

State Agency Greenhouse Gas Reduction Report Card

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

TABLE 1: On-going Measures and Reductions in 2009:

A number of GHG emission reduction measures are already in place and operational. The emission reductions achieved by these measures in calendar year 2009, 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 displays the agency targets. The targets were developed based on the strategies that the agencies will implement in the coming years. The total reduction for each agency shown in Table 2 is summarized in Table 3 and shown in comparison to the agency target.

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

Each CAT agency is also 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 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.

Table 1: Ongoing Measures and Related GHG Emission Reductions

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
California Air Resources Board 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 MMTCO ₂ in 2020 as the GHG standards are fully implemented.	0.03
California Air Resources Board 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 ₂ (MTCO ₂).	0.5
BT&H / Caltrans 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 emission reduction estimate indicated here reflects Caltrans cement consumption only and based on cement standards of 2.5% limestone and up to 25% fly ash. The CO ₂ emission reduction estimate includes both domestic and imported cement, which are not differentiated here for the purpose of GHG emission calculations. Caltrans cement consumption in 2009 is estimated at 500,000 Metric Tons. The fly ash consumption was estimated at 125,000 Tons which displaced clinker, reducing climate change emissions by 0.125 MMTCO ₂ in California.	0.1

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
<p>California Department of Forestry and Fire Protection (CAL FIRE)</p> <p>CAL FIRE Forest Practices</p> <p>CAL FIRE Urban Forestry</p> <p>CAL FIRE Forest Legacy</p>	<p>Measures and programs described below combine to total the emission reduction figure listed in the column to the right:</p> <p><u>Conservation Forest Management Strategy benefits:</u></p> <ul style="list-style-type: none"> Annual benefit from California Forest Practice Act rule changes instituted in December 2004 equals 2.2 MMT.¹ <p><u>Urban Forestry Strategy benefits:</u></p> <ul style="list-style-type: none"> CAL FIRE funded planting of 9,022 trees in 2009, 18,675 trees in 2007 and a total of over 39,000 trees since 2005² resulting in GHG reductions of 0.0004 MMTCO₂ in 2009.³ There were no plantings in 2008 due to Prop 84 funding freeze. Annual benefits increase over time as trees mature. Educational programs enhance effectiveness of voluntary tree planting by homeowners, utilities and others, but we do not reliably track voluntary outputs at this time. <p><u>Forestland Conservation Strategy benefits:</u></p> <ul style="list-style-type: none"> State Prop 40 and 50 conservation purchases (multiple agencies) in 2005 and 2006 produce emissions reductions through continued growth and sequestration equal to >.03 MMTCO₂ in 2009.⁴ Department of Fish & Game purchased 2,300 acres of oak woodland in 2007 through Prop 84⁵ potentially avoiding the loss of sequestration, resulting in a GHG reduction of 0.0001 MMTCO₂ in 2009.⁶ No conservation purchases were made since 2007 due to the State bond freeze. CALFIRE conserved 3,137 acres of timberland with easements through state and federal funding and landowner donations in 2009 for avoided conversion benefits of 0.09 MMTCO₂. 	<p>2.3</p>

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
<p>CAL FIRE Vegetation Management Program (VMP)</p> <p>CAL FIRE California Forest Improvement Program (CFIP)</p> <p>Other Forest Sector Programs</p>	<p><u>Fuels Management benefits:</u></p> <ul style="list-style-type: none"> • CAL FIRE conducted fuel or forest health treatments on 15,281 acres in 2007, 4,566 acres in 2008, and 16,780 acres in 2009⁷, avoiding about 0.005 MMT CO₂ from wildfire emissions in 2009.⁸ Biopower benefits were negligible and not accounted for at this time. • USFS and other federal agencies treated over 50,000 acres in 2007⁹ and 93,000 acres in 2008¹⁰ for approximately 0.02 MMT CO₂ of avoided wildfire emissions in 2009. Acres not available for 2009. <p><u>Reforestation benefits:</u></p> <ul style="list-style-type: none"> • CA Forest Improvement Program (CFIP) acreage for 2005-07 revised. CFIP planted 512 acres in 2008 and 112 acres in 2009 for a cumulative total of 1,754 acres. Projects may produce near-term emissions due to site preparation treatments¹¹; however methodology likely underestimates benefits for some CFIP projects conducted on areas immediately after wildfires.¹¹ Sequestration benefits increase as trees mature. GHG emission reduction in 2009 not quantified. • Actions by non-state CAL FIRE partners: USFS planting of about 8,600 acres in 2007 and again in 2008.¹¹ Information not available for 2009. GHG emission reduction in 2009 not quantified. <p><i>Additional Forest Sector Opportunities (may stretch target)</i></p> <p><u>Voluntary carbon projects and markets</u></p> <ul style="list-style-type: none"> • 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. 	

