January 2013
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, though posted and dated January 2013, reflects information from 2011 and 2012. The projections of future GHG emissions are current as of October 2012 when state agencies are required to submit their information to CalEPA, and the report of actual GHG reductions are current as of 2011, the last year of available data.

The statute requires that the Report Card include the following:

- 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: <u>On-going Measures and Reductions in 2011</u>:

A number of GHG emission reduction measures are already in place and operational. The emission reductions achieved by these measures in calendar year 2011, as reported to Cal/EPA by the responsible agencies, are shown in Table 1.

TABLE 2: <u>GHG Reduction Strategies, and Timelines for Implementation</u>:

Anticipated strategies and measures for implementation over the next few years are included in Table 2 along with the expected GHG reduction from each measure, 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, which can be found at http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm). 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 Climate Registry (TCR)*. Inventories identified as 'verified' have been verified by an approved third party and submitted to the registry. The verified inventory reports can be found on the registry's websites: 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.

Under the recently issued Executive Order B-18-12, all state agencies are required to prepare annual GHG inventories. At this time, most agencies have begun reporting their inventories for the 2010 and 2011 calendar years and these should be available for future Report Cards.

*Originally chartered by the state of California as the California Climate Action Reserve

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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

DGS – Department of General Services

DWR – Department of Water Resources

GHG – Greenhouse Gas

GW – Gigawatt,

GWh, MWh – Gigawatt hour, Megawatt hour

GWP –Global Warming Potential

LEED – Leadership in Energy and Environmental Design (certification program)

$MTCO_2E$ - Metric Tons of CO_2 Equivalent

$MMTCO_2E$ - Million Metric Tons of CO_2 Equivalent

MW - Megawatt

OPR – Office of Planning and Research

SCSA – State Consumer Services Agency

SF_6 – Sulfur Hexaflouride

SWRCB – State Water Resources Control Board

Table 1: Ongoing Measures and Related GHG Emission Reductions

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
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 $MMTCO_2E$ in 2020 as the GHG standards are fully implemented.	**	0.5	2.2
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 ($MTCO_2E$). (Note: ARB's emission inventory model is currently being updated. The GHG benefit estimates may be revised after the update is complete.)	0.5	0.5	0.5
California Air Resources Board 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.	N/A	**	0.7

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Air Resources Board Goods Movement (Drayage Trucks)	This regulation requires the reduction of GHG, diesel particulate matter (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 $MTCO_2E$ reductions in 2011 based on difference in fuel economy between pre-1994 and newer engines, and population published in ARB 2007 staff report.	N/A	0.1	0.1
California Air Resources Board 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 $MTCO_2e$ reductions in 2011.	N/A	<0.1	<0.1
California Air Resources Board Reduction of Refrigerant Emissions from Non-Professional Services	This regulation requires a self-sealing valve on small cans of refrigerant, and a deposit and recycling program for the cans.	N/A	N/A	0.3
California Air Resources Board SF_6 Limits in Non-Utility and Non-Semiconductor Applications	This regulation achieves GHG emission reductions from SF_6 use in non-semiconductor and non-utility applications through a phase-out of use over several years. The use and sales requirements do exclude a limited number of uses such as in eye surgeries.	N/A	N/A	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Air Resources Board High GWP Reduction in Semiconductor Manufacturing	This regulation requires manufacturers to use process optimization, alternative chemistries, and abatement technologies in combination or separately (reduces perflourocarbons(PFCs) through changing the process to use lower GWP chemicals, or installing thermal oxidizers to destroy the PFCs). Emission reductions will not be achieved until 2012.	N/A	N/A	**
California Air Resources Board Global Warming Potential Use in Consumer Products	This regulation requires setting Global Warming Potential limits on specific consumer products.	N/A	N/A	0.2
California Air Resources Board Refrigerant Management Program	This regulation requires facilities with large refrigeration systems with more than 50 pounds of high-GWP refrigerant to conduct periodic leak inspections, promptly repair leaks, and keep service records on site. These facilities are also required to register and submit annual refrigerant usage reports to ARB. This regulation also affects any person who installs, services, or disposes of any appliance using a high-GWP refrigerant; as well as refrigerant wholesalers, distributors, and reclaimers. The rule became effective beginning January 1, 2011, With gradual implementation, no reductions are estimated for 2011. Staff estimates ~6$MMTCO_2E$ emission reductions by 2020.	N/A	N/A	**
California Air Resources Board SF_6 Emission Reductions from Gas Insulated Switchgear	This regulation sets an annual emission rate limit for sulfur hexafluoride as a proportion of an entity's capacity of sulfur hexafluoride in gas-insulated switchgear. The maximum allowable annual emission rate started at ten percent for 2011 and decreases one percent per year until 2020, at which point the maximum allowable annual emission rate remains at one percent.	N/A	N/A	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Air Resources Board Landfill Methane	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. Design Plans are required by June 17, 2011 and emission controls are required within 18 months after approval of the Design Plan for active MSW landfills or within 30 months after approval of the Design Plan for closed or inactive MSW landfills.	N/A	N/A	**
California Air Resources Board Low Carbon Fuel Standard	This regulation requires fuel providers in California 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.	N/A	N/A	0.7
California Air Resources Board Heavy-Duty Vehicle Aerodynamic Efficiency	This regulation reduces GHG emissions from long-haul tractors and 53-foot or longer dry-van and refrigerated-van trailers pulled by these tractors by requiring them to be either U.S. EPA SmartWay certified or retrofitted with SmartWay verified aerodynamic technologies and low rolling resistance tires. (Note: The 2010 and 2011 GHG benefits are estimates and may change in 2012 once ARB's emission inventory model is updated.)	N/A	<0.1	0.1
California Air Resources Board Medium- and Heavy-Duty Vehicle Hybridization	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 and zero-emission technology. Incentives for hybrid and zero-emission trucks became available starting the first quarter of 2010 and the program will continue into 2013 with up to $10 million in additional funding augmenting the $54 million previously allocated.	N/A	N/A	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
Caltrans Alternative Cement and Concrete Strategies	In 2009, Caltrans amended their Standard Specifications for concrete to allow contractors to use less energy-intensive concrete mixes. These alternatives include fly ash, blast furnace slag, and silica fume. Caltrans is also looking into ways to reduce GHG emissions associated with concrete. These include; researching the potential of using roller-compacted concrete, which requires less cement as a binding agent, using recycled aggregates in concrete, which reduces life-cycle emissions, using pervious concrete, which is more porous than typical concrete and allows rainwater to pass down to the soil. GHG emission reductions were 50.000 $MTCO_2E$ in 2011.	0.1	0.1	. <0.1
Caltrans Alternative Asphalt Strategies	Caltrans has multiple initiatives to reduce the carbon content of asphalt and the energy required to lay it; Cold-in-place Recycling, Rubberized hot-mix Asphalt, and Rubberized warm-mix Asphalt. Caltrans use of alternatives to hot mix asphalt reduces its operational GHG emissions by over 61,000 tons per year.	N/A	N/A	<0.1
Caltrans Alternative Fuel and Fleet Strategies	Caltrans has been working to conserve fleet fuel use since the mid-1980s by developing more efficient ways to manage the fleet. Recent efforts focus on using alternative fuels and more efficient vehicles in its fleet and equipment, including: Biodiesel fuel, Ethanol fuel, Liquefied petroleum gas (propane), Compressed natural gas (CNG), Hydrogen fuel cell vehicles, and Hybrid electric vehicles. As of 2009, Caltrans had switched to alternative fuel sources for 3,000 vehicles. GHG emission reductions were 1,000 $MTCO_2E$ in 2011.	<0.1	<0.1	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
Caltrans Alternative Employee Commuting Strategies	Caltrans has many employee commute programs in place that reduce the need to drive to work. These include monthly bus passes, emergency ride home vouchers, subsidies for vanpools, carpool matching services, and secure-access bicycle parking. GHG emission reductions were 6,000 $MTCO_2E$ in 2011.	N/A	N/A	<0.1
Caltrans Renewable Energy Generation	As of January 2012, 61 of Caltrans Clean Renewable Energy Bonds (CREBs) funded projects were complete and generating energy, and 9 are in progress. The majority of the 70 photovoltaic projects funded by the CREBs bonds are at Caltrans maintenance facilities and equipment shops, with the remainder at rest areas, office buildings, laboratories, and toll/management facilities. GHG emission reductions were 1,100 $MTCO_2E$ in 2011.	N/A	N/A	<0.1
Caltrans LED Roadway Lighting	Over the past several years, Caltrans has begun to require that most of the highway lighting system use light-emitting diode (LED) light fixtures. Statewide deployment started in 2010, full project funding was approved in February 2012, and full deployment is expected in 2014/2015. GHG emission reductions were 33,000 $MTCO_2E$ in 2011.	N/A	N/A	<0.1
Caltrans Facility Efficiency and Energy Conservation	Caltrans has improved the energy efficiency of existing Caltrans buildings and has constructed new facilities that meet LEED standards. Several of the most widely-deployed strategies to reduce GHG emissions at Caltrans administrative facilities, include: LEED certified buildings, Data center upgrades, Energy efficient lighting, Low flow toilets and water fixtures, Other energy efficiency upgrades and retrofits. GHG emission reductions were 2,000 $MTCO_2E$ in 2011.	N/A	N/A	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Department of Forestry and Fire Protection (CAL FIRE) (various programs)	**Sustainable Forests:** Existing state and federal regulations and assistance programs. Recent research shows California forests increasing in growing stock[1] and likely sequestering more than 5.0 $MMTCO_2E$ per year.[2] CAL FIRE, federal and other known state forest sector activities contributing to current sequestration rates include:	Total = 2.3	Total = 2.3	Total = 2.7
- Forest Practices	<u>Conservation Forest Management Strategy benefits</u>: Annual benefit from California Forest Practice Act rule changes instituted in December 2004 equals 2.2 $MMTCO_2E$.[3]	2.2	2.2	2.2
- Urban Forestry	<u>Urban Forestry Strategy benefits</u>: CAL FIRE funded planting of 9,453 trees in 2011 for a cumulative total of 64,003 trees since 2005 resulting in annual benefits of 0.0007 $MMTCO_2E$ reductions.[4] Annual sequestration is based on cumulative nos. 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.	<0.1	<0.1	<0.1
- Forest Legacy	<u>Forestland Conservation Strategy benefits:</u> • CAL FIRE conserved 15,483 ac in 2011 for a one time avoided conversion emission of 0.46 $MMTCO_2E$.[5] • Ongoing annual uptake benefits from conservation purchases by other agencies in 2005-2007 total 0.02 $MMTCO_2E$[6]. CAL FIRE has not tracked subsequent conservation purchases.	0.1	0.1	0.5

