

# State Agency Greenhouse Gas Reduction Report Card

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## **Background**

Under Section 12892 of Part 2.5 of Division 3 of Title 2 of the Government Code (as set forth in AB 1338, 2008), the California Environmental Protection Agency (Cal/EPA) is required to prepare an annual report describing state agency actions to reduce greenhouse gas (GHG) emissions. Cal/EPA is required to compile and organize this information in the form of a 'Report Card' and post it on the Cal/EPA website. The Report Card must include:

- A list of those measures that have been adopted and implemented by the state agency with the actual GHG emissions reduced as a result of these measures.
- A list and timetable for adoption of any additional measures needed to meet GHG emission reduction targets.
- A comparison of the reductions from actions taken or proposed to be taken by a state agency to that agency's GHG emission reduction targets.
- An estimate of the greenhouse gas emissions from each agency's own operations and activities.

## **Climate Change Report Card Tables**

The required information is organized into four tables as described below:

### TABLE 1: On-going Measures and Reductions in 2010:

A number of GHG emission reduction measures are already in place and operational. The emission reductions achieved by these measures in calendar year 2010, as reported to Cal/EPA by the responsible agencies, are shown in Table 1.

### TABLE 2: GHG Reduction Strategies, and Timelines for Implementation:

Strategies and measures that they will be implemented over the next few years are included in Table 2 along with the expected GHG reduction from each, and the timeframe for completion.

The timeframes noted in Table 2 reflect current estimates based on the work to date. Where the timetable indicates "To Be Determined (TBD)", work on the measure is in preliminary stages. Measures described as "on-going" have already begun but either the final completion dates are still to be determined, or they are programs being implemented on a continuous basis. Future Report Cards will update these completion dates as implementation efforts mature.

There are several factors to consider regarding the reported GHG emission reductions in Table 2. There are a number of strategies with cross-agency implementation responsibilities. The individual agency reduction targets for these strategies will be better refined as implementation actions progress. The total reduction for these measures may be listed twice in some cases to reflect that each agency is responsible for some portion of the reductions. There are also several individual measures for which there are

interacting impacts so that the reduction numbers from each are not strictly additive (as recognized and explained in the AB 32 Scoping Plan). Also, there are a number of agency efforts which are not reflected in the AB32 Scoping Plan, several of which have emission reductions which are reported as “TBD”.

TABLE 3: GHG Reduction Target Comparison:

Table 3 summarizes the reductions shown in Tables 1 and 2, and compares the 2020 goals from Table 2 with the annual reductions from current programs shown in Table 1. Reductions shown are only those achieved within California during the given year. The annual figures are not cumulative and do not reflect reductions that might occur out-of-state.

TABLE 4: Climate Action Team (CAT) – GHG Inventory Status:

Each CAT agency is required to report an estimate of the greenhouse gas emissions from their own operations and activities. Table 4 lists the CAT agencies, boards, departments and commissions, and the current status of the greenhouse gas inventory activities for each. The information in this Table was provided to CalEPA by the named agency or department.

The GHG inventories are conducted using protocols established by the California Climate Action Registry (CCAR) or The Climate Registry (TCR). Inventories identified as ‘verified’ have been verified by an approved third party and submitted to the respective registry.

The verified inventory reports can be found on the registries’ websites:

(<https://www.climateregistry.org/CARROT/public/reports.aspx> or

<http://www.theclimateregistry.org/public-reports>.)

The data that have not yet been verified are included in this report to indicate the current status of the inventory activities. These data are not final and may change during the process of verification.

*Abbreviations:*

ARB – Air Resources Board

BTH – Business, Transportation & Housing

CalFIRE – California Department of Forestry & Fire Protection

CDFA – California Department of Food & Agriculture

CEC – California Energy Commission

CalRecycle – California Department of Resources Recycling and Recovery

CPUC – California Public Utilities Commission

DWR – Department of Water Resources

MMTCO<sub>2</sub>E - Million Metric Tons of CO<sub>2</sub> Equivalent

OPR – Office of Planning and Research

SCSA – State Consumer Services Agency

SWRCB – State Water Resources Control Board

**Table 1: Ongoing Measures and Related GHG Emission Reductions**

Agency Program Title	Description of Measures	2009 Emission Reductions, MMT <sub>CO<sub>2</sub>E</sub> *	2010 Emission Reductions, MMT <sub>CO<sub>2</sub>E</sub> *
<b>California Air Resources Board</b> Pavley (AB 1493)	This regulation sets fleet-average GHG standards for new passenger vehicles, phasing in over 2009-2016. The emission reductions increase to 26 MMT <sub>CO<sub>2</sub></sub> in 2020 as the GHG standards are fully implemented.	<0.1	0.5
<b>California Air Resources Board</b> Diesel Anti-Idling	This Air Toxic Control Measure limits general idling of all commercial and publicly owned diesel-fueled vehicles with a gross vehicle weight of greater than 10,000 pounds. This regulation reduces diesel particulate matter and also reduces the amount of diesel fuel used in California, saving 50 million gallons per year. Each gallon saved reduces climate change emissions by 0.01005 metric tons of CO <sub>2</sub> (MTCO <sub>2</sub> ).	0.5	0.5
<b>California Air Resources Board</b> Tire Pressure Program	This strategy requires specified automobile servicing businesses to ensure proper tire inflation at the time of service, as well as public education about proper tire inflation. Because the regulation became effective September 1, 2010, implementation was gradual until end of 2010. Reductions for 2010, therefore, could not be estimated.	**	**
<b>California Air Resources Board</b> Goods Movement (Drayage Trucks)	This regulation requires the reduction of GHG, diesel PM, and NOx emissions from drayage trucks operating at, or transporting cargos to or from, California's ports and intermodal rail yards through retrofits, and fleet turnover of pre-1994 trucks. Staff estimates 100,000 MTCO <sub>2</sub> e reductions in 2010 based on difference in fuel economy between pre-1994 and newer engines, and population published in ARB 2007 staff report.	**	0.1

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>California Air Resources Board</b> Ship Electrification	This regulation requires most container, passenger, and refrigerated cargo ships to shut off their auxiliary engines while at dock and receive power from the electrical grid, or reduce their emissions by a similar amount via the implementation of other technologies. Staff estimates 2,400 MTCO <sub>2</sub> e reductions in 2010	**	<0.1
<b>BT&amp;H / Caltrans</b> Cement Standards	The new Caltrans specifications for concrete provide for the replacement of a certain amount of cement in concrete with supplementary cementitious materials and pure limestone. The CO <sub>2</sub> emission reduction estimate includes both domestic and imported cement, which are not differentiated here for the purpose of GHG emission calculations. With slowing economy, a significant reduction in cement production is observed within California. Annual cement production in has reduced to half in 2010 (about 6 MMT) of what it was in 2006 (about 12 MMT). In addition, the measures introduced in 2009 to reduce cement consumption are still on going on Caltrans projects. Moreover, cement specifications now allow up to 5% limestone replacement increasing overall reduction in GHG.	0.1	0.1
<b>BT&amp;H / Caltrans</b> Alternative Fuel Usage and Carbon Reduction	The Caltrans Fleet Greening Program began as a five-year plan in August 2000 to reduce emissions from the Caltrans fleet, stay ahead of emerging regulations, and set the example for the use of emerging, clean air technologies. Today the Director's policy continues to promote an efficient fleet mix and use of efficient, low emission vehicles to lower Caltrans' use of petroleum as well as reduce emissions of criteria air pollutants and greenhouse gases. Through a combination of regulation compliance, state purchasing policies, and innovative demonstrations we've implemented, for example, hybrid passenger vehicles, solar-powered equipment, propane-fueled vehicles, low dust street sweepers, diesel particulate filters on heavy-duty, diesel-powered vehicles, two hydrogen demonstration vehicles, and an E-85 fuel ethanol demonstration project.	<0.1	<0.1

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<p><b>CAL FIRE</b> (various programs)</p> <p>- Forest Practices</p> <p>- Urban Forestry</p> <p>- Forest Legacy</p>	<p><b>Sustainable Forests:</b> Existing state and federal regulations and assistance programs. Recent research shows California forests increasing in growing stock<sup>1</sup> and likely sequestering more than 5.0 MMTCO<sub>2</sub>e per year.<sup>2</sup> CAL FIRE, federal and other known state forest sector activities contributing to current sequestration rates include the following measures.</p> <p><u>Conservation Forest Management Strategy benefits:</u> Annual benefit from California Forest Practice Act rule changes instituted in December 2004 equals 2.2 MMT.<sup>3</sup></p> <p><u>Urban Forestry Strategy benefits:</u> CAL FIRE funded planting of 11,467 trees in 2010 for a cumulative total of 39,164 trees since 2005 resulting in annual benefits of 0.0005 MMT GHG reductions.<sup>4</sup> Annual sequestration is based on cumulative numbers of trees since sequestration increases over time as trees mature. Educational programs enhance effectiveness of voluntary tree planting by homeowners, utilities and others, but we cannot reliably track voluntary outputs at this time.</p> <p><u>Forestland Conservation Strategy benefits:</u></p> <ul style="list-style-type: none"> <li>• CAL FIRE conserved 3,268 acres in 2010 for a one time avoided conversion emission of 0.1 MMT.<sup>5</sup></li> <li>• Ongoing annual uptake benefits from conservation purchases by other agencies in 2005-2007 total 0.02 MMT<sup>6</sup>. CAL FIRE has not tracked subsequent conservation purchases.</li> </ul>	<p>Total = 2.3</p> <p>2.2</p> <p>&lt;0.1</p> <p>0.1</p>	<p>Total = 2.3</p> <p>2.2</p> <p>&lt;0.1</p> <p>0.1</p>

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
-Vegetation Management Program (VMP)	<p><u>Fuels Management benefits:</u>            CAL FIRE conducted fuel reduction on 11,487 acres using mechanical or manual treatments and 6,053 acres using prescribed burning in 2010. No reliable methodology for calculating avoided fire emissions is available at this time. Biomass is not being used for energy, thus no avoided fossil fuel benefits are being realized at this time. Not tracking fuel treatments and biomass utilization by federal agencies. CAL FIRE is revising its Vegetation Treatment Program EIR and will conduct a more detailed analysis of fuel treatment emissions.<sup>7</sup></p>	< 0.1	**
- California Forest Improvement Program (CFIP)	<p><u>Reforestation benefits:</u></p> <ul style="list-style-type: none"> <li>o CA Forest Improvement Program (CFIP) had no funding for tree planting in 2010. Annual sequestration from cumulative acres planted since 2005 are still negligible, since methodology assumes near-term emissions from site preparation treatment. Methodology likely underestimates benefits for reforestation projects conducted immediately after wildfires, however, and should be revisited.<sup>8</sup></li> <li>o Actions by non-state CAL FIRE partners: USFS planting of about 8,600 acres in 2007 and 2008.<sup>9</sup> CAL FIRE has not tracked subsequent USFS reforestation.</li> </ul>	0	0
Other Forest Sector Programs	<p><b><i>Additional Forest Sector Opportunities (stretch target)</i></b></p> <p><u>Voluntary carbon projects and markets</u></p> <ul style="list-style-type: none"> <li>o Private forest carbon projects continue to be registered with the Climate Action Reserve, though CAL FIRE is not funded to track these at this time.</li> </ul>	**	**

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>California Department of Water Resources</b> End Use Water Conservation & Efficiency	<p>In 2009, DWR, in cooperation with other State agencies, released the final report of the "20X2020" Water Conservation Program, which established the baselines and targets for reducing statewide per capita urban water use by 20% by the year 2020. This program was later supplemented by the SBX7-7 Water Conservation Act of 2009, which includes water conservation and water use efficiency for both urban and agricultural water uses. The Department is also evaluating quantitatively the water savings/energy savings/GHG emission reductions in our previously funded projects. New Proposal Solicitation Packages will include specific requirements for quantifying these same savings and reductions. In 2010, the Department's Integrated Regional Water Management grant program adopted a climate change standard which includes consideration of water-related GHG emissions. Also in 2010, the Urban Water Management Plan guidelines were revised to recommend the inclusion of a climate change element that addresses the water-energy nexus.</p>	**	**
<b>California Energy Commission</b> Appliance Energy Efficiency Standards	<p>The Appliance Efficiency Regulations are designed to increase the efficiency of appliances sold or offered for sale to California consumers and businesses. Emission reductions result from energy-efficient appliances consuming less electricity and natural gas, thereby avoiding emissions associated with electricity generation and natural gas combustion appliances used by residential and non-residential customers. Estimates use a CO<sub>2</sub> emissions factor for each MWh of electricity avoided of 0.436 MTCO<sub>2</sub>.<sup>10</sup> Estimates use a CO<sub>2</sub> emissions factor for each MMBtu of natural gas combustion avoided of 0.0529 MTCO<sub>2</sub>. Using a revised electricity forecast and 2007 as a base year, cumulative electricity savings in 2009 was 2,710 GWh and 4,096 GWh in 2010. Estimates of natural gas savings from appliance standards use a 2007 baseline estimate of 0.5 million MMBtu of natural gas and then applies the same percentage reduction as electricity savings from appliances.</p>	1.2	1.8

