

JOINT LEGISLATIVE COMMITTEE ON CLIMATE CHANGE POLICIES

ASSEMBLYMEMBER EDUARDO GARCIA, CHAIR

SENATE COMMITTEE ON ENERGY, UTILITIES AND COMMUNICATIONS

SENATOR BEN HUESO, CHAIR

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY

ASSEMBLYMEMBER CHRIS HOLDEN, CHAIR

INFORMATIONAL HEARING:

DECARBONIZING THE ELECTRIC GRID: TRACKING THE GHGs IN OUR ELECTRONS

JULY 2, 2018

3:00PM

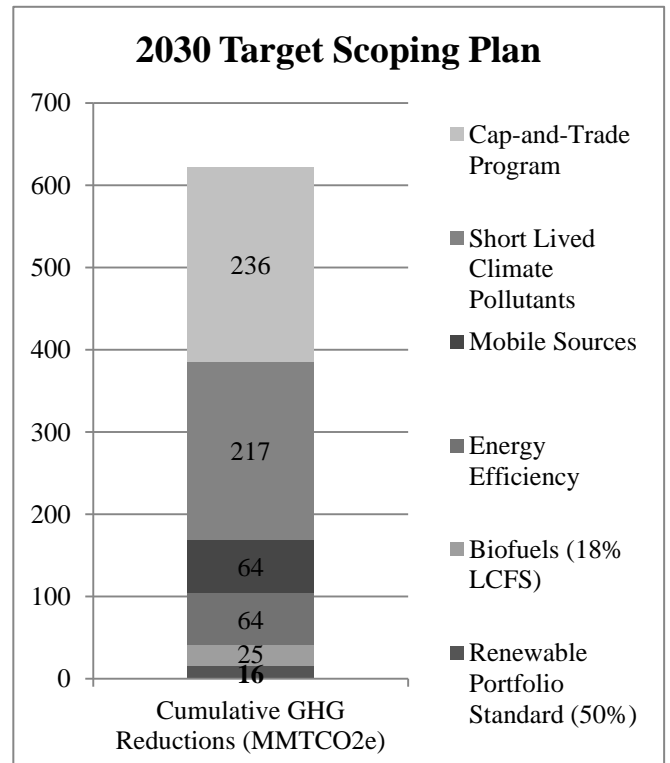
STATE CAPITOL ROOM 4202

As California embarks on leading the nation in reducing greenhouse gas emissions (GHGs), the state's efforts have included strategies to reduce the carbon emissions derived from the electricity sector. Long a known leader on energy efficiency, California has in more recent years coupled its efforts on energy efficiency strategies with efforts to procure more renewable energy resources, including wind, solar, biomass, and geothermal. Whereas, just twenty years ago, the state was procuring most of its energy from fossil-fuel based generation including coal and natural gas resources, today, California has significantly increased its use of renewable energy resources and adopted a requirement to procure fifty percent of its portfolio from renewable energy resources by 2030. As the state's efforts have garnered much success, changes in the electricity landscape may present both challenges and opportunities to ensuring the state remains on track and ensures reliability and affordability.

BACKGROUND ON CALIFORNIA'S CLIMATE POLICIES

AB 32 (Chapter 488, Statutes of 2006) requires the State Air Resources Board (ARB) to adopt a statewide emissions limit of 1990 emissions levels by the year 2020. California is on track to reach the 2020 emissions target established per AB 32. Reductions seen so far have largely been attributed to the economic decline that started in 2008 and on decarbonizing efforts in the electricity sector. A 2030 climate target of 40 percent below 1990 emissions levels was codified with SB 32 (Chapter 249, Statutes of 2016).