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
-Vegetation Management Program (VMP)	Fuels Management benefits: CAL FIRE conducted fuel reduction on 8,769 acres using mechanical or manual treatments and 8,067 acres using prescribed burning in 2011. 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's is revising its Vegetation Treatment Program Environmental Impact Report (EIR) and will conduct a more detailed analysis of fuel treatment emissions.[7]	<0.1	**	**
- California Forest Improvement Program (CFIP)	Reforestation benefits: o CA Forest Improvement Program (CFIP) had no funding for tree planting in 2011. 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.[8] o Actions by non-state CAL FIRE partners: USFS planting of about 8,600 acres in 2007 and 2008.[9] CAL FIRE has not tracked subsequent USFS reforestation.	0	0	0
Other Forest Sector Programs	***Additional Forest Sector Opportunities (stretch target)*** Voluntary carbon projects and markets 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.	**	**	**

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Department of Water Resources (DWR) End Use Water Conservation & Efficiency	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. The Department's Integrated Regional Water Management grant program adopted a climate change standard which includes consideration of water-related GHG emissions. The Urban Water Management Plan guidelines were revised to recommend the inclusion of a climate change element that addresses the water-energy nexus.	**	**	**

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Energy Commission Appliance Energy Efficiency Standards	The Appliance Efficiency Regulations increase efficiency of appliances sold to California consumers and businesses. Emission reductions result from energy-efficient appliances consuming less electricity and natural gas, thereby avoiding emissions associated with electricity generation and natural gas combustion. Using the California Energy Demand (CED) 2011 forecast and 2007 as a base year, cumulative electricity savings in 2009 was 2,207 GWh, 3,813 GWh in 2010, and 5,159 GWh in 2011.[10] Cumulative natural gas savings from appliance standards for 2009, 2010, and 2011 were 100, 77, and 113 million therms, respectively.[11] Estimates use a CO_2 emissions factor for each MWh of electricity avoided of 0.313 $MTCO_2E$.[12] Estimates use a CO_2 emissions factor for each million british thermal units (MMBtu) of natural gas combustion avoided of 0.0529 $MTCO_2E$. One therm equals 0.1 MMBtu. (Using these revised emission factors, the estimate for 2009 changes from 1.2 $MMTCO_2E$ to 0.7 $MMTCO_2E$ and for 2010 changes from 1.8 $MMTCO_2E$ to 1.6 $MMTCO_2E$.)	0.7	1.6	2.2
California Energy Commission Building Energy Efficiency Standards	The Building Energy Efficiency Standards are designed to increase the efficiency of all newly constructed residential and nonresidential buildings and additions and alterations to existing buildings in California. The strategy is to develop, implement, and enforce standards that require and result in reductions in energy and water use in buildings. Estimates use a CO_2 emissions factor for each MWh of electricity avoided of 0.313 $MTCO_2E$.[13] Estimates use a CO_2 emissions factor for each MMBtu of natural gas combustion avoided of 0.0529 $MTCO_2$. Using the CED 2011 adjusted forecast and 2007 as a base year, cumulative net electricity savings in 2009 was 389 GWh, 840 GWh in 2010, and 1,422 GWh in 2011.[14] Cumulative natural gas savings from building standards for 2009, 2010, and 2011 were 103, 56, and 82 million therms, respectively.[15] (Using these revised emission factors, the estimate for 2009 changes from 0.3 $MMTCO_2E$ to 0.5 $MMTCO_2E$ and for 2010 changes from 0.5 $MMTCO_2E$ to 0.6 $MMTCO_2E$.)	0.5	0.6	0.9