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>California Energy Commission</b> Building Energy Efficiency Standards	<p>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 principal strategy is to develop, implement, and enforce standards that require and result in reductions in energy use in buildings. Estimates use a CO<sub>2</sub> emissions factor for each MWh of electricity avoided of 0.436 MTCO<sub>2</sub>. Estimates use a CO<sub>2</sub> emissions factor for each MMBtu of natural gas combustion avoided of 0.0529 MTCO<sub>2</sub>. Using a revised electricity forecast and 2007 as a base year, electricity savings in 2009 was 681 GWh and 1,015 GWh in 2010. Estimates of natural gas savings from building standards use a 2007 baseline estimate of 0.7 million MMBtu of natural gas and then applies the same percentage reduction as electricity savings from buildings.</p>	0.3	0.5
<b>California Energy Commission</b> Comprehensive Publicly Owned Utility Customer Energy Efficiency Programs	<p>The publicly-owned utilities in California offer primarily electricity efficiency programs to their ratepayers (one utility, City of Palo Alto, has a natural gas efficiency program). The 39 publicly owned utilities reported fiscal year GHG emissions reductions for the first time in 2007. Their programs achieved cumulative savings of 1,047 GWh in 2009 for emissions reductions of 0.46 MMTCO<sub>2</sub>E. POU cumulative reported electricity savings in 2010 was 1,569 GWh for 0.68 MMTCO<sub>2</sub>E. Calculations use 0.436 MTCO<sub>2</sub> per MWh avoided.</p>	0.5	0.7

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>State and Consumer Services Agency (SCSA)</b>	Measures and programs described below combine to total the emission reduction figure listed in the column to the right:	<0.1	<0.1
<b>SCSA</b> Green Buildings - LEED	This measure reduces GHG emissions associated with the design and construction of state buildings. During 2010, eleven new buildings totaling 855,081 sq. ft. were completed and certified under the LEED program at the level of Silver & Gold. This included six leased buildings. These buildings all exceed current Title 24 code requirements, for an estimated total reduction of 994 MTCO <sub>2</sub> . The combined reduction in electricity usage from what it would be if the buildings were designed to code is used to compute the GHG reductions.	<0.1	<0.1
<b>SCSA</b> Green Buildings – Distributed Generation	This measure reduces GHG emissions associated with the installation of clean on-site renewable generation. No solar photovoltaic projects were completed in 2010, so no reductions were reported for 2009 in this category.	0	0
<b>SCSA</b> Green Buildings – Existing State Buildings Retro-Commissioning	This measure reduces GHG emissions associated with the optimization of energy systems and improvement of environmental performance in existing buildings. No retro-commissioning activities occurred during 2010, due to budget restraints.	<0.1	0

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<p><b>SCSA</b> Right-size the State Fleet</p>	<p>This measure focuses on reducing the number of State vehicles with the goal of increasing the efficiency of vehicles, their uses and assignments. A typical effect of right-sizing is a reduction in the number of fuel inefficient vehicles in the fleet and transferring those miles driven to more fuel efficient vehicles. The Office of Fleet and Asset Management administered Executive Order S-14-09 eliminating 488 fuel inefficient vehicles from the State fleet in the second half of calendar year 2009 and saving an estimated 370 tons of CO<sub>2</sub> emissions. Throughout the 2010 calendar year another 1,953 fuel inefficient vehicles were eliminated bringing the total reduction of fuel inefficient vehicles to 2,441 (other non-operational vehicles were also eliminated but not counted in the emissions reduction calculation). It is estimated that eliminating a total of 2,441 vehicles reduced 4,700 tons of CO<sub>2</sub> emissions in 2010 (1,953 vehicles were prorated over 12 months and 488 vehicles entirely for 12 months).</p>	<0.1	<0.1
<p><b>SCSA</b> High-Performance Schools</p>	<p>The State provides incentives for high-performance schools through Prop 1D administered through the Office of Public School Construction (OPSC) and verified by the Division of the State Architect (DSA). Total 2010 reported savings result from 69 High Performance Incentive Grants issued in 2010. The estimated energy reductions associated with these projects total 340,000 MMBtu/year, which equals approximately 18,000 metric tons/year of avoided CO<sub>2</sub> emissions.</p>	<0.1	<0.1
<p><b>California Public Utilities Commission</b> California Solar Initiative</p>	<p>Senate Bill 1 established a \$3 billion rebate program to support the deployment of 3000 MW of distributed solar generation capacity statewide through 2016. The CPUC's portion of this goal and associated budget is 1,940 MW and \$2.4 billion. To calculate the avoided emissions enabled by this program, each MWh of electricity is assumed to displace energy with the following utility-specific emissions factors: 0.26 MTCO<sub>2</sub> for PG&amp;E; 0.32 MTCO<sub>2</sub> for SCE; and 0.35 MTCO<sub>2</sub> for SDG&amp;E.</p>	0.1	0.2

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>California Public Utilities Commission</b> Investor-Owned Utilities Energy Efficiency Programs	The CPUC funds energy efficiency (EE) programs through the resource procurement budgets of the utilities, as required by PU Code 454.5 (b)9.C.3 The programs developed for energy efficiency reach residential - single family, residential - multi-family, commercial, industrial, and agricultural customers of investor-owned distribution utilities. Reductions in 2010 are based on reported 2010 EE gross savings plus evaluated net savings from 2007-2008 and evaluated gross savings from 2009. Cumulative 2007-2010 savings were 9.94 million MWh of electricity and 124 million Therms of natural gas. Each MWh of electricity avoided emissions by: 0.26 MTCO <sub>2</sub> for PG&E; 0.32 MTCO <sub>2</sub> for SCE; and 0.35 MTCO <sub>2</sub> for SDG&E. <sup>11</sup> Each avoided Therm is assumed to reduce emissions by 0.00529 MTCO <sub>2</sub> , reflecting the CO <sub>2</sub> that would otherwise be emitted through the combustion of natural gas.	2.2	3.6
<b>California Public Utilities Commission</b> Renewables Portfolio Standard	The California RPS Program was established by Senate Bill (SB) 1078, and has been subsequently modified by SB 107, SB 1036 and SB 2 (1x). The RPS program is codified in Public Utilities Code Sections 399.11-399.20. Under SB 2 (1x), the RPS program administered by the Commission requires each retail seller to increase its total procurement of eligible renewable energy resources so that 33 percent of retail sales are served by eligible renewable energy resources no later than December 31, 2020. Emissions reductions in 2009 and 2010 represent the increased renewable energy procurements compared to 2007 levels. Each MWh of electricity avoided emissions by: 0.26 MTCO <sub>2</sub> for PG&E; 0.32 MTCO <sub>2</sub> for SCE; and 0.35 MTCO <sub>2</sub> for SDG&E. <sup>12</sup>	1.4	2.0

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>CalRecycle</b> Statewide Recycling	<p>This program reduces GHG emissions associated with energy-intensive material extraction and production as well as methane emission from landfills. The program reduces GHG emissions by several MMTCO<sub>2</sub>e. However, many of the reductions take place outside of California.</p> <p>In 2006 California's diversion rate was 54 percent, surpassing the goal of 50 percent. The 2007 diversion rate increased by four percentage points to 58 percent, or an additional 3.6 million tons of diversion, from the 2006 level. The 2008 diversion rate was 59%. The 2009 diversion rate was 62 to 65 percent.<sup>13</sup> The diversion rate was 63 to 65 percent in 2010.<sup>14</sup></p>	<p style="text-align: center;">**</p>	<p style="text-align: center;">**</p>

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO <sub>2</sub> E *	2010 Emission Reductions, MMTCO <sub>2</sub> E *
<b>California Department of Food and Agriculture</b>	<p>In collaboration with the Air Resource Board and the California Energy Commission, the CDFA Fertilizer Research and Education Program (FREP) is funding research to understand nitrous oxide (N<sub>2</sub>O) levels from nitrogen fertilizers added to different field crops. Research began in 2009 and is expected to be completed in 2012.</p> <p>Several research projects related to GHG reductions were funded under the 2010 SCBGP. The research focus called for projects that address specialty crop agriculture's contribution to adaptation and/or mitigation of climate change.</p> <p>Dairy systems generate significant amounts of methane from onsite waste lagoons. A dairy digester (or biogas digester) is a technology that uses dairy waste to generate and capture methane gas which is in turn used for energy production. This process results in reduced greenhouse gas emissions from dairy systems. CDFA, U.S. EPA, USDA will work with other relevant state and local agencies, as well as industry stakeholders, to address the technical, regulatory and economic barriers for a robust dairy digester sector in California.</p> <p>Biofuels (fuels from plants) have been found to release less GHG compared to fossil fuels. CDFA, in partnership with scientists at UC Davis, and with funding from the California Energy Commission Public Interest Energy Research Program, have undertaken a three-year study to evaluate the economic, beneficial environmental factors, and costs of the biofuel feedstock crops.</p>	<p>**</p>	<p>**</p>
<b>California Department of Food and Agriculture</b>	<p>CDFA's Division of Measurement Standards is responsible for evaluating fuel quality and standards in California. CDFA is an active member of the Low Carbon Fuel Standard (LCFS) Advisory Panel. Under the LCFS, alternative fuels such as hydrogen, biodiesel and electricity will be evaluated for reducing carbon dioxide GHG emissions from motor vehicles. CDFA has developed quality standards for hydrogen to be used in fuel cell vehicles.</p>	<p>**</p>	<p>**</p>

\* MMTCO<sub>2</sub>E - Million Metric Tons of CO<sub>2</sub> Equivalent

\*\* Emission Reduction not quantified.

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<sup>1</sup> Christensen, Glenn A.; Sally J. Campbell; Jeremy S. Fried, tech. eds. 2008. California's forest resources, 2001–2005: five-year Forest Inventory and Analysis report. Gen. Tech. Rep. PNW-GTR-763. Portland, OR: U.S.D.A., Forest Service, Pacific Northwest Research Station. 183 p.

<sup>2</sup> Smith, James E., and Linda S. Heath. 2008. Carbon stocks and stock changes in U.S. forests, and Appendix C. P. 65-80, C-1-C-7 in: U.S. Department of Agriculture. U.S. Agriculture and Forestry Greenhouse Gas Inventory: 1990-2005. Technical Bulletin No. 1921. Washington, DC: Office of the Chief Economist.

<sup>3</sup> CAL FIRE, Forest Conservation Management Strategy, AB 32 Scoping Plan, Appendix C, p. 166..

<sup>4</sup> Benefits estimated using methodology developed for Urban Forestry Strategy in CAT Report and AB 32 Scoping Plan.

<sup>5</sup> Benefits estimated using methodology developed for Forest Conservation Strategy in CAT Report and AB 32 Scoping Plan.

<sup>6</sup> Personal communication, DFG; Resources Agency Prop 40/50 database.

<sup>7</sup> Personal communication, CAL FIRE Vegetation Management Program.

<sup>8</sup> Benefits estimated using methodology developed for Reforestation Strategy for AB 32 Scoping Plan

<sup>9</sup> Personal communication, USFS.

<sup>10</sup> CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO<sub>2</sub>/MWh or 0.436 MTCO<sub>2</sub>/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

<sup>11</sup> CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO<sub>2</sub>/MWh or 0.436 MTCO<sub>2</sub>/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

<sup>12</sup> CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO<sub>2</sub>/MWh or 0.436 MTCO<sub>2</sub>/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

<sup>13</sup> The Disposal Measurement System Act (SB 1016) changed the way State agencies and local governments measure their progress toward meeting the statutory waste diversion mandates. The new per capita disposal and goal measurement system moves the emphasis from an estimated diversion measurement number to using an actual disposal measurement number as a factor, along with evaluating program implementation efforts. Using the per resident disposal indicator, California's "diversion rate equivalent" was 65 percent in 2009. Using the per employee disposal rate (an alternative indicator allowed in statute), produces an estimated 2009 statewide "diversion rate equivalent" of 62 percent.