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
California Department of Water Resources End Use Water Conservation & Efficiency	<p>This program promotes greater implementation of water conservation measures, including best management practices, to improve efficiency. DWR, in cooperation with other state agencies, prepared and released in early 2009 the final report of 20X2020 Water Conservation which established the baselines and targets for reducing statewide per capita urban water use by 20% by the year 2020. Water Use and Efficiency Branch has been working to implement SBX7-7 Water Conservation Act of 2009 which includes water conservation and water use efficiency for both urban and agricultural water uses. We have started to evaluate quantitatively the water savings/energy savings/GHG emission reductions in our previously funded projects, and we plan in our new Proposal Solicitation Packages to include specific requirements for quantifying water savings, energy savings, and GHG emission reductions.</p>	**
California Energy Commission 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 CO₂ emissions factor for each MWh of electricity avoided of 0.436 MTCO₂.¹² Estimates use a CO₂ emissions factor for each MMBtu of natural gas combustion avoided of 0.0529 MTCO₂. Using 2007 as a base year, electricity savings in 2009 was 1,636 GWh. 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 annual electricity savings from appliances.</p>	0.7

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
California Energy Commission 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 alteration to existing buildings in California. The principal strategy is to develop, implement, and enforce standards that require and result in reduction in energy use in these buildings. Estimates use a CO₂ emissions factor for each MWh of electricity avoided of 0.436 MTCO₂. Estimates use a CO₂ emissions factor for each MMBtu of natural gas combustion avoided of 0.0529 MTCO₂. Using 2007 as a base year, electricity savings in 2009 was 979 GWh. 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 annual electricity savings from buildings.</p>	0.5
California Energy Commission Comprehensive Publicly Owned Utility Customer Energy Efficiency Programs	<p>The publicly owned utilities in California offer primarily electric energy efficiency programs to their ratepayers (one utility, City of Palo Alto, has a natural gas efficiency program). The 39 publicly owned utilities reported GHG emissions reductions for the first time in 2007. Their programs achieved savings of 1,047 GWh in 2009, with emissions reductions of 0.46 MMTCO₂E.</p>	0.5

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
<p>State and Consumer Services Agency (SCSA)</p> <p>SCSA Green Buildings - LEED</p> <p>SCSA Green Buildings – Distributed Generation</p> <p>SCSA Green Buildings – Existing State Buildings Retro-Commissioning</p> <p>SCSA Right-size the State Fleet</p>	<p>Measures and programs described below combine to total the emission reduction figure listed in the column to the right:</p> <p>This measure reduces GHG emissions associated with the design and construction of state buildings. During 2009, two new building projects totaling 19,944 sq. ft. were completed and certified under the LEED program at the level of Silver & Gold. In addition, 10 leases were executed for buildings and spaces that are, or will be LEED certified at the Silver or Certified levels for 323,671 sq. ft. These buildings all exceed current Title 24 code requirements, for an estimated total reduction of 400 MTCO₂. 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.</p> <p>This measure reduces GHG emissions associated with the installation of clean on-site renewable generation. No solar Photo Voltaic projects were completed in 2009, so no reductions were reported for 2009 in this category.</p> <p>This measure reduces GHG emissions associated with the optimization of energy systems and improvement of environmental performance in existing buildings. A total of 12 of these buildings were completed in 2009 totaling 5,394,633 sq. ft. Overall reduction in grid-based electricity usage as recorded for existing buildings using Energy Star Portfolio Manager tool resulted in reductions of 1,580 MTCO₂, a 13.5% reduction from 2008.</p> <p>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. In 2009, DGS Fleet eliminated 3,977 vehicles from the State Fleet, saving an estimated 370 tons of CO₂ emissions.</p>	<p><0.1</p>

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
SCSA High-Performance Schools	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 2009 reported savings result from 50 High Performance Incentive Grants issued in 2009. The estimated energy reductions associated with these projects total 265,000 MMBtu/year, which equals approximately 13,700 metric tons/year of avoided CO ₂ emissions.	<i><total included above></i>
California Public Utilities Commission Investor-Owned Utilities Energy Efficiency Programs	The CPUC funds energy efficiency (EE) programs through a combination of the Public Goods Charge (mandated by law) and the resource procurement budgets of the utilities. 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 2009 are based on reported 2009 EE savings plus cumulative savings from 2008. Cumulative 2007-2009 net savings were 5.89 million MWh of electricity (2,568,820 MWh from PG&E; 2,662,401 MWh from SCE; and 656,430 MWh from SDG&E) and 86.5 million Therms of natural gas. Each MWh of electricity avoided emissions by: 0.26 MTCO ₂ for PG&E; 0.32 MTCO ₂ for SCE; and 0.35 MTCO ₂ for SDG&E. ¹² Each Therm not produced by the combustion of natural gas prevents emissions by 0.00529 MTCO ₂ .	2.2
California Public Utilities Commission Renewables Portfolio Standard	Established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, California's Renewables Portfolio Standard (RPS) requires electric corporations to increase procurement from eligible renewable energy resources by at least 1% of their retail sales annually, until they reach 20% by 2010. In 2009, the Investor Owned Utilities (IOUs) collectively served 15.4% of their electric load with renewable energy under the RPS, up from 13% in 2008. The current projection is that IOUs will meet the 20% target in 2011. Emissions reductions in 2009 represent the increased renewable energy procurements compared to 2007 levels. Each MWh of electricity avoided emissions by: 0.26 MTCO ₂ for PG&E; 0.32 MTCO ₂ for SCE; and 0.35 MTCO ₂ for SDG&E. ¹²	1.3

Agency Program Title	Description of Measures	2009 Emission Reductions, MMTCO ₂ E
CalRecycle 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 MMTCO₂e. 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 is 62 to 65 percent.¹³</p>	**

** Emission Reduction not quantified.

¹ CAL FIRE, Forest Conservation Management Strategy, AB 32 Scoping Plan, Appendix C, p. 166.

² Trees planted by FY (Urban Forestry Program).

³ Benefits estimated using methodology developed for Urban Forestry Strategy in CAT Report and AB 32 Scoping Plan.

⁴ CAT Subgroup Reports Supporting AB 32 Scoping Plan, [Forestry Sector Summary and Analysis](#), Forest Conservation, p. 9.

⁵ Personal communication, Department of Fish & Game (DFG).

