Outline

• Background
• The Report Card – what it is
• The Report Card – how it comes about
• What Else?
California GHG Emissions, 2013
459.3 million metric tons CO2-equivalent

- Industrial, 92.7
- Transportation: 168.4
- Electric power: In-state, 39.7
- Electric power: Imported, 40.0
- Agriculture, 36.2
- Recycling and Waste, 8.9
- High GWP, 18.5
- Commercial and Residential, 43.5
Executive Order S-05-03 (2005)

• Promulgated GHG targets for California:
  – Back to 2000 levels by 2010
  – Back to 1990 levels by 2020
  – 80 percent below 1990 levels by 2050

• Established Climate Action Team
  – Coordination of State efforts
  – Chaired by CalEPA Secretary
  – Staffed by CalEPA Climate Unit

- Assembly Bill 32. Nuñez and Pavley, Chapter 488, Statutes of 2006
- Established a GHG target for 2020: get back to 1990 emissions
- CARB to adopt a Scoping Plan by the end of 2008
SB 85 (2007) mandates the Report Card

• Senate Bill 85. Committee on Budget and Fiscal Review, Chapter 178, Statutes of 2007
• 1.5 out of 21 pages describes the Report Card
  – Agencies report list of measures and reductions by Oct 1
  – CalEPA posts report on the Internet by Jan 1
  – Audits every three years (never happened)
The 2008 Scoping Plan

• Required by AB 32, the Global Warming Solutions Act of 2006
• Plan by CARB for reducing emissions to reach 2020 target
• Main document plus Appendices A-J
• Adopted by ARB in late 2008
• Contains 73 measures, of which one is a cap-and-trade program
Major GHG Regulations

- Low-Carbon Fuel Standard
- Renewable Portfolio Standard
- Energy Efficiency
- High Global Warming Potential
- Advanced Clean Cars
- Sustainable Communities Strategies
- Cap and Trade
- All Others
California Trends since 2000

<table>
<thead>
<tr>
<th>Metric</th>
<th>Associated 2013 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>2.05 trillion (2009 $)</td>
</tr>
<tr>
<td>Population</td>
<td>38.2 million</td>
</tr>
<tr>
<td>GHG Emissions</td>
<td>459.3 MMTCO$_2$e</td>
</tr>
<tr>
<td>GHG Emissions per Capita</td>
<td>12 metric tons CO$_2$e per person</td>
</tr>
<tr>
<td>GHG Emissions per GDP</td>
<td>224 metric tons CO$_2$e per million dollars</td>
</tr>
</tbody>
</table>
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• Background
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Table 1

- Ongoing measures and related GHG emission reductions
- Columns
  - Agency, program title
  - Description of measure
  - Emission reductions in last two years
- Implemented as an Excel file
  - Each agency has its own worksheet
  - Less confusing than a Word file with table
<table>
<thead>
<tr>
<th>California Energy Commission Program Title</th>
<th>Description of Measures</th>
<th>Emission Reductions, MMTCO₂eq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliance Efficiency Standards</td>
<td>The Appliance Efficiency Regulations increase efficiency of appliances sold to California consumers and businesses. Emission reductions result from energy-efficient appliances consuming less electricity and natural gas, avoiding emissions associated with electricity generation and natural gas combustion. Using the California Energy Demand (CED) 2013 final forecast and 2007 as a base year, cumulative electricity savings for 2008 through 2013 was 6,665 GWh. 1 Electricity savings in 2014 was estimated to be 2,382 GWh. Natural gas savings between 2008 and 2014 was estimated to be 177 million therms. 2</td>
<td>3.0 3.9</td>
</tr>
<tr>
<td>Building Energy Efficiency Standards</td>
<td>The Building Energy Efficiency Standards are designed to increase the efficiency of all newly constructed residential and nonresidential buildings and additions and alterations to existing buildings in California. The strategy is to develop, implement, and enforce standards that require and result in reductions in energy and water use in buildings. Using the CED 2013 final forecast and 2007 as a base year, cumulative electricity savings for 2008 through 2013 was 2,781 GWh. Electricity savings in 2014 was estimated to be 765 GWh. Natural gas savings was estimated to be 54 million therms in 2014, with cumulative natural gas savings from building standards between 2008 and 2014 estimated to be 130 million therms. 2</td>
<td>1.2 1.6</td>
</tr>
<tr>
<td>Comprehensive Publicly Owned Utility Customer Energy Efficiency Programs</td>
<td>Publicly owned utilities (POU) in California have electricity efficiency (EE) programs that benefit their ratepayers. The publicly owned utilities began reporting GHG emissions reductions in 2007. Their programs achieved cumulative savings of 2,990 GWh between 2008 and 2013. 3 POU EE savings in 2014 was 625 GWh for 0.17 MMTCO₂eq. Seven years of POU EE savings between 2008-2014 equal 3,615 GWh for 0.97 MMTCO₂eq. All figures use a GHG factor of 565 lbs CO₂/MWh or 0.267 MTCO₂eq per MWh avoided. 2</td>
<td>0.8 1.0</td>
</tr>
</tbody>
</table>
Table 2