<sup>14</sup> Using the per employee disposal rate (an alternative indicator allowed in statute), the estimated statewide "diversion rate equivalent" for 2010 was 65 percent. The continuing economic downturn and increased diversion program implementation likely share responsibility for the small increase in diversion from 2009 to 2010.

<sup>14</sup> Using the per employee disposal rate (an alternative indicator allowed in statute), the estimated statewide "diversion rate equivalent" for 2010 was 65 percent. The continuing economic downturn and increased diversion program implementation likely share responsibility for the small increase in diversion from 2009 to 2010.

**TABLE 2: GHG EMISSION REDUCTION STRATEGIES AND TIMELINES FOR IMPLEMENTATION**

Numbered footnotes appear at the end of the document. Notes identified with asterisks or plus signs are at the end of each agency's section.

MMTCO<sub>2</sub>E - Million Metric Tons of CO<sub>2</sub> Equivalent

Scoping Plan: Strategy Number or Chapter / Section	Agency <sup>1</sup> and Sector	Name	Implementation Timeline <sup>+++</sup>	Activities since last Report Card	Expected GHG Emission Reductions in 2020 <sup>2</sup> (MMTCO <sub>2</sub> E)	Brief Description
<b>AIR RESOURCES BOARD (ARB) STRATEGIES : NOTE:</b>						
<b>AGRICULTURAL SECTOR</b>						
A-1	ARB	Methane Capture at Large Dairies	Voluntary Measure Implementation 2017-2020	ARB collaborating with CDFA, State Water Board and other stakeholders to identify and reduce barriers to greater digester use.	1 <sup>3</sup>	This measure, developed in collaboration with CDFA, encourages voluntary installation of anaerobic digesters at large dairies to capture methane from manure. The protocol that is included in the cap-and-trade program is used to verify reductions from the digesters, once installed. This measure is also shown under those being implemented by CDFA. The GHG reduction is attributed to the CDFA totals.
<b>ELECTRICAL AND NATURAL GAS SECTOR</b>						
E-3	CPUC, CEC, ARB	Renewables Portfolio Standard (Previously called Renewable Electricity Standard)	SBX 1-2 Chapered by Secretary of State Apr-2011, Effective Dec-2011	ARB is working with CPUC and CEC on implementation.	Reduction included in CPUC totals	This measure increases the use of renewable electricity required by the Renewables Portfolio Standard (RPS). California electric utilities must obtain 33 percent of their electricity from eligible renewable energy resources by 2020.
<b>HIGH GLOBAL WARMING POTENTIAL (GWP) GASES</b>						
H-1	ARB	HFC Reduction Strategies: Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	Approved Jan-2009; Implemented Jan-2010; Phase-in complete Jan-2011	Implementing regulation.	0.2	This regulation requires a self-sealing valve on small cans of refrigerant, and a deposit and recycling program for the cans.
H-2	ARB	SF <sub>6</sub> Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	Approved Feb-2009 Implementation 2010	Implementing regulation.	< 0.1	This regulation places restrictions on nonessential end uses of SF <sub>6</sub> , where feasible alternatives are available.
H-3	ARB	High GWP Reduction in Semiconductor Manufacturing (Discrete Early Action)	Approved Feb-2009 Implementation 2012	Implementing regulation.	0.2	This regulation requires manufacturers to use process optimization, alternative chemistries, and abatement technologies in combination or separately (reduces PFCs through changing the process to use lower GWP chemicals, or installing thermal oxidizers to destroy the PFCs.)
H-4	ARB	Limit High GWP Use in Consumer Products-- Pressurized Gas Duster GWP Limit of 150 and Other Consumer Product Categories (Discrete Early Action)	Approved Jun-2008 Implementation 2010	Implementing regulation.	0.2	This regulation requires setting GWP limits on specific consumer products.
H-5	ARB	High GWP Reductions from Mobile Sources: 1) Low GWP Refrigerants for New Vehicle A/C Systems.	1) Board to consider in January 2012; implementation 2017 model year	Regulatory development.	0.8	1) Measure addresses development of low GWP refrigerants for use with the A/C systems on new vehicles. This measure has been integrated into the Advanced Clean Cars Measure.
		2) Air Conditioner Refrigerant Leak Test During Vehicle Smog check.	2) Board to consider TBD Implementation TBD	Continuing to evaluate potential regulation.		2) Proposes the addition of a refrigerant leak check on MVAC systems when the smog check is required.
		3) Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers	3) Board to consider TBD Implementation TBD	Continuing to evaluate potential regulation.		3) Addresses the recovery of refrigerants from decommissioned refrigerated shipping containers, and,
		4) Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	4) Board to consider TBD Implementation TBD	Continuing to evaluate potential regulation.		4) Enforcement of federal ban on refrigerant release during servicing or dismantling of motor vehicle air conditioning systems.

**TABLE 2: GHG EMISSION REDUCTION STRATEGIES AND TIMELINES FOR IMPLEMENTATION**

Scoping Plan: Strategy Number or Chapter / Section	Agency <sup>1</sup> and Sector	Name	Implementation Timeline <sup>+++</sup>	Activities since last Report Card	Expected GHG Emission Reductions in 2020 <sup>2</sup> (MMTCO <sub>2</sub> E)	Brief Description
H-6	ARB	High GWP Reductions from Stationary Sources: 1) SF <sub>6</sub> Emission Reductions from Gas Insulated Switchgear	Approved Feb-2010 Implementation 2011	Implementing regulation.	5.9	1) Measure to set maximum SF <sub>6</sub> emission rate for gas insulated switchgear,
		2) Foam Recovery and Destruction Program	Board to consider TBD Implementation TBD	Continuing to evaluate potential regulation.		2) Measure for the collection of foam and then either recycling or destruction of high GWP gases,
		3) High-GWP Refrigerant Management Program for Stationary Sources Refrigerant Tracking/Reporting/Repair Deposit Program	Approved Dec-2009 Implementation 2011	Implementing regulation.		3) Measure to reduce emissions of high GWP refrigerants from stationary, non-residential refrigeration equipment through leak detection and repair, system retrofit or retirement, and reporting and recordkeeping requirements. (Note: This activity was originally listed as 3a and is now considered separate from 3b, shown below.)
		4) Specifications for Commercial and Industrial Refrigeration Systems	CEC to consider in 2012-13; Implementation 2014	Working with the CEC to evaluate potential regulation.		4) Measure to reduce both direct emissions of high GWP refrigerants resulting from the design and installation and indirect emissions resulting from energy consumption of large supermarket refrigeration systems. (Note: This activity was originally listed as 3b and is now considered separate from 3, shown above.)
		5) Residential Refrigeration Early Retirement / Voluntary Program	Implementation 2013	Continued implementation.		5) ARB work with utilities to encourage recovery of high GWP materials from residential refrigerators at end of life; and,
		6) Alternative Fire Suppressants	Board to consider TBD Implementation TBD	Continuing to evaluate potential regulation.		6) Use of leakage reduction methods and/or lower GWP fire suppression agents.
H-7	ARB	Mitigation Fee on High GWP Gases	On hold.	Determined to be not feasible at this time.	5	This regulation proposes establishment of an upstream fee on high GWP gases based on their global warming potential.
<b>INDUSTRY SECTOR</b>						
I-1	ARB	Energy Efficiency and Co-Benefits Assessments for Large Industrial Sources	Approved Jul-2010 Implementation 2010	Implementing regulation. Reports due Dec. 15, 2011.	N/A	This regulation requires major industrial facilities to conduct an assessment of the potential to reduce greenhouse gas emissions, and possible co-benefits for criteria air pollutants and toxic air pollutants.
I-2	ARB	Oil and Gas Extraction GHG Emission Reduction	Measure currently on hold.	Continuing to evaluate.	0.2	This measure would require controls to minimize the venting and fugitive emissions of methane and carbon dioxide from crude oil and natural gas production, processing, and storage operations.
I-3	ARB	GHG Leak Reduction from Oil and Gas Transmission	Measure currently on hold.	Continuing to evaluate.	0.9	Replace pipelines, compressor stations, and meter and regulating stations, as well as improve maintenance and inspection requirements for valves and flanges.
I-4	ARB	Refinery Flare Recovery System Improvement	Board to consider TBD Implementation TBD	Continuing to evaluate.	0.3	This regulation proposes to minimize GHG emissions by recovering gases before they are combusted by the refinery flare. The system collects the gas, compresses it, cools it, and then sends it back to a refinery process, where the recovered gas can be used as refinery fuel gas or refinery feedstock.
I-5	ARB	Removal of Methane Exemption from Existing Refinery Regulations	Board to consider TBD Implementation TBD	Continuing to evaluate.	0.01	This regulation proposes to remove existing fugitive methane exemptions from the regulations applicable to equipment and sources employed in California's refineries.
N/A	ARB	GHG Reductions from Large Industrial Sources	Board to consider 2012 Implementation TBD	Regulatory development.	N/A	This measure would require implementation of specific cost effective, technically feasible measures identified in the industrial energy efficiency audits that would result in reductions of GHG emissions and co-pollutants.

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<b>RECYCLING AND WASTE MANAGEMENT</b>						
RW-1	ARB	Landfill Methane Control Measure (Discrete Early Action)	Approved Jun-2009 Implementation 2010	Implementing regulation.	1.5	This regulation requires enhanced control of methane emissions from municipal solid waste landfills and requires owners and operators to install gas collection and control systems at smaller and other uncontrolled landfills. Affected landfills are required to implement advanced methane monitoring requirements.
<b>TRANSPORTATION SECTOR</b>						
T-1	ARB	Pavley I and Advanced Clean Cars	Pavley I: Approved Sep-2004 Implementation 2009-2016  Advanced Clean Cars: Board to consider Jan- 2012 Implementation 2017-2020	Regulatory development.	29.9	On May 19, 2009, the Obama administration announced an agreement to enact national GHG standards for cars and light trucks. This agreement among the U.S. Environmental Protection Agency (EPA), National Highway Transportation Safety Administration (NHTSA), California, and the major auto manufacturers has several key parts. EPA and NHTSA agreed to conduct a joint rulemaking establishing a national GHG and fuel economy standard for 2012 – 2016. California amended its new passenger motor vehicle GHG emission standards for model years 2012-2016 to permit compliance based on federal GHG emission standards. The automakers agreed to drop their lawsuits. EPA granted California the requested waiver. California's program went into effect with the 2009 model year, and all parties agreed to maintain all existing authorities.  The Advanced Clean Cars Program will achieve additional GHG reductions from passenger vehicles for model years 2017-2025. This Program represents a new approach to passenger vehicles – cars and light trucks – by combining the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards known as LEVIII. The new approach also includes efforts under the Zero-Emission Vehicle Program to support and accelerate the numbers of plug-in hybrids and zero-emission vehicles in California.
T-2	ARB	Low Carbon Fuel Standard (Discrete Early Action)	Approved Apr-2009 Implementation 2010	Implementing regulation.	15	This regulation requires fuel providers in CA to ensure that the mix of fuel they sell into the CA market meets, on average, a declining standard for GHG emissions measured in CO <sub>2</sub> equivalent grams per energy unit of fuel sold.
T-3	Local Governments / ARB / CalTrans / HCD / OPR / Regional Planning Agencies	Regional Transportation-Related Greenhouse Gas Targets	Board approved targets Sep-2010; Implementation is ongoing.	Working with MPOs on Sustainable Communities Strategies.	3.0	ARB set regional passenger vehicle GHG reduction targets to implement Senate Bill 375 (Steinberg, 2008) in Sept-2010, developed a methodology to review Metropolitan Planning Organizations (MPO) sustainable communities strategy (SCS) in Jul-2011, and is reviewing MPO SCSs as regions develop them. SB 375 enhances California's ability to reach its AB 32 goals by promoting effective planning with the goal of more sustainable communities. SB 375 also establishes incentives to encourage implementation of a SCS or alternative planning strategy (APS) to meet the targets. Developers can get relief from certain environmental review requirements under the California Environmental Quality Act (CEQA) if their new residential and mixed-use projects are consistent with a region's SCS (or APS) that meets the target.
T-4	ARB	Tire Pressure Program (Discrete Early Action)	Approved Mar-2009 Implementation Sept-2010	Implementing regulation.	0.6	This strategy requires specified automobile servicing businesses to ensure proper tire inflation at the time of service, as well as public education about proper tire inflation.
T-5	ARB	Ship Electrification at Ports (Discrete Early Action)	Approved Dec-2007 Implementation 2010	Implementing regulation.	0.2	This regulation requires most container, passenger, and refrigerated cargo ships to shut off their auxiliary engines while at dock and receive power from the electrical grid, or reduce their emissions by a similar amount via the implementation of other technologies.
T-6	ARB	<u>Goods Movement Efficiency Measures:</u> 1) Port Drayage Trucks  2) Transport Refrigeration Units Cold Storage Prohibition and Energy Efficiency  3) Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification	1) Approved Dec-2007 Implementation to begin 2010  2) Board to consider TBD Implementation TBD  3) Board to consider TBD Implementation TBD	Implementing regulation.  Continuing to evaluate.  Continuing to evaluate.	3.5	1) This regulation requires the reduction of GHG, diesel PM, and NOx emissions from drayage trucks operating at California's ports and rail yards through retrofits and turnover of pre-1994 trucks.  2) Transport Refrigeration Units (TRUs) are powered by external combustion engines. More efficient engine designs and advanced cooling technologies will reduce fuel requirements and thereby reduce GHG emissions.  3) This measure proposes to require ARB to investigate and potentially develop a new measure to restrict unnecessary idling of cargo handling equipment, which would reduce fuel consumption and associated greenhouse gases, criteria pollutants, and toxic air contaminants.