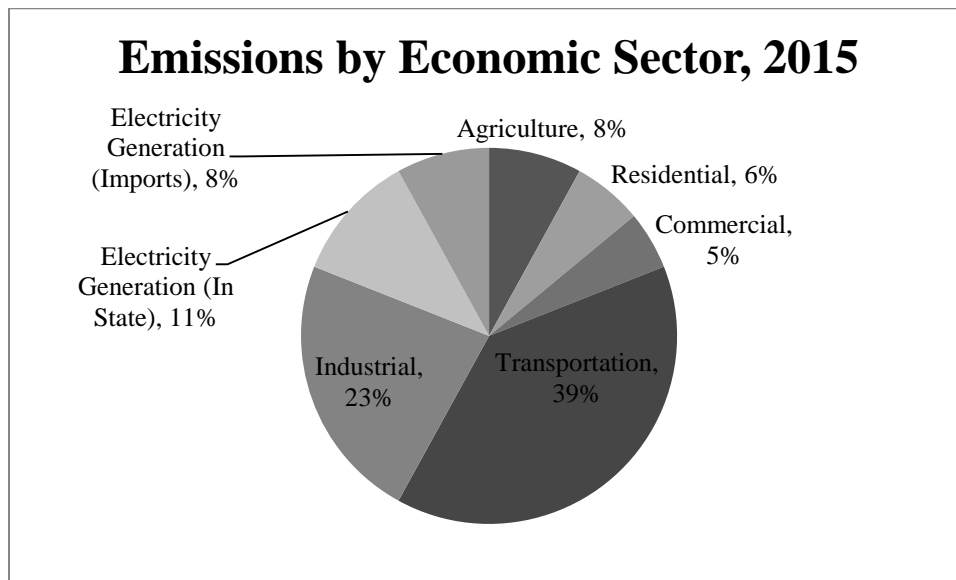
ARB prepares a Scoping Plan at least every five years to identify strategies necessary to achieve those statutory goals.



The most recent Scoping Plan was adopted on December 14, 2017 and includes the following strategies:

- Implementation of SB 350 (Chapter 547, Statutes of 2015):
 - Achieving 50 percent Renewables Portfolio Standard (RPS)
 - Doubling of energy efficiency savings
- Increasing the stringency of the Low Carbon Fuel Standard from 10 to 18 percent
- Implementation of the Mobile Sources Strategy:
 - Continuing ramp up of GHG standards for light-, medium- and heavy-duty vehicles
 - Putting 4.2 million zero-emission vehicles (ZEVs) on the road
 - Increasing zero-emission buses, delivery and other trucks
 - Reducing vehicle miles traveled
- Implementation of the Sustainable Freight Strategy
- Implementation of the Short-Lived Climate Pollutant Reduction Strategy:
 - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels
 - Reduce emissions of black carbon 50 percent below 2013 levels
- Implementation of a post-2020 Cap-and-Trade Program

EFFORTS TO REDUCE GHGS FROM THE ELECTRICITY SECTOR



Based on ARB's most recent greenhouse gas emission inventory, electricity generation represented 19 percent of California's total emissions in 2015. ARB has plans to reduce emissions from every major emitting sector, including energy. The 2017 Scoping Plan adopted in identified three high-level objectives and goals to further reduce GHG emission from electricity sector. They are as follows:

- Achieve sector-wide and load-serving entity specific GHG reduction planning targets set by the State through Integrated Resource Planning (IRP).
- Reduce fossil fuel use.
- Reduce energy demand.

The energy sector is subject to the Cap-and-Trade program. In addition to those targets, the Scoping Plan also identified the state's RPS as helping to deliver approximately 2.6 percent of additional cumulative emissions reductions needed to reach the 2030 target; those emissions are based on the assumption that the RPS stays at the current target of 50 percent. The Scoping Plan also identified reductions from energy efficiency as helping to deliver

just over 10 percent of the cumulative reductions, pursuant to statutory mandates to double energy efficiency by 2030 enacted by SB 350.

ABOUT THE RENEWABLES PORTFOLIO STANDARD

The RPS was established by SB 1078 (Chapter 516, Statutes of 2002) which required renewable power generation target of 20 percent of the total energy generated for consumption in California without reference to a target year. That target was clarified to 20 percent by 2010 by SB 107 (Chapter 464, Statutes of 2006), raised to 33 percent by 2020 by SB 2x1 (Chapter 1, Statutes of 2011-12 First Extraordinary Session), and further raised to 50 percent by 2030 by SB 350.

The RPS statutes define procurement of renewable energy since 2010 in one of three portfolio content categories (also known as “buckets”):

- Category 1: bundled renewable energy credits (RECs) from facilities with a first point of interconnection with a California Balancing Authority, or facilities that schedule electricity into a California Balancing Authority on an hourly or sub-hourly basis.
- Category 2: procurement that bundles RECs with incremental electricity and/or substitute energy from outside of a California Balancing Authority. This category often includes RECs from out-of-state renewable facilities.
- Category 3: unbundled RECs that do not include the physical delivery of the energy attached to the REC. This category often includes RECs associated with the sale and purchase of the RECs themselves, not the energy.