⁶ Benefits estimated using methodology developed for Forest Conservation Strategy in CAT Report and AB 32 Scoping Plan.

⁷ Sum of CFIP calendar year and Fuels Management fiscal year treatments for 2005-2008. For 2009, acres were added for non-Vegetation Management Program (VMP) fuel management treatments (estimated 50% of 10,307 reported ac). No Prop 40 projects for 2009.

⁸ Estimate derived from methodology developed for Fuels Management/Biomass Strategy in CAT Report and for AB 32 Scoping Plan: i.e., 0.022 MMT CO₂e/155,600 acres x acres treated = MMT reductions.

⁹ Department of Interior and USDA Fuels Treatment Accomplishments Report website: <http://www.forestsandrangelands.gov/reports/fuel-treatments.cfm?statename=California&FY=2008>

¹⁰ Personal communication, US Forest Service (USFS).

¹¹ Estimates based on methodology developed for Reforestation Strategy in AB 32 Scoping Plan.

¹² CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO₂/MWh or 0.436 MTCO₂/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

¹³ 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.

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.

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline ⁺⁺⁺	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
AIR RESOURCES BOARD (ARB) STRATEGIES : NOTE:					
AGRICULTURAL SECTOR					
A-1	ARB	Methane Capture at Large Dairies	Voluntary Measure Implementation 2017-2020	1 ³	This measure, developed in collaboration with CDFA, encourages voluntary installation of anaerobic digesters at large dairies to capture methane from manure. The protocol named below 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.
Appendix C, Section 12	ARB	Compliance Offset Protocol for Livestock Manure (Digester) Projects	Board Endorsed Compliance Protocol Dec-2010, as part of the Cap-and-Trade Regulation	* N/A	This measure provides a standardized accounting methodology for projects that reduce GHG emissions from waste management practices (storage, disposal, and transport).
ELECTRICAL AND NATURAL GAS SECTOR					
E-3	ARB	Renewable Electricity Standard	Approved Sep-2010 Implementation 2011	11.4	This measure increases the use of renewable electricity required by the Renewable Portfolio Standard (RPS). This measure was assigned to the ARB by Executive Order S-21-09 in September 2009. This measure requires California electric utilities to obtain 33% of their electricity from eligible renewable energy resources by 2020. Scoping Plan Measure E-3 will reduce approximately 23.4 MMTCO ₂ e, of which 12 MMTCO ₂ e is attributed to the RPS measure to reach 20% reduction by 2010 and 11.4 MMTCO ₂ e attributed to RES to reach 33% reduction by 2020. [Scoping Plan, Vol II, page I-30]
FOREST SECTOR					
Appendix C, Section 10	ARB	Compliance Offset Protocol for U.S. Forest Projects	Board Endorsed Compliance Protocol Dec-2010, as part of the Cap-and-Trade Regulation	* N/A	This protocol is an accounting mechanism to determine, on a project level, the GHG emissions reductions and sequestration from forest management practices.
Appendix C, Section 10	ARB	Compliance Offset Protocol for Urban Forest Projects	Board Endorsed Compliance Protocol Dec-2010, as part of the Cap-and-Trade Regulation	* N/A	The goal of the Urban Forestry Protocol is to provide a methodology for accounting and reporting the effects of urban forests on GHG emissions and sequestration.
HIGH GLOBAL WARMING POTENTIAL (GWP) GASES					
H-1	ARB	HFC Reduction Strategies: Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	Approved Jan-2009 Implementation 2010	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 ₆ Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	Approved Feb-2009 Implementation 2010	< .1	This regulation places restrictions on nonessential end uses of SF ₆ , where feasible alternatives are available.
H-3	ARB	High GWP Reduction in Semiconductor Manufacturing (Discrete Early Action)	Approved Feb-2009 Implementation 2012	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	0.2	This regulation requires setting GWP limits on specific consumer products.
		High GWP Reductions from Mobile Sources: 1) Low GWP Refrigerants for New Vehicle A/C Systems.	1) Board to consider TBD Implementation TBD		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.