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Scoping Plan: Strategy Number or Chapter / Section	Agency <sup>1</sup> and Sector	Name	Implementation Timeline <sup>***</sup>	Activities since last Report Card	Expected GHG Emission Reductions in 2020 <sup>2</sup> (MMTCO <sub>2</sub> E)	Brief Description
		4) Goods Movement System-Wide Efficiency Improvements	4) Board to consider TBD Implementation TBD	Continuing to evaluate.		4) The System-wide Efficiency Improvements measure addresses emissions from marine vessels, trucks, trains and port-support equipment. This measure entails development and implementation of strategies that provide continued progress toward a lower carbon, more sustainable freight transport system.
		5) Commercial Harbor Craft Maintenance and Design Efficiency	5) Board to consider TBD Implementation TBD	Continuing to evaluate.		5) This measure proposes to facilitate reduction of fuel consumption and associated CO2 emissions through a variety of technologies and strategies that improve vessel efficiency.
		6) Clean Ships	6) Board to consider TBD Implementation TBD	Continuing to evaluate.		6) This regulation proposes to require a reduction of fuel consumption and associated CO2 emissions through a variety of technologies and strategies, such as hull and propeller design in new ships, that improve the efficiency of ocean-going vessels.
		7) Vessel Speed Reduction	7) Board to consider TBD Implementation TBD	Continuing to evaluate.		7) This measure proposes to primarily require reduction of NOx emissions as well as diesel PM, SOx, and CO2 emissions resulting from reduced fuel consumption from speed reduction.
T-7	ARB	Heavy-Duty Vehicle GHG Emission Reduction Measure (Aerodynamic Efficiency) (Discrete Early Action)	Adopted – Dec-2008; Amended Dec-2010; Implementation 2010-2019.	Implementing regulation.	0.9	This regulation reduces GHG emissions from tractor-trailer combinations by increasing their fuel efficiency through improvements in aerodynamic drag and tire rolling resistance. It requires 2010 and older model year trucks and trailers to be retrofitted with U.S. EPA SmartWay verified aerodynamic technologies and/or fuel efficient tires and new 2011+ model year tractors and trailers to be U.S. EPA SmartWay certified.
T-8	ARB	Medium- and Heavy-Duty Vehicle Hybridization	Incentive program funding approved annually. Incentive program implementation initiated 2010.	Allocated \$11M for hybrid trucks from AQIP.	< 0.1	This incentive program reduces the GHG emissions of urban, stop-and-go vehicles, such as parcel delivery trucks and vans, utility trucks, garbage trucks, transit buses, and other vocational work trucks, through the use of hybrid technology. Incentives for hybrid trucks became available starting the first quarter of 2010 and the program will continue into 2012 with an additional \$11 million in funding augmenting the \$43 million previously allocated.
<b>OTHER SECTORS / STRATEGIES</b>						
Appendix C, Sections 3 and 4	ARB	Cool Communities	Ongoing	Implementation ongoing.	N/A **	This guidance encourages efforts such as light colored pavement, cool roofs and shade trees to decrease the effective temperature of urban areas. These strategies can result in energy savings due to decreased need for air conditioning, leading to decreased GHG emissions associated with energy generation. These efforts also increase albedo, thus reflecting sunlight radiation back to space and resulting in local cooling.
Scoping Plan Chapter IV, Section B	ARB	Small Business Toolkit	Approved Apr-2009 Ongoing	Implementation ongoing.	N/A **	This toolkit provides guidance and informational resources to local businesses on best practices, emission calculation methods, case studies, cost-effectiveness information, and other tools to assist in reducing GHG emissions.
Appendix C, Section 3	ARB	Local Government Toolkit	Approved May-2009 Ongoing	Implementation ongoing.	N/A **	Local governments can use this toolkit to help California meet its AB 32 targets through climate action planning. The toolkit was designed to provide guidance and resources to help cities and counties reduce greenhouse gas emissions and save money.
Scoping Plan Chapter II, Section B	ARB	Local Government Operations Protocol	Approved Sep-2008 Ongoing	Implementation ongoing.	N/A **	This protocol provides a standardized set of guidelines to assist local governments in quantifying and reporting GHG emissions associated with their government operations. Allows cities to track their own emissions over time, but is not intended to be used to compare one city's emissions to another city's emissions.
Scoping Plan Chapter II, Section C.1.	ARB	Cap-and-Trade Program	Board Endorsed Dec-2010 with final adoption Oct-2011; Implementation/program launch Jan-2012	Regulatory development.	18 ***	The California cap-and-trade program is a market-based approach that will provide a firm limit, or "cap," on GHG emissions from the electricity, industrial, commercial, and residential fuels and transportation fuels sectors. The California program may link with other Western Climate Initiative Partner programs to create a regional market system that will achieve greater environmental and economic benefits for the state. Part of the GHG emission reductions under this program are expected to come from the use of offsets (qualified projects outside of sectors under the cap.) Offset protocols that are being developed under the cap-and-trade program include four areas: 1) U.S. forest projects; 2) urban forests; 3) livestock manure (digesters); and 4) ozone depleting substances (ODS.)
<b>Total Reductions Expected from ARB Led Strategies</b>					<b>86.5 ****</b>	

**TABLE 2: GHG EMISSION REDUCTION STRATEGIES AND TIMELINES FOR IMPLEMENTATION**

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<p><b>ARB NOTES:</b> * These measures are to develop offset protocols that will generate credits for use for compliance with the cap-and-trade program. To the extent the credits are used in the cap-and-trade program, they will offset emissions from sources covered by that program helping to reduce compliance costs, but will not result in net emission reductions.</p> <p>** These measures facilitate reductions through voluntary actions.</p> <p>*** Set at a level needed to help achieve the GHG emission reduction target for 2020.</p> <p>**** Emission reductions for adopted and proposed measures are based on published Staff Reports.</p> <p>The term "approved" indicates the Board's action at the hearing. This is an interim step in the administrative process; final action by ARB to adopt a regulation occurs after the hearing, and a regulation does not become legally effective under California law until it has been approved by the Office of Administrative Law.</p>						

MMTCO<sub>2</sub>E - Million Metric Tons of CO2 Equivalent

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<b>BUSINESS, TRANSPORTATION AND HOUSING (BTH) STRATEGIES</b>						
<b>TRANSPORTATION SECTOR *</b>						
Not in Scoping Plan	BTH, CalTrans	Strategic Growth Plan - Operational Improvements	2020	With an anticipated June 2012 completion date, the draft Transportation Corridor Concept Report (TCCR) guidelines are being updated to include several GHG emission reduction measures and practices, including best practices from the Corridor System Management Plan process to be used in the TCCR. Also included are strategies with congestion reduction and GHG emission reduction goals to be considered, such as: operational improvements, demand management, Intelligent Transportation Systems, HOV/HOT/toll/express lanes, bike and ped facilities, and transit facility strategies. TCCRs will also consider land use, Smart Mobility Framework place types, and community characteristics for appropriate route strategies. Operational measures will be collected to calculate GHG emissions generated by system to allow future tracking of emissions. Other efforts through the Trade Corridors Improvement Fund (TCIF) include an emphasis on projects that improve trade corridor mobility while reducing diesel particulate and other pollutant emissions.	1.2	Transportation Corridor Concept Reports, Corridor System Management Plans and the Trade Corridors Improvement Fund
Not in Scoping Plan	BTH, CalTrans	Fleet Greening and Fuel Diversification	2020	The Caltrans Fleet Greening Program began as a five-year plan in August 2000 to reduce emissions from the Caltrans fleet, stay ahead of emerging regulations, and set the example for the use of emerging, clean air technologies. Today the Director's policy continues to promote an efficient fleet mix and use of efficient, low emission vehicles to lower Caltrans' use of petroleum as well as reduce emissions of criteria air pollutants and greenhouse gases. Through a combination of regulation compliance, state purchasing policies, and innovative demonstrations we've implemented, for example, hybrid passenger vehicles, solar-powered equipment, propane-fueled vehicles, low dust street sweepers, diesel particulate filters on heavy-duty, diesel-powered vehicles, two hydrogen demonstration vehicles, and an E-85 fuel ethanol demonstration project.	0.1	Fleet replacement
Not in Scoping Plan	BTH, CalTrans	Non-Vehicular Conservation Measures	2020	These activities include: district facility energy conservation projects coming on line; bridge LED roadway lighting system upgrades; LED roadway lighting increased at intersections & on ramps; full statewide deployment of the Computer Energy Reduction and Data (CERD) collection project; Clean Renewable Energy Bond (CRED) photovoltaic projects starting.	0.13	Energy Conservation Opportunities
T-3: C-56	BTH, HCD	Regional, Transportation-Related Greenhouse Gas (GHG) Targets.	Beginning 2010, complete determination for the next update for the RHNA, RTP, and housing element processes for SANDAG and applicable other COGs. Then ongoing	HCD finalized approximate 10-year Regional Housing Need Assessments (RHNA) for three regional councils of governments (COGs): (1) SANDAG in Nov 2010, (2) SCAG in Aug 2011, and (3) SACOG in Sep 2011 consistent with SB 375. HCD and COGs integrated housing planning with regional transportation plans (RTPs) to assist in reducing GHG emissions.	HCD will work with COGs/MPOs in establishing baselines and targets	Regional Transportation-Related Greenhouse Gas (GHG) Targets: Integrate the regional housing needs assessment (RHNA) and housing element update processes with regional transportation plans (RTP's) and develop RHNA methodology to assist in meeting GHG targets for the land use portion of the transportation sector.
<b>INDUSTRY SECTOR</b>						
Not in Scoping Plan	BTH, CalTrans	Portland Cement - 5% limestone cement mix and up to 50% fly ash**	On-going		1.5	Cement and Construction Industries

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<b>LAND USE *</b>						
C-82 ***	BTH - HCD	Housing Element Technical Assistance	Beginning in 2010 and ongoing.	Draft of SB 375 technical assistance paper to facilitate jurisdiction planning efforts is under review. Anticipated additional technical assistance and outreach efforts are pending resolution of budget and staff reductions.	Not quantified. HCD will work with CARB and regional and local entities to establish mechanism to evaluate impact of land use changes.	Housing Element Technical Assistance: HCD will update technical assistance and outreach efforts to include climate change and greenhouse gas emission reductions objectives in technical assistance materials and resources for local governments updating their housing elements. This will include identification of new land use strategies that both address housing supply and affordability requirements (density of housing, infill potential, energy conservation in residential development both in construction and retrofitting and design) and reduction in greenhouse gas emissions.
C-83 ***	BTH - HCD	Affordable Housing Finance Incentives	Beginning 2011 and ongoing.	No activity to report. Activities dependent on adequacy of budget and staff resources.	Not quantified. HCD will work with internal and external stakeholders and CARB regarding funding programs and ways to promote and/or provide incentives for projects that address energy conservation and GHG emission reductions.	Promote GHG emission reductions and energy conservation in HCD-administered funding programs. Evaluate how existing funding programs could provide competitive advantage to housing and community development projects that incorporate design and land use changes to achieve GHG emission reductions.
C-49 ***	BTH - HCD	Local Assistance on GHG Reduction Strategies	Beginning 2011 and ongoing.	No new activity to report. Activities dependent on adequacy of budget and staff resources.	Not quantified. HCD will work with CARB, regional and local entities, and stakeholders to provide information regarding housing planning, land use, and GHG reduction strategies.	Educate housing developers, housing advocacy groups, business and industry groups, environmental advocates, and local government housing and planning departments about the relationship between planning well for housing and achieving climate change objectives and effective housing and land use strategies to reduce greenhouse gas emissions.
C-76 ***	BTH - HCD	Regulatory Relief to GHG Emission Reduction Land Use Strategies	FY 2012-13	No activity yet to report.	Not quantified. HCD will work with CARB, regional and local entities, and stakeholders to address housing and land use regulatory barriers and relief to facilitate GHG emission reductions.	BTH is required to convene a group to identify regulatory barriers to housing and efficient land use strategies and prepare recommendations on how such barriers can be addressed. HCD will lead this effort on behalf of BTH.
<b>Total Reductions Expected from BTH Led Strategies</b>					<b>2.9</b>	
<p><b>BTH NOTES:</b></p> <p>* Responsibility for many of the reductions previously associated with land use, smart growth and related strategies has shifted to the ARB to ensure consistency with the Scoping Plan and the mandates of SB 375 (Steinberg, Chapter 728, Statutes of 2008). BTH/CalTrans/HCD will play an active role in the implementation of these and related land use measures through the Blueprint Planning process and other ongoing programs.</p> <p>** This strategy reflects Caltrans cement consumption only. The measure includes both the 2.5% limestone cement mix and up to 25% fly ash. It is also expected that given the new Caltrans' cement standards, the GHG emission savings could be reflected in the statewide cement consumption as well. However, that saving is not shown here. Starting in 2009, new Caltrans cement standards will reflect 5% limestone and up to 50% fly ash which is expected to improve the CO2 emission savings correspondingly. The Scoping Plan has identified the Cement Sector as falling under Cap &amp; Trade.</p> <p>*** References section numbers of the Scoping Plan where the strategies are described.</p>						