As of the third compliance period, retail sellers are required to submit at least 75 percent of their compliance obligation from category one RECs and no more than 10 percent from category three RECs. This ratio is intended to facilitate the development of new utility-scale renewable energy facilities. One REC is equivalent to one megawatt hour of electricity. The RPS program is jointly administered by the California Public Utilities Commission (CPUC) and the CEC. According to the CPUC’s 2017 Annual Report for the RPS, IOUs forecast that they can meet their RPS requirements for 2030 by 2020. This is largely due to excess RPS procurement since 2013, resulting in enough banked RECs to meet their obligations, even though they haven’t solicited any new renewable power since 2015.

ABOUT ENERGY EFFICIENCY EFFORTS

SB 350 requires the CEC and CPUC to establish annual targets for state energy efficiency savings and demand reduction with the goal of doubling statewide energy efficiency savings by 2030. Measures currently underway to achieve that goal include CEC updates to building and appliance standards, private and public funding for energy efficiency investments in existing buildings, and policies and investments in developing cleaner heating fuels.

SB 350 directed CEC to complete a study that included research on the barriers for low-income consumers to energy efficiency and weatherization investments, and recommendations on how to increase access. That study, finalized by the CEC in December 2016, identified the following structural barriers for low-income customers to access these programs:

- Low home ownership rates
- Complex needs, ownership, and financial arrangements for low-income multifamily housing
- Insufficient access to capital
- Building age
- Remote or underserved communities

The study also identified high costs, inefficient program delivery, lack of integration across programs, limited data, and lack of consideration for non-energy benefits (such as family health, safety, comfort, and tenant retention) in cost-

effectiveness tests as programmatic or policy challenges preventing low-income customer access to energy efficiency resources. To help the state reach the energy efficiency goals established in statute, the CEC recommended the following main strategies be implemented:

- Establish a state taskforce to coordinate all state agencies administering programs for low-income customers and disadvantaged communities to allow for collaboration, standardization, streamlining, integration, and cofunding opportunities with related federal, state, and local agencies.
- Align costs for community and onsite solar to incentivize utilities to deploy community solar in low-income and disadvantaged communities.
- Establish a partnership between CEC, CPUC, the California Department of Community Services and Development, and the California Labor and Workforce Agency – along with other stakeholders – to strategize and track the progress of workforce, community, and clean energy goals.
- Continue to develop a series of energy upgrade financing pilot programs to evaluate ways to improve access and participation of low-income customers.
- Require common metrics and data collection/use across programs.

The report also outlined in more detail the research that informed those recommendations as well as additional recommendations that could improve access. The CEC is currently working with other agencies and stakeholders to implement the findings of the SB 350 barriers study.

ABOUT THE INTEGRATED RESOURCE PLAN

In addition to increasing the RPS target, SB 350 created Integrated Resource Plan (IRP) requirements for load-serving entities (LSEs), except for small electric cooperatives, but includes investor-owned utilities (IOUs), publicly owned utilities (POUs), CCAs, and energy service providers (ESPs) to meet targets that contribute to California's economy-wide GHG emissions reductions goals. The IRP process requires the CPUC to identify a portfolio of resources for electricity procurement that provides optimal integration of renewable energy in a cost-effective manner, and minimize impacts on ratepayer's bills. The identification of this portfolio is intended to guide LSEs' IRPs, which help ensure that utilities meet GHG reduction targets for the electricity sector. The reference system plan is a guide – not a mandate. The CPUC adopted a GHG reduction goal of 42 million metric tons by 2030. To meet this target, the CPUC identified specific procurements for LSEs, noted in the IRP reference system plan.

The CPUC recently issued a ruling (CPUC Decision 18-02-018) on February 8, 2018 providing updated GHG emission benchmarks to guide LSE planning towards the IRP filing deadline on August 1st of this year. The ruling outlines the Reference System Plan, which establishes the following requirements for the LSE IRPs:

- Meet the greenhouse gas emissions reduction targets established by ARB based on RESOLVE modeling done by CPUC.
- Procure at least 50 percent eligible renewable energy resources by December 31, 2030 pursuant to SB 350.
- Enable each electrical corporation to fulfill its obligation to serve its customers at just and reasonable rates.
- Minimize impacts on ratepayers' bills.
- Ensure system and local reliability.
- Strengthen the diversity, sustainability, and resilience of the bulk transmission and distribution systems, and local communities.
- Enhance distribution systems and demand-side energy management.
- Minimize localized air pollutants and other greenhouse gas emissions, with early priority for disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code.