TABLE 2: GHG EMISSION REDUCTION STRATEGIES AND TIMELINES FOR IMPLEMENTATION

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline ⁺⁺⁺	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
H-5	ARB	2) Air Conditioner Refrigerant Leak Test During Vehicle Smog check. 3) Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers 4) Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	2) Board to consider TBD Implementation TBD 3) Board to consider TBD Implementation TBD 4) Board to consider TBD Implementation TBD	0.8	2) Proposes the addition of a refrigerant leak check on MVAC systems when the smog check is required, 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.
H-6	ARB	High GWP Reductions from Stationary Sources: 1) SF ₆ Emission Reductions from Gas Insulated Switchgear 2) Foam Recovery and Destruction Program 3) High-GWP Refrigerant Management Program for Stationary Sources a) Refrigerant Tracking/Reporting/Repair Deposit Program b) Specifications for Commercial and Industrial Refrigeration Systems 4) Residential Refrigeration Early Retirement / Voluntary Program 5) Alternative Fire Suppressants	1) Approved Feb-2010 Implementation 2011 2) Board to consider TBD Implementation TBD 3a) Approved Dec-2009 Implementation 2011 3b) CEC to Consider 2011 Implementation 2013 4) Board to consider TBD Implementation TBD 5) Board to consider TBD Implementation TBD	5.9	1) Measure to set maximum SF ₆ emission rate for gas insulated switches; 2) Measure for the collection of foam and then either recycling or destruction of high GWP gases; 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, as well as reduce emissions resulting from the installation and servicing of refrigeration and air conditioning appliances using refrigerants; 4) ARB work with utilities to encourage recovery of high GWP materials from residential refrigerators at end of life; and, 5) Use of leakage reduction methods and/or lower GWP fire suppression agents.
H-7	ARB	Mitigation Fee on High GWP Gases	Board to consider TBD Implementation TBD	5	This regulation proposes establishment of an upstream fee on high GWP gases based on their global warming potential.
	ARB	Compliance Offset Protocol for U.S. Ozone Depleting Substances Projects	Board Endorsed Compliance Protocol Dec-2010, as part of the Cap-and-Trade Regulation	N/A *	This measure provides a standardized accounting methodology for projects that reduce GHG emissions through the destruction of ozone depleting substances which are also potent greenhouse gasses. As an example, ODS destruction that occurs from the proper management of high GWP materials may be able to establish an offsets project if they meet the compliance offset protocol criteria.
	INDUSTRY SECTOR				
I-1	ARB	Energy Efficiency and Co-Benefits Assessments for Large Industrial Sources	Approved Jul-2010 Implementation 2010	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	Board to consider TBD Implementation TBD	0.2	These regulations propose to require minimizing the venting of natural gas to the atmosphere during maintenance procedures.
I-3	ARB	GHG Leak Reduction from Oil and Gas Transmission	Board to consider TBD Implementation TBD	0.9	These regulations propose to improve maintenance and inspection requirements for valves and flanges.
I-4	ARB	Refinery Flare Recovery System Improvement	Board to consider TBD Implementation TBD	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	0.01	This regulation proposes to remove existing fugitive methane exemptions from the regulations applicable to equipment and sources employed in California's refineries.

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Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline ⁺⁺⁺	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
RECYCLING AND WASTE MANAGEMENT					
RW-1	ARB	Landfill Methane Control Measure (Discrete Early Action)	Approved Jun-2009 Implementation 2010	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.
TRANSPORTATION SECTOR					
T-1	ARB	Pavley I and Advanced Clean Cars	Pavley I: Approved Sep-2004 Implementation 2009-2016 Advanced Clean Cars: Board to consider April 2011 Implementation 2017-2020	29.9	On May 19, 2009, the Obama administration announced an agreement to enact national greenhouse gas (GHG) standards for cars and light trucks. This agreement among the federal 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 automobile manufacturers agreed to drop their lawsuits. EPA granted California the requested waiver. The California 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 the model years 2017 through 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	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 ₂ 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 TBD	3.0	ARB approved regional transportation related GHG reduction targets to implement Senate Bill 375 (SB 375, Steinberg, Statutes of 2008) . SB 375 enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. SB 375 also establishes incentives to encourage implementation of a sustainable communities strategy (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	0.6	This strategy requires 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	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	Goods Movement Efficiency Measures: 1) Port Drayage Trucks 2) Transport Refrigeration Units Cold Storage Prohibition and Energy Efficiency 3) Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4) Goods Movement System-Wide Efficiency Improvements	1) Approved Dec-2007 Implementation to begin 2010 2) Board to consider TBD Implementation TBD 3) Board to consider TBD Implementation TBD 4) Board to consider TBD Implementation TBD	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. 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.

TABLE 2: GHG EMISSION REDUCTION STRATEGIES AND TIMELINES FOR IMPLEMENTATION

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline ^{***}	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
		5) Commercial Harbor Craft Maintenance and Design Efficiency	5) Board to consider TBD Implementation TBD		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		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		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)	Approved Dec-2008 Implementation 2010-2013	0.9	This regulation requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB approved technology to reduce GHG emissions and improve the fuel efficiency of trucks; may include devices that reduce aerodynamic drag and rolling resistance.
T-8	ARB	Medium- and Heavy-Duty Vehicle Hybridization	Incentive program funding approved annually. Incentive program implementation initiated 2010	< .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 with additional funding available in the first quarter of 2011.
OTHER SECTORS / STRATEGIES					
Appendix C, Sections 3 and 4	ARB	Cool Communities	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.
Scoping Plan Chapter IV, Section B	ARB	Small Business Toolkit	Approved Apr-2009 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 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 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. Implementation Jan-2012	18 ^{***}	The broad-based California cap & trade program will provide a firm limit 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.
Total Reductions Expected from ARB Led Strategies				97.7 ^{****}	
<p>ARB NOTES: [*] 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. Expected emission reductions for proposed measures not yet adopted are based on the Scoping Plan</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>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
BUSINESS, TRANSPORTATION AND HOUSING (BTH) STRATEGIES					
TRANSPORTATION SECTOR *					
Not in Scoping Plan	BTH, CalTrans	Strategic Growth Plan - Operational Improvements	2020	1.2	Congestion Management Plan
Not in Scoping Plan	BTH, CalTrans	Fleet Greening and Fuel Diversification	2020	0.1	Fleet replacement
Not in Scoping Plan	BTH, CalTrans	Non-Vehicular Conservation Measures	2020	0.3	Energy Conservation Opportunities
T-3: C-56	BTH, HCD	Regional, Transportation-Related Greenhouse Gas (GHG) Targets.	Begin in 2010 in preparation of the next update for the SANDAG, RTP and RHNA. Then ongoing	HCD will work with CARB to establish baseline and targets in 2010-2011	Regional Transportation-Related Greenhouse Gas (GHG) Targets: Integrate the regional housing needs allocation (RHNA) and housing element update processes with regional transportation plans (RTP's) and develop new RHNA methodology to meet GHG targets for the land use portion of the transportation sector.
INDUSTRY SECTOR					
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

