

Annual Report to the Joint Legislative Budget Committee
on Assembly Bill 32
(Chapter 488, Statutes of 2006)
The California Global Warming Solutions Act of 2006

January 2015

*Fulfills the Requirements of:
Supplemental Report of the 2012 Budget Act (Item 3900-001-0001 Air Resources Board)
Senate Bill 1018 (Statutes of 2012)*

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INTRODUCTION

Assembly Bill 32 (AB 32), The California Global Warming Solutions Act of 2006, designates the Air Resources Board (ARB or Board) as the State agency charged with monitoring and regulating sources of greenhouse gas (GHG) emissions. AB 32 set a goal for California to reduce GHG emissions to 1990 levels by 2020, and to maintain and continue reductions beyond 2020. The law tasked ARB with quantifying this goal, implementing a mandatory emissions reporting system, and adopting a Scoping Plan that describes the measures and other actions planned to achieve the target.

AB 32 also highlights the need to continue greenhouse gas reductions beyond 2020. In March 2012, Governor Brown signed Executive Order B-16-2012 establishing zero emission vehicle benchmarks and affirming a long-range climate goal for California to reduce GHG emissions to 80 percent below 1990 levels by 2050.

Legislative Direction. The Supplemental Report of the 2012 Budget Act Item 3900-001-0001 requires ARB to provide the Joint Legislative Budget Committee (JLBC) with multiple reports on its activities and resources to implement AB 32. These requirements include:

- (1) Semi-annual AB 32 update on key climate programs, including recent developments and upcoming milestones;
- (2) Annual AB 32 fiscal report for the prior fiscal year summarizing fees and proceeds coming in, and expenditures going out; and
- (3) Annual AB 32 resource reports – one prospective and one retrospective – showing staffing and operations, plus contract expenses, by major program area.

Senate Bill 1018 (Budget and Fiscal Review), Chapter 39, Statutes of 2012, also requires ARB and the Secretary for Environmental Protection to submit reports to the JLBC on the Western Climate Initiative, Incorporated (WCI, Inc.):

- (4) Semi-annual report on any actions proposed by WCI, Inc. that affect California State government or entities located within the State, as well as advance notification of any planned ARB payments to WCI, Inc. over \$150,000.

Annual Report Content. This document provides the required annual updates on the four items listed above. It covers ARB's implementation of AB 32 and does not include the activities and resources of other State agencies to implement AB 32. The State Agency Greenhouse Gas Reduction Report Card published by the California Environmental Protection Agency (CalEPA) details the activities of each agency and department to reduce GHG emissions. For more information on the Report Card, please see: http://www.climatechange.ca.gov/climate_action_team/reports/.

SECTION 1:

SEMI-ANNUAL AB 32 PROGRAM UPDATE (July 2014 - June 2015)

This report is required semi-annually by the Supplemental Report of the 2012-13 Budget¹ to highlight significant developments in the last six months and identify upcoming milestones in the next six months in ARB's implementation of AB 32. This semi-annual report, together with the previously submitted mid-year semi-annual report², provides a comprehensive update on AB 32 program activities for the second half of 2014. The upcoming milestones in this semi-annual report focus on the first half of 2015. The report format follows the Budget directive, beginning with major regulatory measures, followed by supporting programs, then a discussion of the GHG emission reductions, and concluding with the current funding in the Greenhouse Gas Reduction Fund.

While this program update focuses on the high profile regulations and supporting programs identified in the Supplemental Budget Report, they represent a subset of ARB's activities and resources to address climate change. Additional activities include research, air monitoring, and preparing the emissions inventory (including the Mandatory Reporting Regulation), as well as the development, implementation, and enforcement of over 20 regulations that reduce GHGs as a primary objective or as a co-benefit. These other regulations affect a wide range of activities and facilities, including: passenger vehicles (including their tires and air conditioners); heavy trucks and the trailers they pull; ships at berth; and sources of high global warming potential (GWP) gases like semi-conductor manufacturing, appliance recycling, and consumer products.

¹ "The California Air Resources Board (CARB) shall submit to the Legislature an AB 32 program update every six months summarizing key program activities. Each update should highlight developments since the previous update, provide advance notice of anticipated major milestones, and include current statewide greenhouse gas (GHG) emission updates. These developments may include, but are not limited to, board hearings and release of significant documents, key support contracts, lawsuits, compliance milestones, and other actions that have the potential to substantially affect the success and effectiveness of the program.

The scope of the program updates should include: significant activities related to CARB's GHG reduction measures (for example, cap-and-trade, low-carbon fuel standard, or advanced clean cars), including an analysis of which programs are having the greatest impact in terms of GHG reductions per dollar spent; key developments on supporting activities such as updates to the AB 32 Scoping Plan, cap-and-trade auction fund regulations, coordination with entities outside of California like the Western Climate Initiative, and SB 375 sustainable communities plans; and the amount of cap-and-trade auction funds deposited into the Greenhouse Gas Reduction Fund and the current balance in that fund."

² For previous reports, see: <http://www.arb.ca.gov/cc/jlbcreports/jlbcreports.htm>.

I. ARB GREENHOUSE GAS EMISSION REDUCTION MEASURES

This section focuses on the activities of three major ARB regulatory programs to reduce GHG emissions: Cap-and-Trade, Low Carbon Fuel Standard, and Advanced Clean Cars. We also discuss the landfill methane regulation mentioned in the supplemental budget language as well as developments related to reducing emissions from oil production and natural gas operations.