- GHG emission reduction strategies and expected reductions in 2020
- Columns
  - Scoping Plan Strategy Number
  - Agency and Sector
  - Name
  - Brief Description
  - Expected GHG Reductions in 2020
  - Activities since last Report Card
<table>
<thead>
<tr>
<th>RW-3 (Sub strategy listed below)</th>
<th>Agency* and Sector</th>
<th>Name</th>
<th>Brief Description</th>
<th>Expected GHG Emission Reductions in 2020 (MMTCCO2e)</th>
<th>Activities since last Report Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW-2 Sub strategy 2</td>
<td>CALRecycle</td>
<td>Mandatory Commercial Recycling Regulation</td>
<td>The commercial recycling measure focuses on increased commercial waste diversion. Commercial waste diversion in California generates roughly 75 percent of the statewide solid waste. Reductions in GHG emissions can be realized upon solid waste management by recovering recoverable recyclable materials from the commercial waste stream with the goal to remanufacture these materials, thus reducing the GHG emissions from multiple phases of product production including extraction of raw materials, processing and manufacturing. Traditional recyclables materials have significant intrinsic energy value that displaces fossil fuel energy requirements when introduced back into the manufacturing cycle. Benefits from the commercial recycling measure include avoided methane emissions from landfills by recycling any organic materials from the waste stream.</td>
<td>5.0</td>
<td>In accordance with AB 341 (Chesbro, Chapter 475, Statistics of 2011), CALRecycle revises jurisdiction annual reports to assess implementation progress, recent review of 10 jurisdictions found them in compliance. CALRecycle also promotes a climate calculator to assess the financial, climate change, and waste reduction/environmental benefits of reducing and recycling discarded materials. CALRecycle has conducted a statewide waste characterization study in 2014-15 to assess statewide goals, final report summary pending. The mandatory commercial recycling program was expanded in October 2014 when AB 1080 (Chesbro, Chapter 725, Statistics of 2011) was adopted, requiring multiple state agencies, including State Animal, to recycle their organic waste on and after April 1, 2015. CALRecycle conducted numerous workshops, revised its Enforcement Guide, and developed outreach materials and case studies in anticipation of implementation.</td>
</tr>
</tbody>
</table>
Quantification of Reductions in Table 2

• Out of 13 agencies that contributed to Table 2,
  – Agencies that have measures with quantified reductions greater than 0.1 MMT: 8
  – Agencies that report measures that only get less than 0.1 MMT each: 2
  – Agencies that do not quantify reductions: 3
Table 3

• GHG Emission Reductions Achieved
  – Based on Table 1
  – Shows subtotal for each agency
  – Shows grand total