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
LAND USE *					
C-82 ***	BTH - HCD	Housing Element Technical Assistant	Beginning in 2010 and ongoing.	Not quantified. HCD will work with ARB 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 in 2010 and ongoing.	Not quantified. HCD will work with ARB to establish mechanism to evaluate impact of land use changes.	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 in 2010 and ongoing.	Not quantified. HCD will work with ARB to establish mechanism to evaluate impact of land use changes.	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	By 2012	Not quantified. HCD will work with ARB to establish mechanism to evaluate impact of land use changes.	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.
Total Reductions Expected from BTH Led Strategies				3.1	
<p>BTH NOTES:</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 & Trade.</p> <p>*** References section numbers of the Scoping Plan where the strategies are described.</p>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
CalFIRE / BOARD OF FORESTRY STRATEGIES					
FOREST SECTOR					
F-1 (Substrategies Below)	CalFIRE / BOARD OF FORESTRY	Sustainable Forests *	On-going	5.0	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	CalFIRE / 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	CalFIRE / BOARD OF FORESTRY	Forest Conservation	2005-2020		Prevent conversion of forestlands through publicly and privately funded acquisitions and easements.
F-1: Substrategy 3	CalFIRE / BOARD OF FORESTRY	Fuels Management/Biomass	2005-2020		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	CalFIRE / BOARD OF FORESTRY	Urban Forestry **	2005-2020		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	CalFIRE / BOARD OF FORESTRY	Afforestation/Reforestation **	2005-2020		Reforest state, private and federal lands to produce sequestration benefits.
Total Reductions Expected from CalFIRE Led Strategies				5.0	
<p>Cal FIRE NOTES: * 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.</p> <p>** Forestry Protocols adopted by the ARB (see the 'Forest Sector' under the ARB section of this document) will be used in the implementation of these measures.</p>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA) STRATEGIES					
AGRICULTURAL SECTOR					
A-1	CDFA, ARB	Methane Capture at Large Dairies (Enteric Fermentation, Dairy Digesters)	TBD	1 ³	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	N/A ⁴	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	Bio-fuels (E-85 and Biodiesel)	TBD	TBD	CDFA Division of Measurement Standards (DMS) is working with renewable fuel producers to develop and market test fuels through an established variance program. This collaborative venture allows "experimental fuels" (fuels without ASTM adopted standards) to gain broad based market feedback, exposure, and market access with close regulatory oversight.
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, CEC	Energy Crops	Jan. 1, 2009 - Dec. 31, 2011	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.
WATER SECTOR					
Not in Scoping Plan	CDFA, USDA-NRCS	Promote water use efficiency through case studies and outreach to growers	Dec 31, 2009	TBD	CDFA has a \$45,000 contract with NRCS to develop a forum to provide outreach to growers on irrigation methods and funding programs that promote water-use efficiency methods and technologies.
Total Reductions Expected from CDFA Led Strategies				1.0	

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
CALIFORNIA ENERGY COMMISSION (CEC) STRATEGIES					
ELECTRICAL AND NATURAL GAS SECTOR					
E-1	CEC	Comprehensive Publicly Owned Utilities Efficiency Program	2016	3.5	POUs' pursue energy efficiency programs for their customers in all end uses, notably cooling and lighting. They report their goals and accomplishments to the Energy Commission.
Not in Scoping Plan	CEC	Building Energy Efficiency Standards in Place	Ongoing	2.1 ⁵	Current energy efficiency requirements for newly constructed buildings, additions and alterations (Title 24, Part 6); the building standards adopted in 2008 will take effect in 2010.
Not in Scoping Plan	CEC	Appliance Energy Efficiency Standards in Place	Ongoing	4.5 ⁵	Current energy efficiency requirements for appliances sold in California (Title 20); metal halide lamps, portable lights, and pool pump standards will take effect in 2010. In 2011 efficiency standards for TV's (<58 inches) and certain general service incandescent lamps will take effect.
TRANSPORTATION SECTOR					
T-4	CEC	Fuel-Efficient Tire Program	Ongoing	0.26	Adoption/Implementation in 2010-2011. Reducing the average rolling resistance of replacement tires through consumer information and minimum standards promises fuel savings and a resultant reduction in GHG emissions.
WATER SECTOR					
W-3	CEC, DWR, CPUC, SWRCB	Energy Intensity of the Water System	Ongoing	2 ³	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 ³	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.
Total Reductions Expected from CEC Led Strategies				6.7	

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
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	1.5 ***	This regulation requires enhanced control of methane emissions from municipal solid waste landfills and would require owners and operators to install gas collection and control systems at smaller and other uncontrolled landfills. Affected landfills would be required to implement advanced methane monitoring requirements.
RW-2	CalRecycle	Increasing the Efficiency of Landfill Methane Capture	Guidance Document Complete April 2008, outreach on-going	TBD ³	To support the landfill methane control measure (RW-1), in 2008 CalRecycle published "Technologies and Management Practices for Reducing Greenhouse Gas Emissions from Landfills" that can be used as an outreach tool to optimize and increase the efficiency of landfill methane capture. The "Improved Inventory Methods for Landfill Methane Emissions from California Landfills" project was initiated by the California Energy Commission in cooperation with CalRecycle to develop improved methods for estimating landfill methane emissions in the context of the California greenhouse gas inventory. This project includes inventory method development with theoretical/empirical modeling; selective data collection, analysis, and validation; and field validation of methodology with feedback for method/model adjustments.
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	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. CalRecycle's efforts include: <ul style="list-style-type: none"> • Published "Guidance Document on How Anaerobic Digestion Fits Current Board Regulatory Structure" to provide guidance on how CalRecycle's requirements apply to potential uses of anaerobic digestion. • Conducting research to assess the capabilities of a new landfill-based in-situ anaerobic digester technology designed to generate electricity and achieve emissions less than those of current aerobic composting technology. • Preparing a Programmatic Environmental Impact Report to assess the environmental impact of siting new and expanding existing anaerobic digestion facilities.

