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<th><strong>Docket Number:</strong></th>
<th>19-SB-100</th>
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<tr>
<td><strong>Project Title:</strong></td>
<td>SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future</td>
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<td><strong>Document Title:</strong></td>
<td>SB 100 Report Central Valley Scoping Workshop</td>
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<tr>
<td><strong>Description:</strong></td>
<td>Presentations by Carey Bylin (California Air Resources Board), Simon Baker (California Public Utilities Commission), and Siva Gunda (California Energy Commission)</td>
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<td><strong>Filer:</strong></td>
<td>Jann Mitchell</td>
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<td><strong>Organization:</strong></td>
<td>California Energy Commission</td>
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<td>Commission Staff</td>
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Agenda

Opening Video
“Leading the Way to California’s Clean Energy Future”

Welcome and Opening Comments

Agency Presentations
• CARB: California’s Climate Strategy and Carbon Neutrality
• CPUC: California Clean Electricity Programs Overview
• CEC: SB100 Joint Agency Report Process and Implementation

Stakeholder Presentations
• Mayor Rey León, City of Huron
• Brad Koehn, Turlock Irrigation District
• Leslie Martinez, Leadership Counsel for Justice & Accountability

Public Comment

Closing Remarks
California’s Climate Strategy and Carbon Neutrality

Carey Bylin
California Air Resources Board
September 30, 2019
California’s GHG Emissions Reduction Targets

**Source:** CARB, 2018

**Total GHG Emissions (MMTCO₂e)**

- **1990**
- **2020**
- **2030**
- **2050**

**Emissions to be reduced by 2020**
- 431 MMTCO₂e

**Additional reductions by 2030**
- 260 MMTCO₂e

**Additional reductions by 2050**
- 86 MMTCO₂e

**2020 Target**
- 431 MMTCO₂e

**2030 Target**
- 260 MMTCO₂e

**2050 Goal**
- 86 MMTCO₂e

**MMT = Million Metric Tons**

**Note:** MMT = Million Metric Tons

Source: CARB, 2018
California Trends of Emissions and Indicators

Double building efficiency

50% renewable power**

More clean, renewable fuels

Cleaner zero or near-zero emission cars, trucks, and buses

Walkable/bikeable communities with transit

Cleaner freight and goods movement

Slash potent “super-pollutants” from dairies, landfills and refrigerants

Cap emissions from transportation, industry, natural gas, and electricity

Invest in communities to reduce emissions

Protect and manage natural and working lands

**In 2018, SB 100 increased the Renewables Portfolio Standard to 60% by 2030
Transportation Remains a Key Focus

- In 2017, California was home to
  - Nearly 50% of all ZEVs sold in the U.S.
  - A total diesel blend that includes 18% biomass-based fuel
  - 75% of U.S. venture capital investment in clean transportation

Low Carbon Transportation Program Investments

- Clean Vehicle Rebate Program (CVRP)
- Clean Vehicle Assistance Program
- Transportation Equity Projects to Increase Access
- Clean Truck and Bus Voucher Incentive Project
- Freight projects: demonstrations and early commercial pilots for clean engines and facilities
Framing the Path Forward

Some regions are net emitters; others are sinks

Carbon Neutrality by 2045

Reduce fossil energy and NWL emissions; evaluate potential sinks

IPCC Report – Carbon neutrality by 2045 may hold global warming to 1.5°C
California Carbon Neutrality (CO$_2$e)

**Today**
- AB 32 GHG Inventory
- Conversion
  - Natural & Working Lands Inventory

**Mid-century**
- Minimize emissions
- Transition from source to sink

Both categories emit GHGs

No net GHG emissions
2019 Engagement

- Technical workshops to explore topic areas on achieving carbon neutrality
  - Energy demand and supply
  - Transformation across economic sectors (i.e., transportation, industrial)
  - Options and support for sequestration activities

- Continued collaboration
  - State and local agencies
  - Academics and researchers
  - International partners
Scoping Plan Supporting Efforts

- Inter-agency Projects
  - SB100 Joint Report to Legislature
  - AB 74 Studies on Vehicle Emissions and Fossil Fuel Demand and Supply
Thank You

- Climate Change Scoping Plan
  - https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm

- Carbon Neutrality Workshops
  - https://ww3.arb.ca.gov/cc/scopingplan/meetings/meetings.htm
California Clean Electricity Programs Overview

Simon Baker
California Public Utilities Commission
September 30, 2019
Climate Change Mitigation in California’s Electricity Sector

Programs

- Energy efficiency
- Rooftop solar
- Renewable energy (RPS)
- Building electrification
- Transportation electrification
- Research & development

Program Domains

Customer

- Residential 94,799 (33%)
- Commercial 106,006 (37%)
- Manufacturing 41,736 (15%)
- Agricultural 18,712 (7%)
- Mining 9,302 (3%)
- TCU* 15,526 (5%)
- Street Lighting 1,384 (0%)

Energy Efficiency: 2,485 (Residential)
Electric Vehicles: 15

Grid

- Residential
- Commercial
- Manufacturing
- Agricultural
- Mining
- TCU*
- Street Lighting

*Transportation, Communications & Utilities

Source: California Energy Commission, 2018 IEPR Update, Mid Demand Forecast
Energy efficiency + rooftop solar driving down the demand curve

Per Capita Sales of Electricity

Electricity Consumption per capita (kWh)


1. Building + appliance standards
2. Incentive programs
3. Decoupling

California United States
Growth in Customer-Sited Solar PV Installations Statewide in California

Number of Installed BTM PV Systems in California (Through June 2019)

California Solar Initiative (CSI) rebates end
• Achieves the Commission-adopted electric sector GHG planning target of 42 million metric tons by 2030
• Contains ~12,000 megawatts of new renewable and storage resources by 2030
Building Electrification Programs & Proceedings

• Senate Bill 1477 (Stern, 2018)
  - CPUC Building Decarbonization proceeding
• San Joaquin Valley Pilots
• “Fuel substitution” test
• Self Generation Incentive Program
• Assembly Bill 3232
• Zero emission buildings goal

Illustration of heat pump “mini-split” heating and AC system.
Transportation Electrification (TE) Investments & Programs

- Investor-owned utility ratepayer investments (CPUC)
  - ~$1B authorized
  - ~$800M under review

- $100M annually for Clean Transportation Program (CEC)

- CCI Low Carbon Transportation Program (CARB)
  - $1.7B in through FY 2018-19
  - Additional $485M in 2019-20
  - Over 80 percent has supported TE
Electric Program Investment Charge (EPIC)
Research & Development - Overview

• CPUC established in 2011, funded by utility customers
  o Funded at $555M for 2018-2020 investment period

• Administered by the CEC (80% of funds), PG&E, SCE, and SDG&E (together, 20% of funds)

• Program areas
  o Applied Research and Development (CEC only)
  o Technology Demonstration and Deployment (CEC + IOUs)
  o Market Facilitation (CEC only)

• CEC Focal Areas: renewable, efficiency, grid-scale storage, resilience & reliability, climate science & adaptation, innovation.
Programs and Initiatives in Disadvantaged Communities (DACs)

• SB 350 Barriers Report
  o CEC Energy Equity Indicators
• CPUC and CEC SB 350 Disadvantaged Communities Advisory Group
• Bill assistance programs
• Weatherization programs
• Solar programs
• Budget “carve-outs” — Various programs
• CPUC Environmental and Social Justice Action Plan
SB100 Joint Agency Report
Process and Implementation

Siva Gunda
California Energy Commission
September 30, 2019
It is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045.
In consultation with CA balancing authorities, through a public process, issue a joint agency report by January 1, 2021 and at least every four years after that includes:

• **Review of the policy** focusing on: technologies, forecasts, then-existing transmission, and maintain safety, environmental and public safety protection, affordability, and system/local reliability

• Evaluation identifying potential **benefits and impacts on system/local reliability**

• Evaluation identifying the nature of any **anticipated financial cost and benefits** to electric, gas, and water utilities, including customer rate impacts and benefits

• **Barriers and benefits** of achieving the policy

• **Alternative scenarios** to achieve the policy with estimated cost and benefits
Joint Agency Report Goals

- Meet the joint agency report statutory requirements
- Provide direction to the electricity market
- Coordinate the planning processes of the State Agencies
- Form consensus on interpretation of statute
  - e.g. definition of “zero-carbon resources”
Interagency Coordination