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Energy Commission Comprehensive Publicly Owned Utility Customer Energy Efficiency Programs	The publicly owned utilities in California offer electricity efficiency programs to their ratepayers. The publicly owned utilities reported GHG emissions reductions for the first time in 2007. Their programs achieved cumulative savings of 1,046 GWh in 2009[16] for emissions reductions of 0.33 $MMTCO_2E$. POU cumulative reported electricity savings in 2010 was 1,569 GWh for 0.49 $MMTCO_2E$. Electricity savings totaled 2,029 GWh in 2011 for 0.63 $MMTCO_2E$. Previous estimates of GHG emissions reductions used 0.436 $MTCO_2E$ per MWh. These calculations use 0.313 $MTCO_2E$ per MWh avoided.[17] (Using these revised emission factors, the estimate for 2009 remains unchanged, but for 2010 changes from 0.7 $MMTCO_2E$ to 0.5 $MMTCO_2E$.)	0.5	0.5	0.6

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
Department of General Services (DGS)* **	Measures and programs described below combine to total the emission reduction figure listed in the column to the right:	<0.1	<0.1	<0.1
DGS Green Buildings - LEED	This measure reduces GHG emissions associated with the design and construction of state buildings. During 2011, nine new or renovated buildings totaling 801,514 sq. ft. were completed and certified under the LEED program at the level of Silver, Gold & Platinum. This included six leased buildings. These buildings all exceed current Title 24 code requirements, for an estimated total reduction of 932 $MTCO_2E$. 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	<0.1
DGS Green Buildings – Distributed Generation	This measure reduces GHG emissions associated with the installation of clean on-site renewable generation. In 2011, 2 MW were installed at State facilities, with more being installed in 2012 and 2013.	0	0	<0.1
DGS 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, however, eight previously retro-commissioned buildings implemented additional energy efficiency measures, resulting in more energy savings.	<0.1	0	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
DGS Right-size the State Fleet	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_2 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 CO2 emissions in 2010 (1,953 vehicles were prorated over 12 months and 488 vehicles entirely for 12 months). In calendar year 2011, OFAM administered Executive Order B-2-11, and evaluated the State fleet for a second round of reductions. This analysis resulted in the targeting of over 7,000 fleet assets for elimination, including more than 4,200 passenger vehicles. The elimination of the vehicles and associated GHG reductions will begin taking place in FY 2012/2013.	<0.1	<0.1	<0.1
DGS 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 2010 reported savings result from 29 High Performance Incentive Grants issued in 2011. The estimated energy reductions associated with these projects total 143,000 MMBtu/year, which equals approximately 7,565 metric tons/year of avoided CO_2 emissions.	<0.1	<0.1	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Public Utilities Commission California Solar Initiative	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 $MTCO_2E$ for PG&E; 0.32 $MTCO_2E$ for SCE; and 0.35 $MTCO_2E$ for SDG&E. Reductions for 2011 are based on systems installed and operating through 2011.	N/A	0.2	0.3
California Public Utilities Commission California Solar Initiative – Thermal Program (Solar Water Heating)	The CPUC's CSI-Thermal program offers incentives based on the amount of natural gas or electricity displaced by solar water heaters. Incentives are available for residential, multifamily and commercial applications. The program was created in January 2010 (by Decision (D).10-01-022 and modified in 2012 by D.12-08-008, pursuant to AB 1470). In 2007, the legislature authorized a new $250 million program to be funded by natural gas ratepayers with a goal of promoting 200,000 solar thermal systems that displace natural gas use by 2017. In 2011, the CPUC authorized a low-income component of the CSI-Thermal Program with a $25 million budget dedicated to low-income solar water heating incentives funded by gas ratepayers (pursuant to AB 1470).	N/A	**	<0.1

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Public Utilities Commission 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 2011 are based on gross savings from installed and operating measures from the 2007 through 2011 program years, including 7.8% assumed avoided line losses for consistency with the methodology of ARB's Climate Change Scoping Plan. Cumulative gross savings in 2011 were 16.2 million MWh of electricity (absent avoided line losses) and 246 million Therms of natural gas. Each MWh of electricity avoided emissions by 0.28 $MTCO_2E$, the weighted average emissions intensity of PG&E, SCE and SDG&E.[18] Each avoided Therm is assumed to reduce emissions by 0.0053156 $MTCO_2E$, reflecting the CO_2 that would otherwise be emitted through the combustion of natural gas. (Note that previous Report Cards reporting 2009 and 2010 data relied on a combination of net and gross electricity EE savings, but this 2012 Report Card updates prior years' data to reflect gross EE savings, which is a more appropriate metric to account for GHG reductions and will be used for all future Report Cards. Therefore the reported emissions reductions for 2009 changed from 2.2$MMTCO_2E$ to 4.6 $MMTCO_2E$ and for 2010 changed from 3.6 $MMTCO_2E$ to 5.4 $MMTCO_2E$.)	4.6	5.4	6.2

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Public Utilities Commission 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, 2010 and 2011 represent the increased renewable energy procurements compared to 2007 levels. Each MWh of electricity avoided emissions by: 0.26 $MTCO_2E$ for PG&E; 0.32 $MTCO_2E$ for SCE; and 0.35 $MTCO_2E$ for SDG&E.[19]	1.3	2.0	3.5
California Department of Resources, Recycling and Recovery (CalRecycle) Statewide Recycling	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 $MMTCO_2e$. However, many of the reductions take place outside of California. 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. The diversion rate was 63 to 65 percent in 2010. In 2011 the diversion rate was 64 to 65 percent,[20]	**	**	**

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Department of Food and Agriculture Fertilizer Research and Education Program	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_2O) levels from nitrogen fertilizers added to corn, tomatoes, and cotton crops. Research began in 2009. Research for tomatoes and cotton is expected to be completed at the end of 2013. Corn research will be completed at the end of 2014. 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. Dairy systems generate significant amounts of methane from onsite waste lagoons. A dairy digester (or biodigester) 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. 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. A final report of the research findings will be available in August, 2013.	N/A	**	**

Agency Program Title	**Description of Measures**	**2009 Emission Reductions, $MMTCO_2E$**	**2010 Emission Reductions, $MMTCO_2E$**	**2011 Emission Reductions, $MMTCO_2E$**
California Department of Food and Agriculture Fuel Quality and Standards	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.	N/A	**	**

** Emission Reduction not quantified.
***In prior reports DGS was listed under SCSA.

FOOTNOTES:

[1] 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.
[2] 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.
[3] CAL FIRE, Forest Conservation Management Strategy, AB 32 Scoping Plan, Appendix C, p. 166...
[4] Benefits estimated using methodology developed for Urban Forestry Strategy in CAT Report and AB 32 Scoping Plan.
[5] Benefits estimated using methodology developed for Forest Conservation Strategy in CAT Report and AB 32 Scoping Plan.
[6] Personal communication, DFG; Resources Agency Prop 40/50 database.
[7] Personal communication, CAL FIRE Vegetation Management Program.
[8] Benefits estimated using methodology developed for Reforestation Strategy for AB 32 Scoping Plan.
[9] Personal communication, USFS...
[10] The estimates are based on the California Energy Demand 2011 (CED 2011) mid-case scenario which can be found at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/. The estimates for 2009 and 2010 are revised from previous Report Cards to reflect the results of the 2011 demand forecast.
[11] The estimates reflect the California Energy Demand 2011 (CED 2011) mid-case scenario which can be found at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/; cumulative energy savings can be negative in a given year because many factors affect total energy consumption, including changes in the price of energy (e.g., drop in natural gas prices).
[12] In this Report Card, the Energy Commission staff used an updated GHG emission factor of 690 lbs CO_2/MWh or 0.313 $MTCO_2$/MWh to better estimate the emission attributes of the electricity system for years 2009, 2010, and 2011. In previous Report Cards, the Energy Commission used the GHG emission factor of 961 lbs CO_2e per MWh developed in the AB 32 Scoping Plan. The Energy Commission currently uses the 690 lbsCO_2/MWh or 0.313 $MTCO_2$/MWh GHG emission factor to estimate emission reductions from energy efficiency, consistent with the *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report, Final Report*, Prepared by: Economics Subgroup, Climate Action Team, October 15, 2007.

http://www.climatechange.ca.gov/climate_action_team/reports/2007-10-15_MACROECONOMIC_ANALYSIS.PDF, page 13. The Energy Commission is currently working with other agencies to develop a consistent methodology for estimating GHG emission reductions from efficiency and renewable energy projects in California.

[13] In this Report Card, the Energy Commission staff used an updated GHG emission factor of 690 lbs CO_2/MWh or 0.313 $MTCO_2$/MWh to better estimate the emission attributes of the electricity system for years 2009, 2010, and 2011. In previous Report Cards, the Energy Commission used the GHG emission factor of 961 lbs CO_2e per MWh developed in the AB 32 Scoping Plan. The Energy Commission currently uses the 690 lbsCO_2/MWh or 0.313 $MTCO_2$/MWh GHG emission factor to estimate emission reductions from energy efficiency, consistent with the *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report, Final Report*, Prepared by: Economics Subgroup, Climate Action Team, October 15, 2007. http://www.climatechange.ca.gov/climate_action_team/reports/2007-10-15_MACROECONOMIC_ANALYSIS.PDF,page 13. The Energy Commission is currently working with other agencies to develop a consistent methodology for estimating GHG emission reductions from efficiency and renewable energy projects in California.

[14] The estimates are based on the adjusted California Energy Demand 2011 (CED 2011) mid-case scenario which can be found at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/; a memo describing adjustments to CED 2011 can be viewed at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/Memorandum_IUEE-CED2011.pdf. The estimates for 2009 and 2010 are revised from previous Report Cards to reflect the results of the 2011 demand forecast.

[15] The estimates reflect the California Energy Demand 2011 (CED 2011) mid-case scenario which can be found at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/; a memo describing adjustments to CED 2011 can be viewed at: http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/Memorandum_IUEE-CED2011.pdf; cumulative energy savings can be negative in a given year because many factors affect total energy consumption, including changes in the price of energy (e.g., drop in natural gas prices).

[16] Cumulative energy savings from publicly owned utility energy efficiency programs for years 2009, 2010, and 2011 are reported in *Energy Efficiency in California's Public Power Sector – A Status Report* (March 2012), page 23. These energy savings figures have not been systematically evaluated by the POUs or the Energy Commission. The Energy Commission is working to develop a standardized approach to evaluation of POU energy efficiency program savings estimates.

[17] In this Report Card, the Energy Commission staff used an updated GHG emission factor of 690 lbs CO_2/MWh or 0.313 $MTCO_2$/MWh to better estimate the emission attributes of the electricity system for years 2009, 2010, and 2011. In previous Report Cards, the Energy Commission used the GHG emission factor of 961 lbs CO_2e per MWh developed in the AB 32 Scoping Plan. The Energy Commission currently uses the 690 lbsCO_2/MWh or 0.313 $MTCO_2$/MWh GHG emission factor to estimate emission reductions from energy efficiency, consistent with the *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report, Final Report*, Prepared by: Economics Subgroup, Climate Action Team, October 15, 2007. http://www.climatechange.ca.gov/climate_action_team/reports/2007-10-15_MACROECONOMIC_ANALYSIS.PDF,page 13.The Energy Commission is currently working with other agencies to develop a consistent methodology for estimating GHG emission reductions from efficiency and renewable energy projects in California.

[18] CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO_2/MWh or 0.436 $MTCO_2$/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

[19] CEC uses a GHG emission factor relied upon by CARB for analysis of the Scoping Plan: 961 lbsCO_2/MWh or 0.436 $MTCO_2$/MWh. CPUC uses emission factors for investor-owned utilities, which are lower than the statewide average.

[20] 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. The continuing economic downturn and increased diversion program implementation likely share responsibility for the small increase in 2010 for a "diversion rate equivalent" of 65 percent. The estimated statewide "diversion rate equivalent" for 2011 remained unchanged at 65 percent.

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

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

$MMTCO_2E$ - Million Metric Tons of CO2 Equivalent

Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	AIR RESOURCES BOARD (ARB) STRATEGIES : NOTE:					
	AGRICULTURAL SECTOR					
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 [3]	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.
	ELECTRICAL AND NATURAL GAS SECTOR					
E-3	CPUC, CEC, ARB	Renewables Portfolio Standard (Previously called Renewable Electricity Standard)	SBX 1-2 Chaptered 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.
	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; Implemented Jan-2010; Phase-in complete Jan-2011	Implementing regulation.	0.26	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	Implementing regulation.	< 0.1	This regulation places restrictions on nonessential end uses of SF_6, where feasible alternatives are available.
H-3	ARB	High GWP GHGs Reduction in Semiconductor Operations (Discrete Early Action)	Approved Feb-2009 Implementation of Regulation 2010	Implementing regulation.	0.2 - in 2012 and expect further reductions in future years.	This regulation requires operations to use process optimization, alternative chemistries, and abatement technologies in combination or separately (reduces GHGs through changing the process to use lower GWP chemicals or installing thermal and plasma destruction devices to abate the high GWP GHGs.)
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.	0.23	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) Approved-January 2012; implementation 2017 model year	Implementing regulation.	0.8	1) Measure provides credit incentives for using 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.

Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
		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.
H-6	ARB	High GWP Reductions from Stationary Sources: 1) SF_6 Emission Reductions from Gas Insulated Switchgear	Approved Feb-2010 Implementation 2011	Implementing regulation.	5.9	1) Measure to set maximum SF_6 emission rate for gas insulated switchgear,
		2) Foam Recovery and Destruction Program	On hold.	Determined to be not feasible at this time - additional research to determine emission impacts is underway.		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-Registration /Reporting/Repair 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	Currently under the public rulemaking process.		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	TBD	Continuing to evaluate the feasibilty and cost of the program.		5) ARB work with utilities to encourage recovery of high GWP materials from residential refrigerators at end of life; and,
		6) Alternative Fire Suppressants	On hold.	Determined to be not feasible at this time.		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.
	INDUSTRY SECTOR					
I-1	ARB	Energy Efficiency and Co-Benefits Assessments for Large Industrial Sources	Approved Jul-2010 Implementation 2010	Implementing regulation.	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	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	Measure no longer being considered	Local air district efforts have reduced routine refinery flaring rates, thereby obviating the need for additional flare gas recovery capacity.	N/A	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	Measure currently on hold.	Continuing to evaluate while requesting local air districts to remove exemptions voluntarily.	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 2013 Implementation TBD	Regulatory development.	N/A	This measure would require implementation of 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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Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	RECYCLING AND WASTE MANAGEMENT					
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.
	TRANSPORTATION SECTOR					
T-1	ARB	Pavley I and Advanced Clean Cars	Pavley I: Approved Sep-2004 Implementation 2009-2016 Advanced Clean Cars: Approved Jan- 2012 Implementation 2017-2020	Implementing regulation.	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_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 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	1) Approved Dec-2007 Implementation to begin 2010	Implementing regulation.	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 Cold Storage Prohibition.	2) Board to consider TBD Implementation TBD	Continuing to evaluate.		2) Transport Refrigeration Units (TRUs) are powered by external combustion engines. This measure would limit the amount of time TRU engines could run for extended cold storage at facilities including distribution centers and grocery stores.
		3) Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification	3) Board to consider TBD Implementation TBD	Continuing to evaluate.		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[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	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.	0.7	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 up to $10M for hybrid and zero-emission 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 and zero-emission technology. Incentives for hybrid and zero-emission trucks became available starting the first quarter of 2010 and the program will continue into 2013 with up to $10 million in additional funding augmenting the $54 million previously allocated.
	OTHER SECTORS / STRATEGIES					
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; First allowance auction held November 14, 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.)
Total Reductions Expected from ARB Led Strategies					**86.1**	

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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.

** These measures facilitate reductions through voluntary actions.

*** Set at a level needed to help achieve the GHG emission reduction target for 2020.

**** Emission reductions for adopted and proposed measures are based on published Staff Reports.

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.

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$MMTCO_2E$ - Million Metric Tons of CO2 Equivalent

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	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	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	CalFIRE / 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	CalFIRE / 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	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**	

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.

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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	CalRecycle continues to work with ARB, other agencies, and external stakeholders as new data and scientific methodologies become available, to ensure that California has the most up-to-date and scientifically accurate estimates of fugitive methane emissions.	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. CalRecycle conducted a detailed analysis of Waste-to-Energy facilities and avoided landfill methane emissions for the purpose of providing recommendations relating to Waste-to-Energy GHG estimates, avoided landfill methane emissions for other waste management options, and the need for further research on landfill methane emissions.	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	Participated in the development of the 2012 Bioenergy Action Plan, which contains more than 50 recommended actions to increase the sustainable use of organic waste, expand research and development of bioenergy facilities, reduce permitting and regulatory challenges, and address economic barriers to bioenergy development. ARB, in partnership with CalRecycle, developed the Low Carbon Fuel Standard pathway for High Solids Anaerobic Digestion technologies. ARB and CalRecycle have started developing LCFS fuel pathway(s) for Low Solids Anaerobic Digestion technologies. In collaboration with the California Biomass Collaborative, the California Organic Recycling Council, and the City of San Jose, CalRecycle hosted the Digesting Urban Organic Residuals (DUOR) Forum showcasing project implementation progress in California, and highlighting the benefits and challenges of AD technology. In collaboration with US EPA Region 9, hosted the California Bioresources Alliance 7th Annual Symposium, "Renewable Energy from Organic Residuals". CalRecycle is providing on-going technical support to a number of the AD projects that are under development.	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	The MCR regulation was adopted by CalRecycle on January 17, 2012 and reflects the statutory provisions of AB 341 with additional procedural clarifications. The regulation was approved by the Office of Administrative Law on May 7, 2012 and became effective immediately with business and local jurisdiction implementation required on July 1, 2012. Staff continues to work with each jurisdiction to develop specific strategies for providing education, outreach, and monitoring to businesses and multifamily complexes. Released a climate calculator designed for virtually any California business or multifamily complex to assess the financial, climate change, and waste reduction/environmental benefits of reducing and recycling their discarded materials. Published a two-page outreach brochure to explain the new state requirements.	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	CalRecycle approved PaintCare's Architectural Paint Stewardship Program Plan on July 19, 2012. Additionally, the Office of Administrative Law approved CalRecycle's Architectural Paint Recovery Program Regulations on June 6, 2012. CalRecycle conditionally approved the Carpet Stewardship Plan on January 17, 2012 and the Carpet Stewardship Regulations became effective January 26, 2012. These laws follow producer responsibility principles to ensure programs that are sustainably funded and properly manage leftover architectural paint and discarded carpet in California.	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 *Framework for Evaluating End-of-Life Product Management Systems in California* 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	Continued several research projects related to compost production and markets including: compost-based Best Management Practices in a field demonstration setting; research on GHG emissions from compost piles and N20 emission reduction potential of finished compost application on agricultural land. Conducting informal workshop to review draft regulatory issues and potential approaches for future revisions to Title 14 and Title 27 regulations regarding compostable materials, transfer/processing, permit application form, and permit exemptions.	2.0 **	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 N20 emissions.
Appendix C, Section 9. C.	CalRecycle	Liquefied Natural Gas from Landfill Gas Measure	Full implementation by 2020	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. The Solid Waste Facility Permit for Simi Valley Landfill was issued on 4/3/2012.	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 Achieved 65% in 2011	CalRecycle provides assistance to local jurisdictions, businesses and the public with their recycling efforts. In 2011, a per-resident disposal rate of 4.4 pounds/resident/day was calculated using SB 1016's measurement system; however, the per-resident "diversion rate equivalent" remains unchanged at 65%.	3 [5]	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. *[**NOTE**: The 3 MMT figure for this strategy reflects the GHG reduction at the 54% level for recycled materials]*
Not in Scoping Plan	CalRecycle, CEC, ARB, CPUC	Waste Technology Demonstration & Development	Full implementation by 2020	An RMDZ loan to Clean World Partners was tentatively approved in 2012 for $2 million to finance equipment for a new anaerobic digestion (AD) facility. The facility will recycle food waste into compressed natural gas (CNG) that will be used to refuel waste hauling trucks, generate electricity and produce various residual by-products. This facility is projected to divert 9,125 tons of food waste from landfills annually and create six jobs.	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.
Not in Scoping Plan	CalRecycle,	AB 341 – California's 75 Percent Recycling Initiative	Full implementation by 2020	CalRecycle is conducting workshops and meetings to obtain public input in the development of a plan to achieve the 75 percent recycling goal.	TBD	Signed by the Governor in October 2011, AB 341 set an ambitious 75 percent statewide recycling goal of California's solid waste by 2020 which means that roughly 20 million tons per year of materials currently disposed in landfills will be recycled resulting in significant GHG reductions.
	WATER SECTOR					
Appendix C, Section 4.E.	CalRecycle, DWR	Watershed Friendly Landscape Guidelines	Full implementation by 2020	CalRecycle continues to work with the River Friendly Landscape (RFL) Coalition in the development and use of the "RFL Benefits Calculator". The calculator is for homeowners, landscape professionals and anyone else who wants to see how much water, time and money can be saved be creating a river-friendly landscape. Also, this tool will estimate the amount of greenhouse gases that be reduced by using river-friendly principles. The calculator was released in early 2012.	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.
Total Reductions Expected from CalRecycle Led Strategies					**10****	