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
RW-3: Sub strategy 2	CalRecycle	Mandatory Commercial Recycling	Full implementation by 2020	5.0 ^{**}	GHG emission reductions are achieved by recycling materials. Recycling reduces the fossil fuel energy used to extract resources and process materials and, in some cases, avoid some methane emissions at landfills. Efforts include: <ul style="list-style-type: none"> • Conducted Cost Study on Commercial Recycling to analyze the cost-benefits of commercial diversion programs • Collaborating with the Institute of Local Governments to encourage business and industry to implement commercial recycling programs (2008-2012) • CalRecycle is conducting informal workshops. Formal rulemaking is scheduled for January 2011. Adoption of the regulations by ARB is scheduled for Spring 2011, with jurisdictions adopting & implementing programs by July 2012.
RW-3: Sub strategy 3 ¹	CalRecycle	Extended Producer Responsibility (EPR)	• Establish authority for EPR framework	TBD ³	EPR places a shared responsibility for end-of-life product management on the producers and all entities involved in the product chain. Some of the strategies include: reducing the amount of materials used to make products; influencing product design, use, and reuse capabilities to minimize raw material inputs; extend product life spans; and maximize the ease and frequency of subsequent product disassembly, recycling, and/or transformation for further productive use. GHG emission reductions are realized from avoided energy use in the extraction of resources. CalRecycle is currently conducting research to assist in understanding the potential greenhouse gas and other environmental, economic, and social benefits of a producer responsibility/stewardship approach to product management.
RW-3: Sub strategy 4	CalRecycle	Increase Production & Markets for Compost	Full implementation by 2020	2.0 ^{**}	Diversion of organic materials from landfills can, in some cases, provide reduction of GHG's through landfill methane avoidance while the organic materials can be used as feedstock for producing compost. Efforts include: completed a Life Cycle Assessment of organics diversion alternatives; development of compost based BMPs and compost specifications for agriculture crops; studying the effectiveness of compost as cover to mitigate methane emissions at landfills; conducting research on compost emissions and ozone formation; researching N ₂ O emissions from compost production and use; evaluating economic incentives/disincentives and siting and capacity issues.
Appendix C, Section 9. C.	CalRecycle	Liquefied Natural Gas from Landfill Gas Measure	Demonstration project completed 2010	1.0	CalRecycle awarded a \$740,000 matching grant to the Gas Technology Institute (GTI) for a full scale demonstration landfill-gas-to-LNG project at the Altamont Landfill, Alameda County. The plant purifies and liquefies landfill gas that Waste Management collects from the natural decomposition of organic waste in the landfill. The plant is designed to produce up to 13,000 gallons of LNG per day – enough to fuel 300 of Waste Management's 485 LNG waste and recycling collection vehicles in twenty California communities. High Mountain Fuels received "Alternative and Renewable Fuel and Vehicle Technology Program" (AB 118) funds for the development of a new state-of-the-art LNG production plant at the Simi Valley Landfill. This new plant will leverage lessons learned from Altamont and incorporate enhanced capital and operating efficiencies.
Not in Scoping Plan - completed prior to Scoping Plan development	CalRecycle	Achieve 50% Statewide Recycling Goal On-going efforts continue	Achieved 52% in 2005 Achieved 54% in 2006 Achieved 58% in 2007 Achieved 59% in 2008 Achieved 65% in 2009	3.0 ⁵	Recycling has the potential to significantly reduce GHG emissions because the majority of GHG reduction benefits from recycling or waste prevention come from the energy savings from avoided resource extraction and materials processing.

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Not in Scoping Plan	CalRecycle, CEC, ARB, CPUC	Waste Technology Demonstration & Development	Began demonstration project to convert solid waste into bioenergy and biofuel.	TBD	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. The project will use post-Material Recovery Facility (MRF) organic residuals as feedstock and produce liquid, solid or gaseous (or combination of) energy products that will have specific end-uses and market value in energy markets.
Not in Scoping Plan	CalRecycle	AB 1343 - Paint Recovery Act	Signed into law 9/28/10	TBD	This bill creates an architectural paint recovery program that is enforced by CalRecycle. On or before April 1, 2012, a manufacturer or designated "stewardship organization" is required to submit to the department an architectural paint stewardship plan to develop and implement a recovery program to reduce the generation of post-consumer paint, promote the reuse of post-consumer architectural paint, and manage the end-of-life of post-consumer architectural paint in an environmentally sound fashion, including collection, transportation, processing, and disposal.
Not in Scoping Plan	CalRecycle	AB 2398 Product Stewardship: Carpet	Signed into law 9/30/10	TBD	The bill requires, by September 30, 2011, a producer of carpet to submit a carpet stewardship plan to CalRecycle. The plan must include specified elements including a funding mechanism that provides sufficient funds to carry out the plan, including administrative, operational, and capital costs of the plan. This bill will increase recycling of carpet which is currently more than 1.3 million tons of the total waste stream annually.
WATER SECTOR					
Appendix C, Section 4.E.	CalRecycle, DWR	Watershed Friendly Landscape Guidelines	Full implementation by 2020	2.7	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.
Total Reductions Expected from CalRecycle Led Strategies				12.7	
<p>CalRECYCLE NOTES: * 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>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) STRATEGIES					
ELECTRICAL AND NATURAL GAS SECTOR					
E-1	CPUC	IOU Energy Efficiency Programs	Ongoing through 2020	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	6.7	The Commissions are implementing AB 1613 and AB 2791 to create standards and a tariff for new small highly efficient CHP systems. For large CHP systems, a standard offer contract as authorized under PURPA is ready for Commission consideration but is on hold pending settlement negotiations. In addition, there will be future policy framework on CHP for all systems.
E-2	CPUC	Electricity Sector Carbon Policy	Began in 2007 (emissions performance standard)	N/A ²	The Emissions Performance Standard (EPS) creates rules that baseload generation to serve California consumers will be from power plants that have emissions no greater than a combined cycle gas turbine plant.
E-3	CPUC, CEC	20% RPS	Ongoing -- legislative target is to reach 20% goal by 2010 and maintain it thereafter	7.9	Current projection is that Investor Owned Utilities will meet this target in 2011.
E-4	CPUC, CEC	GoSolarCalifornia (previously titled - 'Million Solar Roofs')	Program began in 2007; projected completion by 2016	2.2	The goal of GoSolarCalifornia is to install 3,000 MW of rooftop solar (and achieve greater market transformation) via provision of a subsidy based on performance to help buy-down the cost of rooftop solar PV on residential and commercial buildings. As part of GoSolarCalifornia, the CPUC is responsible for 1,750 MW of retro-fit projects, called the California Solar Initiative.
CR-1	CPUC, CEC	Energy Efficiency: 800 mil. therms reduced consumption.	TBD	4.3	This strategy includes: utility energy efficiency programs; building and appliance standards; and additional efficiency and conservation programs.