CPUC
Principal: Commissioner Randolph
IRP Analytical Work
Collaborate on report

CEC
Principal: Chair Hochschild
Hosting docket
Lead collaborative report

CARB
Principal: Chair Nichols
Economy-Wide View on Carbon Neutrality
Collaborate on report

Workshops and Stakeholder Input
SB 100 Report
Timeline

Fall 2019: Scoping Workshops
Spring 2020: Finish SB 100 workshops/feedback from stakeholders
Summer 2020: Draft report available for comment
Fall 2020: Approval by CEC, CPUC, CARB
By January 1, 2021: Submit report to the Legislature
Workshop Topics

• Scoping Workshops Sept/Oct 2019

• Tentative SB 100 Workshop Topics Fall 2019-Spring 2020
  • Scenarios and Technologies for a Clean Energy Future
  • Electricity System Modeling
  • Affordability
  • Equity
  • Environmental Protection
  • Infrastructure and System Management Needs
  • Reliability Needs
  • System Resilience

• Additional feedback from workshops in other proceedings
SB 100: RPS and Zero Carbon Resources

RPS-eligible
- Solar
- Wind
- Geothermal
- Small Hydro
- RPS Biomass

Zero Carbon (Under Consideration)
- Existing Contracts
  - Large Hydro
  - Nuclear

Comments to date
- “Don’t be prescriptive”
- “Maximize optionality”
- “Be technology inclusive”
SB 100 Questions for Consideration

• How should the SB 100 report approach and address system and local reliability?
  
  o What key factors should be considered?
SB 100 Questions for Consideration

• How should issues around equity (environmental, economic, social) and affordability be addressed?

• How should land use planning issues be considered?
Submit Comments to Docket 19-SB-100
SB 100 Website

- Events
- Related Links
- Subscribe to Listserv
- Submit comments

https://www.energy.ca.gov/programs-and-topics/topics/renewable-energy/joint-agency-report-sb-100

Joint-Agency Report - SB 100

SB 100 Website
• Events
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Joint-Agency Report - SB 100

Senate Bill 100 (SB 100) established a landmark policy requiring renewable energy and zero-emission resources supply 100 percent of electric retail sales to end-use customers by 2045. It requires the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and California Air Resources Board (CARB) to produce this report.

Under this policy, the California’s renewable energy and zero-emission resources supply 100 percent of electric retail sales to end-use customers by 2045. The policy requires the transition to a net-zero electricity system does not cause an offset to increases in greenhouse gas emission levels that were occurring before the transition.

SB 100 requires the CEC, CPUC, and CARB to complete a joint-agency report by the legislature evaluating the 100 percent renewable electricity policy, all relevant facts, and recommendations for further steps. The report will be submitted using a tabular process and qualitative and quantitative analyses to address the requirements and intent of the legislature.

In consultation with all California’s regulatory authorities as part of a public process, the three agencies will update a report to the legislature before January 1, 2021, and at least every four years afterward. The report may include:

1. A description of the 100 percent parameter, described by its economic, environmental, and social benefits and costs, and the need for a coordinated approach.
2. An evaluation of the potential benefits and impacts of the policy.
3. An evaluation of the potential benefits and impacts of the policy.
4. An evaluation of the potential benefits and impacts of the policy.
5. An evaluation of the potential benefits and impacts of the policy.
6. An evaluation of the potential benefits and impacts of the policy.
7. An evaluation of the potential benefits and impacts of the policy.
8. An evaluation of the potential benefits and impacts of the policy.
10. An evaluation of the potential benefits and impacts of the policy.

EVENTS

- SB 100 Staffing: Battery and Energy Storage Systems
  - California Public Utilities Commission (CPUC) and the California Air Resources Board (CARB) to work on a plan for developing a joint-agency report to the legislature.

CATALOGUE
- Topic: Energy Policy
  - Program: Introduce Energy Policy Report - SB 100
Thank you

• Submit comments to CEC Docket 19-SB-100

• Visit the SB 100 Joint Agency Report webpage: https://www.energy.ca.gov/sb100
Mayor Rey León
City of Huron
Brad Koehn
Turlock Irrigation District
Leslie Martinez

Leadership Counsel for Justice & Accountability