CalRecycle NOTES:

* Reduction included under ARB's totals (see page 3)

** GHG emission reduction estimate in Scoping Plan

*** Split responsibility for Substrategy 3: CalRecycle is lead for EPR, and DGS is lead for EPP.

**** Includes RW 3-Substrategy 1 (Anaerobic Digestion), RW 3-Substrategy 2 (Mandatory Commercial Recycling), RW-3 Substrategy 4 (Increase Production & Markets for Compost), and Appendix C. Section 9. C (Liquified Natur

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	CALTRANS					
	TRANSPORTATION SECTOR *					
Not in Scoping Plan	BTH, CalTrans	Alternative Employee Commuting Strategies	2020	On-going. GHG emission reductions were approximately 6,000 MTCO2	0.0065 or (<0.1)	Caltrans has many employee commute programs in place that reduce the need to drive to work. These include monthly bus passes, emergency ride home vouchers, subsidies for vanpools, carpool matching services, and secure-access bicycle parking
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; anda full statewide deployment of the Computer Energy Reduction and Data (CERB) collection project.	0.01	Energy Conservation Opportunities
	INDUSTRY SECTOR					
Not in Scoping Plan	BTH, CalTrans	Alternative Asphalt Strategies	On-going	NA	.0603 (<0.1)	Caltrans use of alternatives to hot mix asphalt reduces its operational GHG emissions
Not in Scoping Plan	BTH, CalTrans	Alternative Cement and Concrete Strategies **	On-going		0.2	Cement and Construction Industries
	OTHER *					
Not in Scoping Plan	BTH, CalTrans	Facility Efficiency and Energy Conservation	On-going	NA	.00223 or (<0.1)	Caltrans has improved the energy efficiency of existing Caltrans buildings and has constructed new facilities that meet LEED standards. Several of the most widely-deployed strategies to reduce GHG emissions at Caltrans administrative facilities, include: LEED certified buildings, Data center upgrades, Energy efficient lighting, Low flow toilets and water fixtures, Other energy efficiency upgrades and retrofits.
Total Reductions Expected from CalTrans Led Strategies					**0.4**	

CalTrans Notes

** 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.

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	CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA) STRATEGIES *					
	AGRICULTURAL SECTOR					
A-1	CDFA, ARB	Methane Capture at Large Dairies (Enteric Fermentation, Dairy Digesters)	TBD	CDFA along with USDA NRCS and US EPA have created the CA/Fed Dairy Digester Working Group. The group consists of staff from ARB, CDFA, CAL-EPA and dairy stakeholders.	1	These activities have been initiated in coordination with the ARB. The State and Federal Agencies continue to work on addressing regulatory, (including permitting), technical and financial barriers to a widespread voluntary adoption of anaerobic digesters on dairies. CDFA organized the Dairy Digester Working Group to address some of the pending issues. 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	Research, through funding from CDFA, continues on corn, tomatoes, and cotton crops. Research on tomatoes and cotton is expected to be completed in 2013. Corn research will be completed in 2014.	N/A [4]	CDFA has engaged in efforts with ARB and CEC during the past several year to coordinate research activities on reducing nitrous oxide emissions from nitrogen fertilizer applications. CDFA committed to funding $150,000 on baseline agricultural nitrous oxide emissions. CDFA funded research on this topic will continue though 2014.
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, and diesel substitutes such as dimethyl ether . Under a grant from the California Energy Commission, DMS 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. DMS is participating with ASTM International in the development of national standards for butanol based fuel. 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 Changing 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.
Not in Scoping Plan	CDFA, CEC	Energy Crops	Final report due August, 2013	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 2011 SCBGP	TBD	Several research projects related to GHG reductions were funded under the 2011 SCBGP. 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 www.cdfa.ca.gov/grants.
Total Reductions Expected from CDFA Led Strategies					**1.0**	

CDFA NOTES: * 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.

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	CALIFORNIA ENERGY COMMISSION (CEC) STRATEGIES					
	ELECTRICAL AND NATURAL GAS SECTOR					
E-1	CEC	Comprehensive Publicly Owned Utilities Efficiency Program	2016	Worked on revising independent efficiency evaluation guidelines that will document savings results and are useful to POUs of all sizes.	2.1 *	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	Adopted the 2013 Building Energy Efficiency Standards update May 31, 2012, will be published in 2013 with an effective date of January 1, 2014.	5.0 **	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	The Energy Commission adopted appliance energy efficiency regulations for battery chargers and lighting controls on January 12, 2012. The regulations were approved by the Office of Administrative law on September 14, 2012.	8.9 **	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.
	TRANSPORTATION SECTOR					
T-4	CEC	Fuel-Efficient Tire Program	Ongoing	Continued research in coordination with NHTSA on tire efficiency metrics.	TBD ***	Depending upon timing of federal action with fuel efficiency of replacement tires, adopt and implement a state program in 2013 or 2014. 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					**2.1**	

CEC NOTES:

* Estimate of POU EE Program energy savings is based upon a March 2012 status report to the Legislature; average of most recent 4 years is used to project savings through 2020. The Energy Commission and POUs are working to develop a standardized approach to evaluation and verification of efficiency program savings estimates.

** Building and appliance standards pre-date the Scoping Plan so are not included in totals but shown here to document on-going efforts. Savings based on CA Energy Demand 2011 adjusted forecast and 690 lbsCO2/MWh for avoided electricity consumption.

*** NHTSA (US DOT) may propose a tire fuel efficiency program in March 2013 and adopt it Fall 2013. State tire efficiency program will focus on consumer education and standards for replacement tires.

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	CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) STRATEGIES *					
	ELECTRICAL AND NATURAL GAS SECTOR					
E-1	CPUC	IOU Energy Efficiency Programs	Ongoing through 2020	2013-14 EE goals study completed; 2013-14 EE guidance decision adopted; 2013-14 EE application decision expected (Nov 2012); 2010-2011 EE Annual Progress report completed; IOU consultant recommendations for EE financing pilots completed; ESAP-CARE application decision adopted; EE natural gas PPP funding backfill decision adopted to address legislative sweep of gas PPP funding; EE electric PGC funding backfill decision adopted to address expiration of electric PGC funding.	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	Began implementing the comprehensive QF/CHP Settlement effective November 2011. Three CHP-only competitive solicitations were held in 2012. Approved via resolution three pro-forma feed-in-tariff contracts (for <20 MW, <5 MW, and < 500 kW facilities) to complete implementation of AB 1613.	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 **	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 proceeding is implementing SB2, which codified the 33% renewables mandate; Two Renewable Auction Mechanism (RAM) auctions (<20 MW facilities) have been conducted and 3rd will be held end of 2012; Issued proposed decision for 2012 RPS solicitation, Renewable Market Adjusting Tariff (ReMAT), targeting <= 3 MW distributed generation, will be implemented Q1 2013	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 2011, the CPUC portion of GoSolarCalifornia, known as the California Solar Initiative (CSI), installed 270 MW. From July 2011 through June 2012, the CSI installed 308 MW. For 2011, 401,786 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	See above (E-1) for IOU EE program activities overseen by the CPUC.	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	In Fall 2011, the CSI-Thermal Program began providing incentives for solar water heating systems that displace propane. In March 2012, the CSI-Thermal Low-Income program began accepting applications for natural gas-displacing solar water heating systems on single and multi-family affordable housing residences..	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).
Not in Scoping Plan	CPUC	Self Generation Incentive Program	Began in 2001; ongoing	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. The revamped SGIP program began accepting applications in the first half of 2012.	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.

Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
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. (See above (E-2) for additional RAM activities.)	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;	In April 2012, the Governor's Office released an Executive Order setting a state target of having 1.5 million PEVs on the roads by 2025. To support this target, CA agencies and stakeholders developed an action plan document to support the state reaching this goal. CPUC will support the state target by evaluating electric vehicle rates offered by utilities, developing a submetering protocol to support customer choice in metering options, identifying barriers that prevent vehicles from integrating into the grid, and conducting load reserach to understand charging behavior and the need for public/workplace charging stations. Additionally, the Commission settled a Energy Crisis-era lawsuit with NRG to provide $100 million in electric vehicle infrastructure in California.	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.
	WATER SECTOR					
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.
Total Reductions Expected from CPUC Led Strategies					**42.4**	

CPUC NOTES: * 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.

** 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.

$MMTCO_2E$ - Million Metric Tons of CO2 Equivalent

Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	Department of General Services (DGS)					
	GREEN BUILDINGS					
GB-1	DGS	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	Very little new construction occurring, much less 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 alternative financing mechanisms 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 funds are diminishing due to ties to diminishing school bond funding. 29 High Performance Incentive Grants issued in 2011.	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 still being built LEED Silver or higher, as well as large leases in existing buildings.	0.25	Now mandatory energy and environmental improvements for leased 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 totalling 21 MW by December 2012, & 24 MW more by the end of 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.
GB-1: substrategy 6	DGS, State Agencies, CIWMB, DTSC	Environmentally Preferable Purchasing (EPP)	Ongoing: Operate green buildings and minimize energy and resource impacts.	Standard specifications development for specific categories of imaging devices is in progress.	*	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. Intervening code cycle included supplement to 2010 CALGREEN Code.	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)
	TRANSPORTATION SECTOR					
Appendix C, Section 2.B.	DGS, State Agencies	Right-size the State Fleet	Ongoing	-In 2011, over 7,000 state fleet assets, including 4,200 passenger vehicles, were identified for reduction. They will be eliminated in FY 2012/2013.	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	In 2012, EO B-16-12, requires that zero emission vehicles (ZEVs) replace gas powered vehicles (10-percent by 2015 and 25-percent by 2020).	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 which will include the institution of default compact vehicle class size for future vehicle procurements..
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.
Total Reductions Expected from DGS Led Strategies					**5.3**	

DGS NOTES: * 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.

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$MMTCO_2E$ - Million Metric Tons of CO2 Equivalent

Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	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.	DWR water use efficiency program actions related to climate change include: 1)GHG emission reduction from both 2012 agricultural water use efficiency grant program (draft Proposal Solicitation Package developed and released) and future desalination grant program (in progress); 2) Water and energy use efficiency related to climate change adaptation and mitigation in California Water Plan Update 2013 (in progress); 3)Developed measures for both urban water use efficiency and agricultural water use efficiency practices ; 4)Collected information on climate change sections from urban water management plans received; 5) Included Climate change effects on water supply from draft guidebook for agricultural water management plan (developed and released).	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	None	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/r	2013	DWR's contract for Reid Gardner expires July 2013, and the Department is already engaged in contract close out activities. In May 2012, DWR finalized its Climate Action Plan, which includes the emissions reductions expected from divestiture of Reid Gardner, as well as even larger reductions resulting from renewable energy procurement and energy efficiency.	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, CO2 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.
Total Reductions Expected from DWR Led Strategies					**2.6**	

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Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	HOUSING AND COMMUNITY DEVELOPMENT (HCD)					
	TRANSPORTATION SECTOR *					
T-3: C-56	BTH, HCD	Regional, Transportation-Related Greenhouse Gas (GHG) Targets.	Beginning 2010, complete HCD RHNA (new housing need) determination for the next update for RTP and housing element processes for COGs/MPOs/localities.	Jan 2012, HCD approved SANDAG RHNA Plan that was determined consistent with SCS & RTP. Feb 2012, HCD finalized RHNA Determination for ABAG region. Oct 2012, SACOG and SCAG regions submitted adopted RHNA Plans in which HCD review will be completed in December 2012.	SANDAG estimates achieving 9% GHG reduction by 2020, slightly above 7% target set by CARB.	HCD RHNA determinations specify number of new housing units COGs/MPOs must plan for and coordinate and integrate with the SCS and RTP as housing and transportation planning must be consistent. COGs/MPOs must allocate a share of RHNA to each local gov't to plan for in updating its housing element. HCD is required to approve region RHNA Plans and local gov't housing elements that describe local land-use decisions regarding housing siting and densities, etc. and consideration of factors relevant to achieving reductions in vehicle trips and GHG.
	LAND USE *					
C-82	BTH - HCD	Housing Element Technical Assistance	Beginning in 2010 and ongoing.	SB 375 technical assistance paper to facilitate jurisdiction planning efforts is anticipated to be released Nov 2012. Technical assistance and outreach efforts got underway in early 2012.	Not quantifiable.	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.	Implementation of CalGreen building standards underway, albiet local development activity reduced within the last year due to economic and budget constraints.	Not quantifiable.	Potential for scaled criteria for energy conservation measures, and GHG reduction in transit oriented development projects, being considered in stakeholder meetings for Prop 1C NOFAs to be released spring 2013.
C-49	BTH - HCD	Local Assistance on GHG Reduction Strategies	Beginning 2011 and ongoing.	Technical assistance and outreach efforts got underway in early 2012 and are continuing.	Not quantifiable.	HCD staff, in presentations made at statewide CA Chapter of American Planners and regional workshops, have educated 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 change or activity yet to report.	Not quantifiable.	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					**0.0**	

HCD NOTES: * 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.

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Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	OFFICE OF PLANNING AND RESEARCH (OPR) STRATEGIES *					
	OTHER SECTORS/STRATEGIES					
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.
Not in Scoping Plan	OPR	ZEV Action Plan	December 15, 2012		No Direct Reductions	OPR is helping to develop a ZEV Action Plan to implement the Governor's ZEV Executive Order, which establishes several GHG emission milestones, highlighted by the target of 1.5 million ZEVs in California by the year 2025.
Total Reductions Expected from OPR Strategies					**0.0 ***	

OPR NOTES: * OPR has important programmatic responsibilities but does not have emission reduction regulatory authority.