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CR-2	CPUC	Increased Use of Solar Water Heating	TBD	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.
Not in Scoping Plan	CPUC	Self Generation Incentive Program	Began in 2001; ongoing	TBD	This program currently only includes Fuel Cells and Wind Turbines. SB 412, effective as of January 1, 2010, provides the CPUC with the authority to include new technologies that are GHG beneficial. Implementation of any new rules for SGIP are expected in 2011.
Not in Scoping Plan	CPUC, CIWMB, ARB	Renewable Auction Mechanism for system-side renewable distributed generation	Began 2008	Is included in goal for 20% RPS	The Commission is considering a proposed decision that would authorize the Renewable Auction Mechanism (RAM). The proposed decision requires the investor-owned utilities to procure renewable energy projects up to 20 MW through a reverse auction. The proposed decision creates a 2-year program for 1000 MW.
Not In Scoping Plan	CPUC	Alternative Fuel Vehicles (Natural Gas and Electric Vehicles)	Rulemaking began in 2009; Program implementation anticipated in 2011	TBD	The CPUC launched an Alternative Fuel Vehicle Rulemaking in August 2009. A decision to potentially implement programs is anticipated in July 2011 per statute. This rulemaking focuses on rates and infrastructure for Plug-in Electric vehicles and potentially Natural Gas Vehicles.
	WATER SECTOR				
W-3	CPUC, CEC, SWRCB, DWR	Water and Energy Conservation	TBD	TBD	The Commission has a current investigation into water conservation and subsequent energy conservation. During 2009, the CPUC sponsored multiple statewide combined state and water agency workshops on water recycling and water use efficiency and chaired the CAT Water-Energy Team (WET CAT) Sub-Committee on Calculating GHG Emissions in the Water Sector.
Total Reductions Expected from Energy Sector Strategies				32.9	
<p>CPUC NOTES: ¹ 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>² 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>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
DEPARTMENT OF WATER RESOURCES (DWR) STRATEGIES					
WATER SECTOR					
W-1	DWR, SWRCB	Water Use Efficiency	Dependent upon resources; various milestones through 2020 per SBx7 7.	1.4 ³	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	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.
Not in Scoping Plan	DWR	Reid Gardner Power Plant Divestiture	2013	1.2	DWR will divest its interest in a 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, CO2 emissions from DWR's power portfolio will decrease an estimated 1,180,000 MT from its 1990 levels. By 2014, DWR's emissions will be almost 40% lower than its 1990 levels.
Total Reductions Expected from DWR Led Strategies				2.6	

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
OFFICE OF PLANNING AND RESEARCH (OPR) STRATEGIES					
OTHER SECTORS/STRATEGIES					
Chapter II Section A	OPR	CEQA Guidelines	January 1, 2010	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	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.
Not in Scoping Plan	OPR	Technical Advisory	January 1, 2011	No Direct Reductions	OPR is developing a 'Technical Advisory' to provide advice to cities and counties for including policies in their general plans to address climate change, and discussing the general plan in relationship to state climate change legislation.
Total Reductions Expected from OPR Strategies				0.0 *	
OPR NOTES: * OPR has important programmatic responsibilities but does not have emission reduction regulatory authority.					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
STATE AND CONSUMER SERVICES AGENCY (SCSA) STRATEGIES					
GREEN BUILDINGS					
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	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	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	N/A*	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	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	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.
GB-1: substrategy 6	DGS, State Agencies, CIWMB, DTSC	Environmentally Preferable Purchasing (EPP)	Ongoing: Operate green buildings and minimize energy and resource impacts.	**	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.