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<b>CaFIRE / BOARD OF FORESTRY STRATEGIES</b>						
<b>FOREST SECTOR</b>						
F-1 (Substrategies Below)	CaFIRE / BOARD OF FORESTRY	Sustainable Forests *	On-going		<b>5.0</b>	Maintain the current level of carbon sequestration through sustainable management practices including reducing the risk of wildfires, avoiding or mitigating land-use changes that reduce carbon storage, and supporting voluntary actions to conserve biodiversity. Actions to support this strategy are detailed below.
F-1: Substrategy 1	CaFIRE / BOARD OF FORESTRY	Conservation Forest Management	2005-2020			Maintain and enhance forest stocks on timberlands through forest management practices subject to the Forest Practice Act.
F-1: Substrategy 2	CaFIRE / BOARD OF FORESTRY	Forest Conservation	2005-2020	One Forest Legacy Program conservation easement transacted to conserve 3,268 ac		Prevent conversion of forestlands through publicly and privately funded acquisitions and easements.
F-1: Substrategy 3	CaFIRE / BOARD OF FORESTRY	Fuels Management/Biomass	2005-2020	CFIP, VMP, Prop 40 and federal programs funded manual or mechanical fuels reduction on >11,000 ac and prescribed burned > 6,000 ac		Reduce wildfire emissions through fuels reduction on private and federal lands and provide GHG benefits by using woody biomass for biofuels and biopower as fossil fuel alternative.
F-1: Substrategy 4	CaFIRE / BOARD OF FORESTRY	Urban Forestry	2005-2020	Urban Forestry Program funded tree planting of > 11,000 trees		Plant trees in urban areas to sequester carbon and provide shade to reduce energy use. Urban forest wood waste will also be used for biopower (renewable energy/fossil fuel alternative).
F-1: Substrategy 5	CaFIRE / BOARD OF FORESTRY	Afforestation/Reforestation	2005-2020			Reforest state, private and federal lands to produce sequestration benefits.
<b>Total Reductions Expected from CaFIRE Led Strategies</b>					<b>5.0</b>	
<b>Cal FIRE NOTES:</b> * CalFIRE led activities may increase the baseline sequestration potential in future years as funding becomes available for more expansive implementation of the 5 substrategies listed above.						

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<b>CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA) STRATEGIES</b>						
<b>AGRICULTURAL SECTOR</b>						
A-1	CDFA, ARB	Methane Capture at Large Dairies (Enteric Fermentation, Dairy Digesters)	TBD		1 <sup>3</sup>	This measure is being developed in coordination with the ARB. CDFA continues to work on addressing regulatory, permitting and financial barriers to a widespread voluntary adoption of anaerobic digesters on dairies. More information about implementation of this measure and the protocol for measuring compliance can be found in the 'Agricultural Sector' listing on the ARB section of this document.
Early Action Item	CDFA, ARB, CEC	Agricultural Research - Nitrous Oxide Reduction	Ongoing	Engaged in efforts with ARB and CEC during the past year to coordinate research proposals	N/A <sup>4</sup>	CDFA has engaged in efforts with ARB and CEC during the past year to coordinate research proposals on reducing nitrous oxide emissions from fertilizer applications. As a result, CDFA has committed to funding a \$150,000 research project on baseline agricultural nitrous oxide emissions. CDFA has secured additional funding commitments from fertilizer industry to fund staff work to coordinate nitrous oxide research, conduct literature review on the current nitrous oxide baseline for agriculture, and to eventually establish recommended best management practices to reduce nitrous oxide emissions.
Not in Scoping Plan	CDFA	Farm-Based Clean Energy Technologies	TBD		TBD	CDFA is working with The San Joaquin Valley Partnership and the SJV Clean Energy Organizations on developing strategies to remove barriers and promote the adoption of clean farm-based energy technologies, such as biogas, biofuels and biomass technologies.
Not in Scoping Plan	CDFA	Hydrogen Fuel Quality and Quantity	Ongoing		TBD*	CDFA – Division of Measurement Standards (DMS) has played a central role in the establishment of a national standard under SAE International for Hydrogen used in fuel cell vehicles. DMS developed interim specifications that served as model for that national standard. Under a grant from the California Energy Commission, DMS is developing sampling techniques and analytical test methods of determine quality of hydrogen dispensed at fueling stations
Not in Scoping Plan	CDFA	Biodiesel Blends Renewable Diesel	Ongoing	Active partner in ongoing development of national standards	TBD*	CDFA-DMS is an active partner in ongoing development of national standards under ASTM International for biodiesel, renewable diesel fuels. Under a grant from the California Energy Commission, DMS is developing sampling techniques and analytical test methods of determine quality of hydrogen dispensed at fueling stations and is conducting research into the test methods needed for the development of a greater than 20% biodiesel blend standard.
Not in Scoping Plan	CDFA	Ethanol Flex Fuel, Gasoline-Ethanol Blends, and other alcohols	Ongoing		TBD*	CDFA-DMS promotes the use of Ethanol based fuels by the establishment of specifications and regulations which allow the sale of Ethanol Flex Fuel and higher Gasoline Ethanol blends. Regulations are in place to permit the sale of Bio-butanol and other Bio-alcohols fuels as these products are brought into the market. The California Type Approval Program has established clear guidelines for approval of any new alternative fuel metering devices.
Not in Scoping Plan	CDFA	Developmental Fuels	Ongoing		TBD*	CDFA developmental engine fuel variance program allows alternative fuels that currently have no National Standard to be used in limited applications for the purpose of developing a National Standard. DMS is working with CEC and PUC to develop public charging infrastructure to promote the retail sale of electricity for Plug-in Electric Vehicle Charging stations. DMS participation on the Low Carbon Fuel Standard Advisory Panel provides California agriculture new opportunities to develop crops for alternative fuels and even greater opportunity for transforming agriculture waste into green fuel.

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Not in Scoping Plan	CDFA, CEC	Energy Crops	Jan. 1, 2009 - Dec. 31, 2011	Coordinate with the CEC on research	TBD	Coordinate with the CEC on research to demonstrate potential energy and industrial crops under commercial conditions; familiarize growers with these crops; focus on crops that use marginal lands and that minimize environmental externalities; determine the suitability of these crops for various energy markets; determine costs and energy balance of production; and, identify barriers to commercialization.
Not in Scoping Plan	CDFA	Specialty Crop Block Grants	Ongoing	Several research projects related to GHG reductions were funded under the 2010 SCBGP	TBD	Several research projects related to GHG reductions were funded under the 2010 SCBGP. Environmental Concerns and Conservation was identified as one of the research funding areas in the 2010 Notice of Funding Availability. More specifically, the research focus called for projects that address specialty crop agriculture's contribution to adaptation and/or mitigation of climate change. The results of the funded research projects are expected to have a direct impact on the current understanding of GHG from agriculture and potential offset strategies. This research is critical in addressing knowledge gaps in GHG emissions for California specialty crops. More information on this and other funded projects can be found at <a href="http://www.cdfa.ca.gov/grants">www.cdfa.ca.gov/grants</a> .
<b>Total Reductions Expected from CDFA Led Strategies</b>					<b>1.0</b>	
<p><b>CDFA NOTES:</b> * CDFA has important programmatic responsibilities that in themselves do not result in emission reductions, however they are an important and necessary piece of the efforts that will result in reductions in other sectors.</p>						

MMTCO<sub>2</sub>E - Million Metric Tons of CO<sub>2</sub> Equivalent

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<b>CALIFORNIA ENERGY COMMISSION (CEC) STRATEGIES</b>						
<b>ELECTRICAL AND NATURAL GAS SECTOR</b>						
E-1	CEC	Comprehensive Publicly Owned Utilities Efficiency Program	2016	Produced report on POU energy efficiency investments, programs, expenditures, cost-effectiveness, results, and independent evaluation of reported energy savings (AB 2021 report).	3.5	POUs' implement energy efficiency programs for their customers in all end uses, most notably cooling and lighting. They report their goals and accomplishments annually to the Energy Commission.
E-1	CEC	Building Energy Efficiency Standards in Place	Ongoing	Worked on development of a 2013 building code update to be adopted in 2012, published in 2013 and effective in 2014.	2.1 <sup>5</sup>	Current energy efficiency requirements for newly constructed buildings, additions and alterations (Title 24, Part 6); the building standards adopted in 2008 became effective in 2010.
E-1	CEC	Appliance Energy Efficiency Standards in Place	Ongoing	Staff worked on appliance energy efficiency regulations for battery chargers and lighting controls.	4.5 <sup>5</sup>	Current energy efficiency requirements for appliances sold in California (Title 20); metal halide lamps, portable lights, and pool pump standards became effective in 2010. In 2011 efficiency standards for TV's (<58 inches) and certain general service incandescent lamps will take effect.
<b>TRANSPORTATION SECTOR</b>						
T-4	CEC	Fuel-Efficient Tire Program	Ongoing	Continued research in coordination with NHTSA on tire efficiency metrics.	0.26	Adoption and implementation in 2011-2012. Reducing the average rolling resistance of replacement tires through consumer information and minimum standards promises fuel savings and a resultant reduction in GHG emissions.
<b>WATER SECTOR</b>						
W-3	CEC, DWR, CPUC, SWRCB	Energy Intensity of the Water System	Ongoing		2 <sup>3</sup>	The Commission has a current investigation into water conservation and subsequent energy conservation
W-5	CEC, DWR, CPUC, SWRCB	Increase Renewable Energy Production from Water	Ongoing		0.9 <sup>3</sup>	The purpose of this measure is to identify and implement specific projects that take advantage of the State's water system-related opportunities to generate renewable electricity. Examples: water moving through conduits, sunlight, wind, and gases emitted during treatment of wastewater at wastewater treatment plants.
<b>Total Reductions Expected from CEC Led Strategies</b>					<b>6.7</b>	

