it has been submitted.
Status: 4/30/14; Assembly Local Government Committee

AB 2227 (Quirk) Building Standards: Solar Energy Systems
Requires the building standards for the construction, installation and alteration of solar energy systems, be adopted and published in the State Building Standards Code by State Building Standards Commission no later than a specified date.
Status: Pending; Assembly Business, Professions & Consumer Protection Committee

SB 1020 (Monning) Hazardous Waste: Photovoltaic Panels: Collection
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: 4/30/14; Senate Environmental Quality Committee

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