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
GB-1: substrategy 7	California Building Standards Commission, CEC, DGS, State Architect, HCD, OSHPD	Green Building Code Development	Ongoing	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 takes effect January 1, 2011. Voluntary reductions estimated at 3.6 MMT. Mandatory reductions estimated at 2.9 MMT. (Source: ARB)
TRANSPORTATION SECTOR					
Appendix C, Section 2.B.	DGS, BAR, DMV, OFAM	Right-size the State Fleet	Ongoing	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, BAR, DMV, OFAM	Removing Higher-Polluting Vehicles from the State Fleet	Ongoing	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. We will continue working with other state agencies on cost effective vehicle replacement strategies.
Appendix C, Section 2.B.	DGS, BAR, DMV, OFAM	Actively manage vehicle miles traveled and reduce petroleum consumption	Ongoing	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.
Total Reductions Expected from SCSA Led Strategies				5.1	
<p>SCSA NOTES: * The estimated reduction for this strategy is still preliminary so is not included for this year.</p> <p> ** 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.</p>					

Scoping Plan: Strategy Number or Chapter / Section	Agency ¹ and Sector	Name	Implementation Timeline	Expected GHG Emission Reductions in 2020 ² (MMTCO ₂ E)	Brief Description
STATE WATER RESOURCES CONTROL BOARD (SWRCB) STRATEGIES					
WATER SECTOR					
W-2	SWRCB, DWR, CEC, CPUC	Water Recycling	by 2020	0.3 ³	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	0.2 ³	This measure proposes that Low Impact Development (LID) be required to maximize the infiltration and/or capture of stormwater to increase local water supplies. Where favorable soil and geologic conditions exist, stormwater 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.
Total Reductions Expected from SWRCB Led Strategies				0.5	
<p>DOCUMENT FOOTNOTES:</p> <ol style="list-style-type: none"> 1. Where multiple agencies are noted, the first is the lead agency and the others work in collaboration to achieve strategy goals. 2. Measures shown without an estimated GHG emission reduction represent on-going or future efforts for which quantification has not been completed. 3. 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). 4. These strategies will not result in direct reductions of GHG emissions but will facilitate reductions through associated voluntary actions and potential future regulatory efforts. 5. 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. 					

TABLE 3: GHG EMISSION REDUCTION TARGETS (MMTCO₂E)

Agency	GHG Emission Reductions in 2009 ¹	GHG Emission Reductions Expected in 2020 from Proposed Strategies ²	Agency 2020 GHG Emission Reduction Target
ARB	0.5	97.7	97.7
BTH	0.1	3.1	3.0
CalFIRE	2.3	5.0	5.0
CDFA	0.0	1.0	1.0
CEC	1.7	6.7	6.7
CalRecycle	0.0	12.7	1 ³
CPUC	3.5	32.9	32.0
DWR	0.0	2.6	1.0
OPR ⁴	0.0	0.0	NA
SCSA	< 0.1	5.1	2 ⁵
SWRCB	0.0	0.5	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 MMT of this target is included in the overall total because the balance of these 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.

Table 4: Climate Action Team - GHG Inventory Status

INVENTORY STATUS	Member of Climate Registry			Inventory Begun (CY)		Inventory Completed (CY)		Emissions in Metric Tons for each year calculated (* verified figures in green)			Notes
	Year	Direct	Indirect	Total							
AGENCY/Dept.											
Business, Transportation & Housing	<i>Following Boards and Departments calculate emissions separately.</i>										
- CalTrans	Yes	2007	2007	2007	2007	136,587	93,996	230,583			
		2008	2008		2008	75,546	111,331	186,877			
		2009	2009		2009	98,423	131,227	229,650			
- Dept. of Housing and Community Development											
CalEPA - includes the following Boards & Depts:	Yes	2005	2005	2005	2005	2,632	4,914	7,546	2005 inventory includes CO2 only.		
- Air Resources Board		2006	2006		2006	2,852	4,796	7,648			
- Integrated Waste Management Board **		2007	2007		2007	2,772	5,526	8,298			
- Dept. of Toxics Substance Control		2008	2008		2008	2,881	5,440	8,321			
- State Water Resources Control Board											
CA Department of Food & Agriculture	Yes	2007	2007								
		2008									
CA Public Utilities Commission	Yes	2004	2004	2004	2004	92	849	941			
		2005	2005	2005	2005	432	1,084	1,516			
		2006	2006	2006	2006	515	1,228	1,743			
Health and Human Services Agency											
- Department of Public Health											
Natural Resources Agency	<i>Following Boards and Departments calculate emissions separately.</i>										
		2004	2007		2007	41,756	7,364	49,120			
		2005	2008		2008	37,081	6,060	43,141			
		2006	2009		2009	33,392	6,248	39,640			
		2007									
		2008									
- CalFire	Yes	2009									
		2003	2003	2003	2003	22	576	598	Decrease in direct emissions due to shift to hybrid vehicles. Increase in indirect emissions (2008) due to inclusion of heating and cooling.		
		2008	2008		2008	14	948	962			
- CA Energy Commission	Yes	2009	2009		2009	11	863	874			
		2007	2007		2007	15,779	15,036	30,815			
		2008	2008		2008	15,365	9,782	25,147			
- Dept. of Fish & Game	No	2009	2009		2009	13,557	9,026	22,583			
		2007	2007	2007	2007	14,299	3,226,250	3,240,549			
		2008	2008	2008	2008	4,116	2,397,336	2,401,452			
- Dept. of Water Resources	Yes	2009	2009		2009	11,477	1,989,900	2,001,377			
- 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.		
		2006	2006	2006	2006	56,135	80,434	136,569			
		2007	2007	2007	2007	58,124	90,739	148,863			
State & Consumer Services Agency		2008			2008	60,256	83,678	143,934			
- Dept. of General Services	Yes	2009			2009	55,324	80,009	135,333			

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

** As of January 2010, the Integrated Waste Management Board no longer resides within Cal/EPA. Starting next year (2011), they will be reporting as part of the Natural Resources Agency under their new name, 'Cal Recycle'.