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CALRECYLCE (formerly CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD (CIWMB)) STRATEGIES						
RECYCLING AND WASTE MANAGEMENT						
RW-1	ARB, CalRecycle	Landfill Methane Control Measure (Discrete Early Action)	Approved June-2009 Implementation 2010	Continued participation to develop rule implementation guidance. Participation in SCAQMD proposed Rule 1150.1 development to ensure consistency with ARB's methane landfill rule and CalRecycle's requirements for monitoring and on the SCAQMD Rule 1110.2 Biogas Technology Advisory Committee and evaluation of NOx reduction technologies to assess feasibility of methods to remove siloxanes from gas and reduce NOx from internal combustion engines using landfill gas as fuel.	1.5 ***	This regulation requires enhanced control of methane emissions from municipal solid waste landfills and requires owners and operators to install gas collection and control systems at smaller and other uncontrolled landfills. Affected landfills are required to implement advanced methane monitoring requirements.
RW-2	CalRecycle	Increasing the Efficiency of Landfill Methane Capture	On-going	CalRecycle continues to pursue strategies to reduce landfill methane emissions above and beyond what is required under RW-1. Updated the inventory of beneficial uses of landfill gas, including an assessment of landfill gas collection as a function of waste in place, quantities used in the generation of electricity, direct use, and conversion to LNG; including proposed landfill gas to energy projects. Completed final review of California Landfill Methane Inventory Model. Published "Biocovers at Landfills for Methane Emissions Reduction Demonstration."	TBD	Per the Statewide GHG emissions inventory, the largest emissions from the Recycling and Waste Management sector come from landfills and are in the form of methane, which is produced when materials placed in landfills decompose over time. Often, decades elapse and methane is still produced from this decomposition. Although methane is captured currently at many large landfill sites, there are still active landfill operations and closed landfill sites that continue to emit methane that could be captured. In addition, methane capture can also reduce air quality impacts by capturing and destroying volatile organic compounds and other landfill gases that are emitted during the decomposition process.
RW-3 (Sub strategies listed below)	CalRecycle	Zero Waste - High Recycling	On-going		Reductions detailed below	Detailed description of related measures below.
RW-3: Sub strategy 1	CalRecycle	Anaerobic Digestion	Full implementation by 2020	Prepared a Programmatic Environmental Impact Report (EIR) for anaerobic digestion facilities; certified on June 22, 2011. Completed Anaerobic Digestion Guidance document for conducting CEQA review; published in September 2011. Published "Integration of Rotary Drum Reactor and Anaerobic Digestion Technologies for Treatment of Municipal Solid Waste" that analyzes treatment process for municipal solid waste feedstocks. Participated in development of Bioenergy Action Plan and 2011-12 Investment Plan for the Renewable Fuel and Vehicle Technology Program (AB 118). Working with ARB on development of Low Carbon Fuel Standard Pathway for the anaerobic digestion of organic waste materials. Published final report, "Landfill-Based Anaerobic Digester-Compost Pilot Project at Yolo County Central Landfill" assessing the capabilities of a new landfill-based in-situ anaerobic digester technology.	2.0 **	Anaerobic digestion involves using an enclosed, covered system for accelerating decomposition of organic materials for the dual purposes of biogas production and waste volume reduction. Diverting organic waste from landfills to beneficial use can provide a significant reduction of GHG emissions through landfill methane avoidance. This strategy will also result in substantial renewable energy production that will aid in the 33% Renewable Portfolio Standards goal and compliance with the Low Carbon Fuel Standard.
RW-3: Sub strategy 2	CalRecycle	Mandatory Commercial Recycling	Full implementation by 2020	Mandatory Commercial Recycling regulation currently underway. Originally scheduled for ARB adoption in October 2011; however, with the passage of AB 341 CalRecycle will be adopting the regulation in early 2012. Published "Cost Study on Commercial Recycling" analyzing the cost-benefits of commercial recycling programs. Collaborated with the Institute of Local Governments to develop tools and resources to assist local governments and business with implementation of commercial recycling programs.	5.0 **	The commercial recycling measure focuses on increased commercial waste diversion. Commercial businesses in California generate roughly 75% of the statewide solid waste. Reductions in GHG emissions can be realized from solid waste management by recovering traditional 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, preprocessing and manufacturing. Traditional recyclable 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 landfill disposal by recycling any organic materials from the waste stream.
RW-3: Sub strategy 3	CalRecycle	Extended Producer Responsibility (EPR)	Full implementation by 2020	Formal rulemaking is underway on paint and carpet product stewardship programs per AB 1343 and AB 2398. Conducting research to evaluate the potential greenhouse gas impacts and other environmental, economic, and social benefits of product stewardship approach to product management; scheduled completion for spring 2012.	TBD	Extended producer responsibility (EPR) places shared responsibility on producers and all entities a product life cycle for reducing health and environmental impacts that result from supply chain, production, use, and end-of-life management. A major component includes product design changes that minimize negative impacts. By implementing extended producer responsibility, GHG emission reductions can be realized from avoided energy use in the extraction of resources.  AB 1343 the Paint Recovery Act, and AB 2398, Product Stewardship for Carpet were signed into law 9/30/10.  In 2007 CalRecycle published <i>Framework for Evaluating End-of-Life Product Management Systems in California</i> as a framework to evaluate end-of-life product management systems; it also offers case studies on existing product management systems for difficult-to-manage products.

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RW-3: Sub strategy 4	CalRecycle	Increase Production & Markets for Compost	Full implementation by 2020	Several research projects related to compost production and markets including: compost-based Best Management Practices in a field demonstration setting; ozone formation potential from greenwaste composting VOC emissions and best management practice to reduce ozone formation potential; research on GHG emissions from compost piles and N <sub>2</sub> O emission reduction potential of finished compost application on agricultural land; published "Third Assessment of California's Compost and Mulch Producing Infrastructure Management Practices and Market Conditions." Conducted review of regulations concerning waste management activities and published "Study on Other States' Regulatory Oversight of Waste and Material Handling Activities Relative to Recycling Centers, Transfer Stations, and Green Material Contamination."	2.0 <sup>**</sup>	CalRecycle continues efforts to divert organic materials from landfills by increasing the production of and markets for compost, mulch, and biofuels/energy. Organic materials diversion from landfill disposal can provide a significant GHG reduction through landfill methane avoidance. When compost and mulch products are applied to soils, including agricultural crop lands, additional GHG emission reductions may be achieved through reduced water consumption, resulting in energy savings in pumping irrigation water. Additional GHG benefits can be realized through reduced manufacturing and transport of fossil-fuel-derived fertilizers, and reduced off-gassing of those fertilizers once applied to ag land. CalRecycle's efforts to increase the production and markets for compost include compost-based best management practices; development of compost specifications for agriculture; and research covering a range of composting uses. Ongoing CalRecycle research will help clarify GHG emissions from compost production and compost use in agriculture, including compost impacts on agricultural N <sub>2</sub> O emissions.
Appendix C, Section 9. C.	CalRecycle	Liquefied Natural Gas from Landfill Gas Measure	Full implementation by 2020	CalRecycle's grant to the Gas Technology Institute (GTI) for full scale demonstration landfill-gas-to-LNG project at Altamont Landfill was completed; plant is designed to produce 13,000 gallons of LNG per day. High Mountain Fuels received "Alternative and Renewable Fuel and Vehicle Technology Program" (AB 118) funds for the development of new LNG production plant at Simi Valley Landfill; project to produce 6 million gallons of renewable bio-LNG per year with completion anticipated in 2013.	1.0	This activity implements grant-funded projects at two landfills to demonstrate commercial scale technologies for converting landfill gas to LNG vehicle fuel. Recovery of landfill methane that is combusted through flaring can be captured as a biomass renewable energy source. Executive order S-06-06 directs State agencies participating in the Bio-energy Interagency Working Group to enhance the sustainable management and development of biomass resources for electricity generation and production of alternative fuels (bio-fuels). However, substantial financial and technical barriers exist for in-state production of LNG from landfill gas. The technology transfer from these commercial projects could provide significant GHG reduction opportunities.
Not in Scoping Plan	CalRecycle	Achieved 50% Statewide Recycling Goal Accomplished prior to Scoping Plan development.	Achieved 52% in 2005 Achieved 54% in 2006 Achieved 58% in 2007 Achieved 59% in 2008 Achieved 65% in 2009 Achieved 65% in 2010	CalRecycle provides assistance to local jurisdictions, businesses and the public with their recycling efforts. In 2010, the per employee disposal rate reached a historic low of 11.7 pounds per employee per day; per resident "diversion rate equivalent" was 65 percent. The continuing economic downturn and increased diversion program implementation likely share responsibility for the small increase in diversion from 2009 to 2010.	3 <sup>5</sup>	Increasing the amount of solid waste that is recycled, reused, or composted will reduce GHG emissions primarily by: 1) reducing the energy requirements associated with the extraction, harvest, and processing of raw materials; and 2) using recyclable materials that require less energy than raw materials to manufacture finished products. Increased diversion of organic materials (green and food waste) will also reduce GHG emissions by redirecting this material to processes that use the solid waste material to produce vehicle fuels, heat, electricity, or compost. <b>[NOTE: The 3 MMT figure for this strategy reflects the GHG reduction at the 54% level for recycled materials]</b>
Not in Scoping Plan	CalRecycle, CEC, ARB, CPUC	Waste Technology Demonstration & Development	Full implementation by 2020	Phoenix Energy received RMDZ loan in 2009 for \$1.1 million for gasifier project in Merced; project will produce electricity from 3,900 tons per year of waste wood pallets. Grid connection is complete; power production expected November 2011. The gasifier is planned to run 7000 hours per year with generation capacity of 750 KW. Environ Strategy Consultants, Inc. received RMDZ loan in 2010 for \$1.6 million for anaerobic digestion project to produce biomethane gas from food waste; generation capacity of 3 MW.	TBD	This measure will aid in the development of new technologies to reduce GHGs by providing necessary funding that will assist developers in demonstrating their technology on a commercial scale. Of particular interest is development of technologies that produce renewable energy from municipal solid waste. CalRecycle, through its Recycling Market Development Zones, continued to provide low interest loans and technical and permitting assistance to eligible biofuel and renewable electricity projects that utilize municipal solid waste.
<b>WATER SECTOR</b>						
Appendix C, Section 4.E.	CalRecycle, DWR	Watershed Friendly Landscape Guidelines	Full implementation by 2020	CalRecycle staff participates in the River-Friendly Landscape Coalition (RFL) which is in the process of developing an online "River Friendly Landscaping Calculator" that will help estimate the benefits of converting to or creating a "river friendly" landscape. RFL plans release the calculator in early 2012 and begin collecting data from the users.	TBD	These adopted guidelines will help protect watersheds through the use of sustainable landscaping practices, as well as reduce GHG emissions related to transporting green material to landfills and the generation of methane from the green materials deposited in landfills. The guidelines will also address fossil fuel consumption from landscape power equipment and chemical fertilizers, and GHG emissions related to water treatment and distribution. Outreach efforts continue.
<b>Total Reductions Expected from CalRecycle Led Strategies</b>					<b>10.0</b>	
<p><b>CalRECYCLE NOTES:</b> * Split responsibility for Substrategy 3: CalRecycle is lead for EPR, and DGS is lead for EPP.</p> <p>** GHG emission reduction estimate in Scoping Plan</p> <p>*** Reduction included under ARB's totals (see page 3)</p>						