• Agency GHG Targets for 2020
  – Based on Table 2
  – Shows subtotal for each agency
  – Shows grand total
Table 4

- Agencies’ GHG Inventory
  - Emissions from State operations
  - Reported to The Climate Registry
  - For some years, the emissions are verified

- Department of Water Resources
  - Reported emissions are large and fluctuate a lot
  - Reflects variability in hydro power, amount of water pumped, coal-fired power
### Table 4

**2015 State Greenhouse Gas Report Card**

<table>
<thead>
<tr>
<th>INVENTORY STATUS</th>
<th>Inventory Completed (CY)</th>
<th>Emissions in Metric Tons CO₂ for each year calculated</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Green indicates verified inventory</td>
</tr>
<tr>
<td>Natural Resources Agency, continued</td>
<td>Year</td>
<td>Direct</td>
<td>Indirect</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>15,716</td>
<td>15,303</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>15,175</td>
<td>14,597</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>13,567</td>
<td>9,026</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>13,223</td>
<td>6,483</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>13,783</td>
<td>8,490</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>14,447</td>
<td>8,318</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>12,660</td>
<td>8,323</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>14,048</td>
<td>4,962</td>
</tr>
</tbody>
</table>

- Dept. of Fish & Wildlife

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>14,269</td>
<td>9,929</td>
<td>11,477</td>
<td>864,416</td>
<td>740,134</td>
<td>922,392</td>
<td>470,750</td>
<td>17,866</td>
</tr>
<tr>
<td>Indirect</td>
<td>3,226,350</td>
<td>2,400,211</td>
<td>2,025,807</td>
<td>1,167,503</td>
<td>1,212,373</td>
<td>1,228,355</td>
<td>783,861</td>
<td>421,778</td>
</tr>
<tr>
<td>Total</td>
<td>3,240,549</td>
<td>2,410,140</td>
<td>2,037,284</td>
<td>2,021,919</td>
<td>1,352,807</td>
<td>2,158,357</td>
<td>1,254,591</td>
<td>451,644</td>
</tr>
</tbody>
</table>

DWR re-verified 2010-2013 inventories after the Verifier agreed to take into account the environmental attributes of renewable energy generation resulting in lower GHG emissions. 2014 inventory is in the process of being verified.
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Engage State Agencies

• In early September, send email to:
  – Management at 14 agencies
  – 17 other staff at those agencies
• Obtain contributions by early October
• Interact with agencies if necessary
  – Table 2, confusion between Brief Description and Activities since last report card
  – Table 2, Brief Description not brief
Assemble the Report Card

• Insert agency contributions into Excel files for Tables 1 and 2

• Make the Report look presentable
  – Page Break Preview is a big help!
  – Revamp of Table 2 for 2016
  – Convert to PDF, print out, inspect

• Get review by CalEPA management

• Put on Climate Action team website in early January
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California’s 2030 Goal

• The goal: 40 percent emission reduction below 1990 levels by 2030
• Proposed “5 Pillars” to achieve this goal

- 50% RENEWABLE ELECTRICITY
- 50% REDUCTION IN PETROLEUM
- DOUBLE ENERGY EFFICIENCY SAVINGS AT EXISTING BUILDINGS
- PROTECTING ECOSYSTEMS
- REDUCE SHORT-LIVED CLIMATE POLLUTANTS
Reports Relating to GHG Reduction

• The 2008 Scoping Plan
  – http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm

• The 2013 Scoping Plan Update
Other Climate-related Reports

• Environmental Goals and Policy Report
  – http://www.opr.ca.gov/s_egpr.php

• Safeguarding California
  – http://resources.ca.gov/climate/safeguarding/

• Climate Action Team Reports
  – http://climatechange.ca.gov/climate_action_team/reports/index.html
Links

• Climate Change Portal
  – http://climatechange.ca.gov/

• Climate Action Team
  – http://www.climatechange.ca.gov/climate_action_team/index.html
Contact Information

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  916-445-0039
Questions?