Retail sellers are currently working on the first IRP submission, due August 1, 2018. The CPUC will aggregate those IRP submissions to issue a Preferred System Plan by the end of 2018. The IRPs filed by individual LSEs will enable

the CPUC to determine whether California is on track to meet its 2030 GHG reduction target with a diverse and balanced mix of resources. The IRPs will be updated every two years, along with the modeling that establishes the greenhouse gas emissions reduction targets.

MECHANISMS TO TRACK GHGs

In an effort to better track power purchases and related impacts, SB 1305 (Chapter 796, Statutes of 1997) established the Power Source Disclosure program to be administered by the California Energy Commission (CEC). This program requires every supplier of electricity to report via a Power Content Label the fuel type used to produce electricity and identify which renewable resources were procured. An sample of the requirements for the Power Content Label is illustrated below.

2016 POWER CONTENT LABEL		
Sample		
ENERGY RESOURCES	Power Mix	2016 CA Power Mix**
Eligible Renewables	34%	25%
Biomass & biowaste	6%	2%
Geothermal	5%	4%
Eligible hydroelectric	4%	2%
Solar	12%	8%
Wind	7%	9%
Coal	11%	4%
Large Hydroelectric	8%	10%
Natural Gas	35%	37%
Nuclear	0%	9%
Other	0%	0%
Unspecified sources of power*	12%	15%
TOTAL	100%	100%
<p>* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.</p> <p>** Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year.</p>		
For specific information about this electricity product, contact:	Sample 555-555-5555	
For general information about the Power Content Label, please visit:	http://www.energy.ca.gov/pcl/	
For additional questions, please contact the California Energy Commission at:	844-454-2906 psdprogram@energy.ca.gov	

AB 162 (Chapter 313, Statutes of 2009) amended that program to allow for “unspecified sources of power” – defined as electricity generated that is not traceable to specific generation sources – to be included in those disclosures. These purchases are often to fulfill demand needs that can’t be met through long-term contracts. ARB is responsible for

accounting for greenhouse gas emissions associated with all electricity consumed in California, however cannot determine the emissions from unspecified purchases since the source or sources of that power is unknown to CAISO. In 2015 approximately 14 percent of California’s power was from “unspecified” sources as identified in statute. Most recently, AB 1110 (Chapter 656, Statutes of 2016) added greenhouse gas emissions intensity to the disclosures.

The California Independent Systems Operator (CAISO) manages the flow of electricity for 80 percent of California’s grid and a small part of Nevada’s grid. The goal is to ensure equal access and energy reliability. Utilities own transmission infrastructure, but CAISO controls the routing of electrons by matching buyers and sellers of electricity. CAISO also administers the Western Energy Imbalance Market (EIM) to conduct bulk power trading to help match the lowest-cost energy to real-time demand. The EIM works within a larger geographic footprint than CAISO, with participants in the states of Oregon, Washington, Idaho, Nevada, Arizona, Utah, and Wyoming as well as part of Canada. Most of the EIM power on the grid counts as “unspecified,” resulting in emissions tracking and crediting challenges at ARB.

CURRENT CHALLENGES AND OPPORTUNITIES IN THE ELECTRIC SECTOR

Currently, the electricity sector landscape is experiencing some major shifts and changes, These changes include the increased migration of energy load from investor owned utilities to Community Choice Aggregators, increases in intermittent renewable resources (including wind and solar), retirement of natural gas power plants due to once-through-cooling regulations, other policies and changing market conditions, the recent and pending retirement of nuclear plants, and threats from the federal government to potentially undermine California’s climate-related policies, to name a few. Taken together, these changes present both challenges and opportunities to California’s efforts to reduce and track greenhouse gas emissions in the electricity sector, while maintaining reliability and affordability. Shifting customer energy loads, new requirements for resource planning and procurement, and ambitious climate goals warrant an examination of California’s electric grid, the data the state collects on emissions, and how load-serving entities plan to work with project developers and state agencies to bring new renewables online.

DISCUSSION QUESTIONS

This joint informational hearing will provide committee members an opportunity to hear perspectives from state agencies, retail sellers of electricity, and stakeholders regarding efforts to decarbonize the electric grid. Panelists will provide short presentations and then be available for questions and discussion from committee members. Public comment will follow the final panel.

Potential questions for panelists:

- What are the barriers to tracking greenhouse gas emissions from our electricity procurement?
- How are current changes in energy procurement creating challenges and opportunities?
- What are the opportunities and challenges to getting new renewable energy projects online?