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<b>CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) STRATEGIES</b>						
<b>ELECTRICAL AND NATURAL GAS SECTOR</b>						
E-1	CPUC	IOU Energy Efficiency Programs	Ongoing through 2020	Launched Energy Upgrade California statewide; adopted the Lighting Action Plan, HVAC action plan and the Residential Zero Net Energy Action Plan; launched the Emerging Technology Action Plan; issued EE financing report	11.7	Reflects EE program reductions in IOU territories not included in the CEC standards measures above. Based on the 2008 ITRON High Goals Scenario and EE reductions based on the Commission's Long Term Energy Efficiency Strategic Plan, including four "Big Bold strategies" strategies: 1) All new residential construction in California will be zero net energy by 2020 2) All new commercial construction in California will be zero net energy by 2030 3) HVAC industry will be reshaped to ensure optimal equipment performance 4) All eligible low-income homes will be energy-efficient by 2020.
E-2	CPUC, CEC	Customer-Installed Combined Heat and Power systems (non SGIP)	2008-2020	Approval of multiple interim decisions to implement AB 1613 and AB 2791. Approval of a comprehensive CHP program in December 2010.	4.8	The Commissions are implementing AB 1613 and AB 2791 to create standards and a tariff for new small highly efficient CHP systems. Furthermore, in December 2010, the CPUC approved a comprehensive CHP program with several procurement options for CHP facilities. This program defines the proportional share of the ARB Scoping Plan GHG emissions reduction target from CHP appropriate for utilities within the CPUC's jurisdiction. That emissions reduction target is reflected in this report card. This program is ready for implementation pending the outcome of litigation at the Commission.
E-2	CPUC	Electricity Sector Carbon Policy	Began in 2007 (emissions performance standard)		N/A <sup>2</sup>	The Emissions Performance Standard (EPS) ensures that baseload generation used to serve California consumers is from power plants that have an emissions intensity no greater than a combined cycle gas turbine plant.
E-3	CPUC, CEC	33% RPS	Ongoing -- legislative target was modified by SB2(1x) to 33% renewable energy by 2020	CPUC initiated proceeding to implement SB2, which codified the 33% renewables mandate; CPUC issued resolution approving the IOUs advice letters for the Renewable Auction Mechanism which targets smaller scale (<20 MW) facilities; PG&E and SCE solar programs targeting wholesale distributed solar are fully implemented and procurement is underway.	19.3	The RPS program establishes a minimum amount of renewable energy the IOUs and POUs must procure from renewable sources to serve their retail customers by 2020. In 2010, 17% of the IOUs' energy deliveries were from renewable resources. The "Expected GHG Emission Reductions in 2020" value shown here reflects the total anticipated annual avoided GHG emissions resulting from all renewable capacity installed pursuant to the RPS program since 2007.
E-4	CPUC, CEC	Senate Bill 1 - GoSolarCalifornia (previously titled - 'Million Solar Roofs')	Program began in 2007; projected completion by 2016	In 2010, the CPUC portion of GoSolarCalifornia, known as the California Solar Initiative (CSI), installed 152 MW. From July 2010 through June 2011, the CSI installed 210 MW. For 2010, 625,000 MWh estimated.	2.2	The goal of GoSolarCalifornia is to facilitate the deployment of 3,000 MW of rooftop solar via provision of rebates to help buy-down the up front cost of rooftop solar PV on residential and commercial buildings. The CPUC is responsible for 1,940 MW of retro-fit projects.
CR-1	CPUC, CEC	Energy Efficiency: 800 mil. therms reduced consumption.	TBD	Natural gas components of EE programs were temporarily suspended in July 2011 due to the legislative sweep of gas EE funds.	4.3	This strategy includes: utility energy efficiency programs; building and appliance standards; and additional efficiency and conservation programs.
CR-2	CPUC	Increased Use of Solar Water Heating	TBD	The PAs began accepting applications for the single-family incentives in May 2010 and for multifamily/commercial incentives in October 2010. CSI-Thermal Low Income PD is on the agenda for tomorrow's meeting. The PAs are instructed to begin accepting applications within 120 days of the date of the decision for the Low Income program.	0.1	In January 2010, the PUC approved the California Solar Initiative (CSI) Thermal Program, which provides up-front incentives toward the purchase of solar water heaters and other solar thermal technologies in the territories for customers electric and gas investor-owned utilities in California. Within the IOU service territories, this program provides customer rebates to support the deployment of gas displacing solar water heating systems on homes and businesses sufficient to displace 585 million therms (equivalent to 200,000 single-family residential systems) as well as support the deployment of electric displacing systems to displace 276 million kWh (equivalent to 100,800 single-family residential systems).

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Not in Scoping Plan	CPUC	Self Generation Incentive Program	Began in 2001; ongoing	As of 2009, 348 MW of capacity had been installed under the program representing a variety of different distributed generation technologies. Pursuant to SB 412, in 2011, the CPUC issued a decision modifying the program to focus more specifically on technologies that provide for net GHG emission reductions.	TBD	Within the IOU service territories, this program provides customer rebates to support the deployment of clean customer side generation including wind and fuel cells. Pursuant to SB 412, in 2011, the CPUC issued a decision modifying the program to focus more specifically on technologies that provide for net GHG emission reductions.
Not in Scoping Plan	CPUC, CIWMB, ARB	Renewable Auction Mechanism for system-side renewable distributed generation	Began 2008	The Commission approved Resolution E-4414 on August 18, 2011. The resolution ordered the IOUs to submit compliance filings with their modified bidding protocols and contracts 30 days from the resolution's approval. The resolution orders the IOUs to close the first auction by November 15, 2011, and the second auction by May 31, 2012.	Is included in goal for 33% RPS	The Renewable Auction Mechanism (RAM) is a simplified, market-based procurement mechanism for renewable distributed generation (DG) projects up to 20 MW on the system side of the meter. The Commission adopted RAM as the primary procurement tool for system-side renewable DG to promote competition, elicit the lowest costs for ratepayers, encourage the development of resources that can utilize existing transmission and distribution infrastructure, and contribute to RPS goals in the near term. To begin the program, the Commission authorized the utilities to procure 1,000 megawatts through RAM. Going forward, the capacity authorization will reflect each utility's need for system-side DG under 20 MW.
Not In Scoping Plan	CPUC	Alternative Fuel Vehicles (Natural Gas and Electric Vehicles)	Rulemaking began in 2009;	The Phase I decision, issued in July 2010, determined that electric vehicle service providers (EVSP) are not public utilities, but are generally end use customers of the utility from which they procure power. The Phase II decision, issued July 2011 found the existing tariffs of the IOUs adequate on an interim basis (with the exception of PG&E's E-9B tariff), determined that the IOUs are prohibited from owning EVSP charging equipment and submeters, addressed IOU electric vehicle education and outreach activities, and directed certain follow-on activities including the development of a submeter protocol, a utility notification report, and a study regarding the cost and load impacts of EV deployment.	TBD	The CPUC launched an Alternative Fuel Vehicle Rulemaking in August 2009. The CPUC has issued several policy decisions through its Alternative Fueled Vehicles Rulemaking, launched in 2009, that address regulatory barriers to help foster widespread adoption of electric vehicles and the provision of the electric vehicle charging services. These decisions have also addressed a number of issues related to system impacts and cost implications to ensure EV deployment is done in a manner that maintains system reliability and reasonable rates.
<b>WATER SECTOR</b>						
W-3	CPUC, CEC, SWRCB, DWR	Water and Energy Conservation	TBD	In 2011, the CPUC joined the WET CAT as a third agency co-chair, and joined the SWRCB in developing the Governor's Office Water and Energy Policy Initiative currently under development. Finally, the CPUC has opened a rule making to develop a comprehensive policy framework for recycled water for investor-owned water companies.	TBD	The Water and Energy Team of the Climate Action Team (WET-CAT) is implementing 6 measures including 5 mitigation measures and one financing measure: Recycled water, water use efficiency, water systems efficiency, storm water capture and reuse and low impact development, renewable energy generation in the water sector, and the development of a public goods charge for water. In 2011, the CPUC joined the WET CAT as a third agency co-chair, and joined the SWRCB in developing the Governor's Office Water and Energy Policy Initiative currently under development. Finally, the CPUC has opened a rule making to develop a comprehensive policy framework for recycled water for investor-owned water companies.
<b>Total Reductions Expected from CPUC Led Strategies</b>					<b>42.4</b>	
<p><b>CPUC NOTES:</b> <sup>1</sup> GHG Reduction goals for PUC measures are taken from ARB's AB 32 Scoping Plan. Unless otherwise noted, values represent statewide reductions for the measures and are not prorated to the CPUC jurisdictional utilities' share.</p> <p><sup>2</sup> The EPS prevents CA utilities from entering into long-term contracts with inefficient generation resources, which will in effect prevent such resources from being built to serve CA load. A reduction calculation would involve speculation about amount of these resources that would have been built in the absence of the EPS.</p>						

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<b>DEPARTMENT OF WATER RESOURCES (DWR) STRATEGIES</b>						
<b>WATER SECTOR</b>						
W-1	DWR, SWRCB	Water Use Efficiency	Dependent upon resources; various milestones through 2020 per SBx7 7.	In 2010, the Department's Integrated Regional Water Management grant program adopted a climate change standard which includes consideration of water-related GHG emissions. Also in 2010, the Urban Water Management Plan guidelines were revised to recommend the inclusion of a climate change element that addresses the water-energy nexus.	1.4 <sup>3</sup>	Promote greater implementation of water conservation measures, including best management practices, to improve efficiency. Implement the Governor's 20x2020 Plan, implement provisions of SBx7 7.
W-6	DWR	Public Goods Charge on Water	TBD	Received report from the Goldman School of Public Policy	TBD	A fee to be used to fund end-use water efficiency improvements, system-wide efficiency projects, water recycling, and other actions that improve water and energy efficiency and reduce GHG emissions.
W-3, W-5; Appendix, Volume 1	DWR	Reid Gardner Power Plant Divestiture/	2013	Contract expires July 2013	1.2	DWR will divest its partial interest in a Nevada coal plant by July 2013. With this action, as well as DWR's procurement of renewable energy and on-going energy efficiency programs, including pump refurbishments, CO <sub>2</sub> emissions from DWR's power portfolio will decrease an estimated 1,180,000 MT from its 1990 levels. Thus, by 2014, DWR's emissions will be 40-50% lower than its 1990 levels.
<b>Total Reductions Expected from DWR Led Strategies</b>					<b>2.6</b>	

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<b>OFFICE OF PLANNING AND RESEARCH (OPR) STRATEGIES</b>						
<b>OTHER SECTORS/STRATEGIES</b>						
Chapter II Section A	OPR	CEQA Guidelines re: GHG emissions	January 1, 2010	Completed	No Direct Reductions	OPR developed CEQA guidelines to help lead agencies address greenhouse gas impacts.
Not in Scoping Plan	OPR	General Plan Guidelines: Update to the Circulation Element Section	December 15, 2010	Completed	No Direct Reductions	OPR developed an "Update to the Circulation Element, Complete Streets and the General Plan". This publication is in response to AB 1358 requiring cities and counties to modify the circulation element of the general plan to provide for a balanced multi-modal transportation network. Final publication should be completed in December 2010.
Chapter II Section B	OPR	Technical Advisory and Technical Assistance	On-going		No Direct Reductions	OPR is developing a 'Technical Advisory' to provide advice to state and local agencies on preparing climate action plans that integrate with CEQA, planning and zoning law and climate change legislation. On an on-going basis, OPR provides technical advice, including training on climate action planning, to local and state agencies.
Not in Scoping Plan	OPR	CEQA Guidelines re: Infill	July 1, 2012		No Direct Reductions	SB 226 requires OPR to develop performance standards for certain infill projects that promote, among other policy objectives, the reduction in greenhouse gas emissions.
Not in Scoping Plan	OPR	General Plan Guidelines: Comprehensive Update	Beginning 2012		No Direct Reductions	OPR will engage in a comprehensive update to the General Plan Guidelines, which will include, among other topics, ways for local governments to address climate change in their General Plans.
<b>Total Reductions Expected from OPR Strategies</b>					<b>0.0 *</b>	
<b>OPR NOTES:</b> * OPR has important programmatic responsibilities but does not have emission reduction regulatory authority.						

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<b>STATE AND CONSUMER SERVICES AGENCY (SCSA) STRATEGIES</b>						
<b>GREEN BUILDINGS</b>						
GB-1	SCSA	Green Buildings Initiative	Ongoing		Reductions specified by substrategy (below)	This project focuses on implementing green building measures in new and existing buildings, including LEED certification, Retro-commissioning, Retrofit projects, and on-site clean generation projects (details included in substrategies described below).
GB-1: substrategy 1	DGS, State Agencies	New state buildings	Ongoing: All new state buildings constructed to LEED-Silver standards	Less new construction occurring than in previous years	0.1	Ensuring all new and renovated state buildings are built to LEED-NC (New Construction) Silver or higher standards. This estimate is based on achieving LEED-NC certifications at a rate consistent with what was achieved in 2007-2008.
GB-1: substrategy 2	DGS, State Agencies	Existing state buildings	All existing State buildings over 50,000 SF in size to be LEED-EB certified by 2015	Working on new on-bill-financing agreements to fund improvements	0.88	Attain LEED-EB (Existing Buildings) certification for all existing buildings over 50,000 square feet in size. This estimate is based on the LEED certification of 60 DGS buildings by 2020.
GB-1: substrategy 3	State Architect, Office of Public School Construction, Department of Education	Schools	Ongoing: California Schools encouraged to achieve green standards	High performance school bond funding program continues to reward schools	0.16	Various activities to encourage California schools to be built and operated to high levels of energy and environmental performance. This estimate is based on 40% of California schools constructed/renovated to LEED/CHPS standards by 2020.
GB-1: substrategy 4	DGS, State Agencies	Leased Buildings	Ongoing: Encourage owners/occupants to implement green building measures	All new build-to-suit leases now being built LEED Silver or higher	0.25	Encourage owners and occupants of leased buildings to implement energy and environmental improvements in their buildings. This estimate is based on all new build-to-suit leases constructed to LEED standards and continuing to educate owners/occupants on the benefits of green buildings.
GB-1: substrategy 5	DGS, State Agencies, CSU/UC	Distributed Generation	Ongoing: Investigate implementation of clean/renewable on-site generation	On-going phases installing 20 MW by June 2012, & 30 MW more by 2013	0.16	Implement clean renewable energy generation projects at state facilities. It is anticipated that at least 50 Megawatts of clean/clean renewable generation will be installed in state facilities by 2020. Installations will consist of Solar PV, Fuel Cell, Wind and Solar Thermal generation projects.