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Scoping Plan: Strategy Number or Chapter / Section	Agency[1] and Sector	Name	Implementation Timeline	Activities since last Report Card	Expected GHG Emission Reductions in 2020[2] ($MMTCO_2E$)	Brief Description
	STATE WATER RESOURCES CONTROL BOARD (SWRCB) STRATEGIES					
	WATER SECTOR					
W-2	SWRCB, DWR, CEC, CPUC	Water Recycling	by 2020	The State Water Board completed analysis of a statewide recycled water survey and estimates that in 2009 the statewide water recycling volume was 669,000 acre-feet/year. In 2012 the State Water Board awarded over $25 million in grants and loans for development of water recycling projects. The State Board is currently updating its Recycled Water Policy to address monitoring for constituents of emerging concern. The California Public Utilities Commission is conducting a recycled water rulemaking to encourage recycled water development by investor-owned water utilities. The CPUC will issue its decision in 2013.	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	The State Water Board and most Regional Water Boards are incorporating low impact development (LID) and hydromodification requirements in all municipal separate storm sewer system (MS4) permits. The Caltrans Statewide Storm Water Permit and all future statewide permits (such as the draft Phase II Small MS4 Permit currently under development) include LID requirements. The State Water Board also convened an expert group and produced a white paper on the state of the science and practice of hydromodification management and is actively working with the California Urban Water Conservation Council (CUWCC) to develop a "new norm" for residential and commercial landscapes. The California Stormwater Quality Association (CASQA) has produced an LID portal to aid designers and practitioners. Efforts are continuing at the local and regional level to promote and implement LID.	0.2 [3]	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.
Total Reductions Expected from SWRCB Led Strategies					**0.5**	

DOCUMENT FOOTNOTES:

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 - GREENHOUSE GAS (GHG) EMISSION REDUCTIONS

TABLE 3a:
GHG EMISSION REDUCTIONS ACHIEVED

The following summarizes the totals from Tables 1 and 2. Reductions shown are Million Metric Tons of CO_2 Equivalent (*MMTCO 2 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 Acheived in 2009[1]	Measured GHG Emission Reductions Achieved in 2010[1]	GHG Emission Reductions Achieved in 2011[1]
ARB	0.5	1.1	4.8
BTH	0.1	0.1	See Caltrans & HCD
CalFIRE	2.3	2.3	2.7
CalTrans	0.1	0.1	<0.1
CalRecycle	0.0	0.0	0.0
CDFA	0.0	0.0	0.0
CEC	1.7	2.7	3.7
CPUC	3.5	5.8	10.0
DGS [5]	< 0.1	< 0.1	<0.1
DWR	0.0	0.0	0.0
HCD [4]	0.0	0.0	0.0
OPR [4]	0.0	0.0	0.0
SWRCB	0.0	0.0	0.0
Additional GHG emissions reductions from previous year		3.9	9.1

TABLE 3b:
Agency GHG Targets for 2020

Agency	Expected GHG Emission Reductions in 2020 from Proposed Strategies [2]
ARB	86.1
CalFIRE	5.0
CalTrans (BTH)	0.4
CalRecycle	1.0 [3]
CDFA	1.0
CEC	2.1
CPUC	42.4
DGS [5]	5.3
DWR	2.6
HCD [4]	0.0
OPR [4]	0.0
SWRCB	0.5
Total	**146.4**

Notes

1. The values in this column are taken from the totals in Table 1. The figures may reflect emission reductions from programs implemented before AB 32 was enacted in order to provide a broad picture of all on-going GHG related efforts.
2. The values in this column are taken from the agency totals in Table 2. These figures only reflect reductions from programs implemented since AB 32 was enacted. The total aggregate GHG reduction cannot be directly calculated from these values due to issues of double counting. Example: the Green Building measures achieve reductions, primarily, by reducing energy consumption. Such reductions would be captured in the energy sector but the measure would be implemented by non-energy sector agencies such as SCSA/DGS.
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. These agencies have important programmatic responsibilities but do not have emission reduction regulatory authority.
5. Most of the GHG reductions from DGS measures are captured within the energy sector. The target is for measures that are not counted elsewhere.

The data below is organized by Agency though many departments are reporting invidually.

Table 4: Climate Action Team - GHG Inventory Status

INVENTORY STATUS >	Member of The 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	
Business, Transportation & Housing									
The following Boards and Departments calculate emissions separately.		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	
		2010							
- *CalTrans*	Yes	2011							
- *Dept. of Housing and Community Development*									
California Environmental Protection Agency									
-Totals include inventory data for the ARB, CalRecycle, OEHHA, DPR, DTSC and SWRCB		2005	2005	2005	2005	2,632	4,914	7,546	2005 inventory includes CO2 only.
		2006	2006		2006	3,119	4,780	7,899	
		2007	2007		2007	3,050	5,545	8,595	
		2008	2008		2008	3,177	5,478	8,655	
		2010						0	
	Yes	2011						0	
		2007	2007						
		2008							
		2010							
CA Department of Food & Agriculture	Yes	2011							
		2010	2010						
California Emergency Management Agency	No	2011	2011		2011	319	226	545	
		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	
		2010							
CA Public Utilities Commission	Yes	2011							
Health and Human Services Agency		2010							
- *Department of Public Health*	No	2011	2011		2011	6,243	6,157	12,400	
Natural Resources Agency									
- *The following Boards and Departments calculate emissions separately.*		2004							
		2005							
		2006							
		2007	2007		2007	41,756	7,364	49,120	
		2008	2008		2008	37,081	6,060	43,141	
		2009	2009		2009	33,392	6,248	39,640	
		2010							
- *CalFire*	Yes	2011							
		2003	2003	2003	2003	22	576	598	2011 direct emissions decreased with two less vehicles. Decline in 2011 indirect emissions due to favorable hydropower year and drop in SMUD's emissions factor. Note: CEC's emissions are included in DGS' inventory.
		2008	2008		2008	14	948	962	
		2009	2009		2009	11	863	874	
		2010	2010		2010	4	903	907	
- *CA Energy Commission*	Yes	2011	2011		2011	3	894	897	
		2007	2007		2007	15,779	15,036	30,815	
		2008	2008		2008	15,365	9,782	25,147	CalEPA has provided a CR account. DFG is entering the 2010 and 2011 data into CRIS with a 12/7/2012 deadline. The CRIS report will not match these amounts due to different reporting protocols.
		2009	2009		2009	13,557	9,026	22,583	
		2010	2010		2010	13,185	9,033	22,218	
- *Dept. of Fish & Game*	No	2011	2011		2011	13,834	9,082	22,916	
		2007	2007	2007	2007	14,299	3,226,250	3,240,549	
		2008	2008	2008	2008	4,116	2,397,336	2,401,452	2010: Water deliveries increased by 727,000 AF compared to 2009. Emissions from coal fired contract reported now in direct emissions due to switch from CCAR to TCR.
		2009	2009	2009	2009	11477	1989899.5	2001376.5	
		2010	2010	2010	2010	802,002	2,229,895	3,031,898	
- *Dept. of Water Resources*	Yes	2011	2011	2011	2011	733,247	2,642,664	3,375,910	
- *State Parks*	Yes	2006							
Office of Planning & Research	Yes								OPR is included with the Governor's Office for purposes of Registry membership and GHG inventories.
State & Consumer Services Agency		2006	2006	2006	2006	56,135	80,434	136,569	
		2007	2007	2007	2007	58,124	90,739	148,863	
		2008	2008		2008	60,256	83,678	143,934	
		2009	2009		2009	55,324	80,009	135,333	
		2010							
- *Dept. of General Services*	Yes	2011							