Scoping Plan: Strategy Number or Chapter / Section	Agency <sup>1</sup> and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020 <sup>2</sup> (MMTCO <sub>2</sub> E)	Brief Description
GB-1: substrategy 6	DGS, State Agencies, CIWMB, DTSC	Environmentally Preferable Purchasing (EPP)	Ongoing: Operate green buildings and minimize energy and resource impacts.	New EPP website: <a href="http://www.buygreen.dgs.ca.gov">http://www.buygreen.dgs.ca.gov</a>	*	Develop environmentally preferable purchasing specifications, contracts and guidelines to promote the use of commodities that lower energy use, increase recycling and reuse and reduce the emission of greenhouse gasses.
GB-1: substrategy 7	California Building Standards Commission, CEC, DGS, State Architect, HCD, OSHPD	Green Building Code Development	Ongoing	CALGREEN code added provisions for additions and renovations based on some existing elements of CALGREEN.	2.9	California adopted the first-in-the-nation Green Building Standards Code (CALGREEN) in 2008, which became effective on August 1, 2009. It established voluntary standards. The Building Standards Commission adopted a 2010 edition of this code in January of 2010, composed of both voluntary and mandatory measures to further promote green buildings. The 2010 CALGREEN code took effect January 1, 2011. Voluntary reductions estimated at 3.6 MMT. Mandatory reductions estimated at 2.9 MMT. (Source: ARB)
<b>TRANSPORTATION SECTOR</b>						
Appendix C, Section 2.B.	DGS, State Agencies	Right-size the State Fleet	Ongoing	3,997 fleet assets were targeted for reduction	0.2	This measure focuses on reducing the number of State vehicles with the goal of increasing the efficiency of vehicle uses and assignments. A typical effect of right-sizing is a reduction in the number of vehicles in the fleet overall.
Appendix C, Section 2.B.	DGS, State Agencies	Removing Higher-Polluting Vehicles from the State Fleet	Ongoing	Swapping out less fuel efficient vehicles for higher fuel efficient vehicles during reduction	0.4	After the state fleet is right-sized we will continue to identify the most polluting vehicles in the state fleet and replace those vehicles with greener more fuel efficient vehicles utilizing the Fleet Asset Management System and the Vehicle Allocation Methodology (VAM). We will continue working with other state agencies on cost effective vehicle replacement strategies.
Appendix C, Section 2.B.	DGS, State Agencies	Actively manage vehicle miles traveled and reduce petroleum consumption	Ongoing	Vehicle allocation methodology evaluated all vehicle utilization will result in car sharing/reduced trips	0.2	Eliminating trip redundancy to optimize vehicle utilization reduces the number of vehicle miles traveled, GHG emissions, criteria pollutants, and maintenance costs. Actively managing fuel consumption meets objectives by decreasing petroleum use through the increased use of renewable and alternative fuels for necessary business travel. By combining all three strategies listed above the State fleet is expected to reduce petroleum consumption by 20% or 9 million gallons of gasoline and diesel.
<b>Total Reductions Expected from SCSA Led Strategies</b>					<b>5.3</b>	
<b>SCSA NOTES:</b> * Unable to determine projected GHG reductions arising from EPP Program due to the relative immaturity of computational algorithms and lack of data collection processes in this area.						

MMTCO<sub>2</sub>E - Million Metric Tons of CO<sub>2</sub> Equivalent

Scoping Plan: Strategy Number or Chapter / Section	Agency <sup>1</sup> and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020 <sup>2</sup> (MMTCO <sub>2</sub> E)	Brief Description
<b>STATE WATER RESOURCES CONTROL BOARD (SWRCB) STRATEGIES</b>						
<b>WATER SECTOR</b>						
W-2	SWRCB, DWR, CEC, CPUC	Water Recycling	by 2020	Based on the results of a recent survey, the State Water Board increased its estimate of recycled water use statewide from 580 thousand to 724 thousand acre-feet per year. The State Water Board is taking steps to streamline future applications under its permit for landscape irrigation use of municipal recycled water; specifically, the State Water Board is preparing guidance on how to prepare nutrient management plans for landscapes irrigated with recycled water. Salt and nutrient management plan development also continues throughout the State (various salt and nutrient management plan stakeholder groups have been established to implement this part of the Recycled Water Policy). The State Water Board awarded over \$500 thousand in water recycling planning grants, and issued over \$400 million in water recycling project construction grants and loans. Water agencies have submitted water conservation plans to DWR (as required by the Urban Water Conservation Planning Act) that include plans for additional water recycling.	0.3 <sup>3</sup>	This measure proposes the production and use of additional recycled water where the recycling of treated effluent is not maximized at wastewater treatment plants located in areas where imported water is used. Implementation of water recycling projects would be prioritized for those areas that discharge to water bodies from which the wastewater cannot otherwise be easily recovered, such as the ocean and brackish water bodies. GHG benefits would be realized where recycled water would consume less energy than water obtained from existing sources.
W-4	SWRCB	Storm Water Reuse	by 2020	The State Water Board has taken steps to incorporate low impact development (LID) and hydro modification requirements in all municipal separate storm sewer system (MS4) permits, with some Regional Water Boards including design standards for LID and hydro modification. All future permits (such as the draft Phase II Small MS4 Permit and the draft Caltrans Statewide Storm Water Permit; both currently under development) will include LID requirements. The Southern California Storm water Monitoring Coalition, in cooperation with the State Water Board, published a Low Impact Development Manual for Southern California. Efforts are underway at the local and regional level to promote and implement LID.	0.2 <sup>3</sup>	This measure proposes that Low Impact Development (LID) be required to maximize the infiltration and/or capture of storm water to increase local water supplies. Where favorable soil and geologic conditions exist, storm water would be infiltrated to increase groundwater supplies. In locations where potential infiltration is either limited or not recommended, capture and storage for on-site non-potable use would be encouraged. GHG benefits would be realized where local water would consume less energy than water obtained from existing sources.
<b>Total Reductions Expected from SWRCB Led Strategies</b>					<b>0.5</b>	
<p><b>DOCUMENT FOOTNOTES:</b></p> <ol style="list-style-type: none"> <li>Where multiple agencies are noted, the first is the lead agency and the others work in collaboration to achieve strategy goals.</li> <li>Measures shown without an estimated GHG emission reduction represent on-going or future efforts for which quantification has not been completed.</li> <li>GHG emission reduction estimate not included in calculating the total reductions needed to meet the 2020 target as established in the Scoping Plan, (see Scoping Plan for details).</li> <li>These strategies will not result in direct reductions of GHG emissions but will facilitate reductions through associated voluntary actions and potential future regulatory efforts.</li> <li>These programs pre-date the Scoping Plan but are included here to document on-going efforts. GHG reductions are not included in the total for the agency as they do not provide additional reductions over and above what would have occurred absent AB 32.</li> </ol>						

**TABLE 3: CURRENT GHG EMISSION REDUCTIONS  
AND TARGETS FOR 2020**

**NOTE:** The following summarizes the totals from Tables 1 and 2. Reductions shown are Million Metric Tons of CO<sub>2</sub> Equivalent (MMTCO<sub>2</sub>E) and are those achieved within California during the given year. The annual figures are not cumulative and do not reflect reductions that might occur out-of-state.

Agency	GHG Emission Reductions in 2009 <sup>1</sup>	GHG Emission Reductions in 2010 <sup>1</sup>	GHG Emission Reduction Targets - Expected in 2020 from Proposed Strategies <sup>2</sup>
ARB	0.5	1.1	86.5
BTH	0.1	0.1	2.9
CalFIRE	2.3	2.3	5.0
CDFA	0.0	0.0	1.0
CEC	1.7	3.0	6.7
CalRecycle	0.0	0.0	1.0 <sup>3</sup>
CPUC	3.5	5.8	46.3
DWR	0.0	0.0	2.6
OPR <sup>4</sup>	0.0	0.0	0.0
SCSA <sup>5</sup>	< 0.1	< 0.1	5.3
SWRCB	0.0	0.0	0.5

**FOOTNOTES:**

1. The values in this column are taken from the totals in Table 1.
2. The values in this column are taken from the agency totals in Table 2. The total aggregate GHG reduction cannot be directly calculated from these values due to issues of double counting and some differences in baseline assumptions. Example: the Green Building measures achieve reductions, primarily, by reducing energy consumption. The GHG reduction is captured within the energy sector but the measure is implemented by agencies such as SCSA.
3. Only 1.0 MMT of the total shown on Table 2 is included in the target because the balance of the reductions may occur largely out-of-state.
4. OPR has important programmatic responsibilities but does not have emission reduction regulatory authority.
5. Most of the GHG reductions from SCSA measures are captured within the energy sector. The target is for measures that are not counted elsewhere.

**Data Source:** The information in this table was provided by the named Agencies, Boards and Departments.

**Verification:** Inventory figures that have been independently verified according to protocols of the California Climate Action Registry or the The Climate Registry are shown in green. Figures not yet verified will be shown for informational purposes with the understanding that they may change during the process of verification.

**Table 4: Climate Action Team - GHG Inventory Status**

INVENTORY STATUS - AGENCY/Dept.	Member of Climate Registry	Inventory Begun (CY)	Inventory Completed (CY)	Inventory Verified (CY)	Emissions in Metric Tons for each year calculated (verified figures in green)			Notes	
					Year	Direct	Indirect		Total
<b>Business, Transportation &amp; Housing</b>									
Following Boards and Departments calculate emissions separately.									
- CalTrans	Yes	2007 2008 2009 2010	2007 2008 2009 2010	2007	2007 2008 2009 2,010	136,587 75,546 98,423 83,695	93,996 111,331 131,227 98,918	230,583 186,877 229,650 182,613	
- Dept. of Housing and Community Development									
CalEPA - annual totals include all the following Boards & Departments	Yes	2005 2006 2007 2008	2005 2006 2007 2008	2005	2005 2006 2007 2008	2,632 2,852 2,772 2,881	4,914 4,796 5,526 5,440	7,546 7,648 8,298 8,321	2005 inventory includes CO2 only. As of January 2010, the Integrated Waste Management Board no longer resides within Cal/EPA. In the future, they will be reporting as Cal Recycles as part of the Natural Resources Agency.
- Air Resources Board									
- Integrated Waste Management Board (CIWMB)									
- Dept. of Toxics Substance Control									
- State Water Resources Control Board									
CA Department of Food & Agriculture	Yes	2007 2008	2007						
		2004 2005 2006	2004 2005 2006	2004 2005 2006	2004 2005 2006	92 432 515	849 1,084 1,228	941 1,516 1,743	
CA Public Utilities Commission	Yes								
Health and Human Services Agency - Department of Public Health									
<b>Natural Resources Agency</b>									
Following Boards and Departments calculate emissions separately.									
- CalFire	Yes	2007 2008 2009 2010	2007 2008 2009 2010		2007 2008 2009 2010	41,756 37,081 33,392 18,310*	7,364 6,060 6,248	49,120 43,141 39,640	Partial inventory: 12 of 30 CAL FIRE reporting entities have not submitted data for 2010.
- CA Energy Commission	Yes	2003 2008 2009 2010	2003 2008 2009 2010	2003	2003 2008 2009 2010	22 14 11 4	576 948 863 903	598 962 874 907	Decrease in 2010 direct emissions with continued shift to hybrid vehicles. Slight increase 2010 indirect emissions due to additional office space.
- CalRecycle		Emissions reported under CIWMB in CalEPA (above) through 2010							CalRecycle is developing and implementing procedures to gather the data needed to complete a GHG inventory.
- Dept. of Fish & Game	No	2007 2008 2009 2010	2007 2008 2009 2010		2007 2008 2009 2010	15,779 15,365 13,557 13,185	15,036 9,782 9,026 9,033	30,815 25,147 22,583 22,218	
- Dept. of Water Resources	Yes	2007 2008 2009 2010	2007 2008 2009	2007 2009	2007 2008 2009 2010	14,299 4,116 11,477 12,625	3,226,250 2,397,336 1,989,900 2,020,409	3,240,549 2,401,452 2,001,377 2,033,034	2010 are preliminary numbers based on reporting to ARB as TCR reporting is not yet finalized.
- State Parks	Yes	2006							
Office of Planning & Research	Yes								OPR is included with the Office of the Governor for purposes of Registry membership and GHG inventories.
State & Consumer Services Agency - Dept. of General Services	Yes	2006 2007 2008 2009 2010	2006 2007	2006 2007	2006 2007 2008 2009 2010	56,135 58,124 60,256 55,324 52,137	80,434 90,739 83,678 80,009 81,181	136,569 148,863 143,934 135,333 133,318	