A. Cap-and-Trade

1. *Background*

California's Cap-and-Trade Regulation (Regulation) is the nation's first comprehensive market-based approach to reducing GHG emissions, and is one of the key measures identified in the AB 32 Scoping Plan. The Regulation was finalized and adopted by the Board in October 2011. Given the complexity of this Regulation and the use of many unique concepts in its design, we provide a lengthier background description below to aid the reader's understanding of these program updates.

Emissions Cap. The Regulation provides a firm declining limit, or cap, on 85 percent of California's GHG emissions. Beginning on January 1, 2013, the cap includes GHG emissions from electricity and large industrial sources. Beginning on January 1, 2015, GHG emissions from transportation fuels, and residential and commercial burning of natural gas and propane are included in the cap. Coverage of the emissions from combustion of these fuels assures that California will achieve the AB 32 target of reducing GHG emissions to 1990 levels by 2020.

The Regulation will reduce GHG emissions by about 23 million metric tons (MMT) in 2020, about 30 percent of the total needed to achieve the AB 32 target for that year. Further, the Regulation plays a key role in assuring the 2020 target is met by complementing other GHG emission reduction measures. For example, in the event that the anticipated reductions from other measures are not realized, the Regulation with its cap serves as a backstop for meeting the AB 32 emission reduction target.

Compliance. To comply with the Regulation, entities subject to the Regulation (facilities and other sources that emit 25,000 metric tons or more of carbon dioxide equivalent (CO₂e) per year), termed "covered entities," must submit compliance instruments (i.e., allowances or offset credits) equal to their emissions. Each allowance or offset credit is equal to one metric ton of CO₂e emissions.

Allowances. Allowances are issued by ARB. A portion of the allowances is allocated for free to covered entities, some allowances are placed in a cost containment reserve, and the remaining portion is auctioned. Each year, the number of allowances declines in proportion to the cap, ensuring that the Regulation achieves intended emission reductions. Covered entities that aggressively reduce their emissions can trade their surplus allowances to firms that find it more expensive to reduce their emissions.

In the early years of the Regulation, ARB allocates most allowances for free to industrial covered entities to provide transition assistance and minimize leakage, and to natural gas and electrical utilities to protect ratepayers from program costs. With the adoption of recent amendments to the Regulation, ARB also provides transition assistance by allocating free allowances to universities and public service facilities, power generators with legacy contracts, and public wholesale water agencies.

Leakage refers to a reduction in GHG emissions within the State that results in an increase in GHG emissions outside the State. Risk of leakage is highest for industries in which production is highly “emissions intensive” (leading to high compliance costs) and trade exposed (i.e., that face competition from out-of-State producers). Over the past several years, ARB determined leakage risk for industrial sectors based on an evaluation of industry emissions and trade exposure. The results of this analysis informed the allocation of additional allowances to reduce compliance costs and maintain industry production in California.

One of the factors that ARB utilizes to calculate the number of free allowances for each industrial covered entity is GHG emissions efficiency. ARB uses emissions performance standards that evaluate the efficiencies of similar operations in the same industrial sector. This evaluation results in more efficient facilities within a sector receiving a larger percentage of their estimated compliance obligation for free, as compared to less efficient facilities in the same sector. This process recognizes early investments to improve efficiency at facilities within the covered industrial sectors.

ARB staff developed two distinct types of allocation methodologies: (1) product-based, which is tied to production activity and applies to specific industry sectors listed in the Regulation, including the oil and gas extraction and refining sectors; and (2) energy-based, which is tied to fuel use and applies to those industry sectors without a product-based benchmark, including some portions of the food processing sector.

In addition to allocation, a number of allowances were placed in the allowance price containment reserve. This account was established to provide a safety valve to the allowance price and help to mitigate potential volatility in allowance prices. The account holds a specified number of allowances removed from the total pool of allowances at the beginning of the program. Covered entities may purchase reserve allowances at specified prices during direct quarterly reserve sales.

Offsets. Offset credits are another type of tradable compliance instrument. Offset credits represent GHG emission reductions or avoidance from activities outside of the capped sectors (i.e., reductions in sectors not subject to the Cap-and-Trade Regulation). Covered entities can use ARB-issued offset credits to meet up to eight percent of their compliance obligation for each compliance period. For example, if a covered entity has 100,000 metric tons of covered emissions, they must submit no fewer than 92,000 allowances and no more than 8,000 ARB-certified offset credits in order to meet their compliance obligation. The ability to use offset credits is an important mechanism for cost-containment under the Regulation.

Offset projects are quantified under regulatory protocols that are approved by the Board and must meet the AB 32 offset criteria of being real, additional, quantifiable, permanent, verifiable, and enforceable. ARB has approved offset protocols for five project areas: forestry, urban forestry, mine methane capture, livestock digesters, and the destruction of ozone depleting substances. ARB accredits third-party verifiers to independently verify all offset project reports. Accredited third-party verifiers have extensive background in related areas, including appropriate field and auditing experience, as well as the scientific and engineering knowledge required for verification. Third-party verifiers must work through ARB accredited verification bodies and must complete ARB's training and pass a specialized test.

ARB can also approve voluntary offset registries that meet regulatory criteria to help administer the program. Offset project registries provide general offset project guidance, reporting, and other support for verification activities, as well as issue voluntary offset credits and list voluntary offset projects. ARB does not delegate any of its oversight or enforcement authority to the verifiers or approved registries. Additionally, ARB does not currently issue offset credits that originate from projects located outside of the United States. However, since California and Québec have a linked cap-and-trade program, ARB does recognize Québec-issued offsets for projects that are implemented in Canada using Québec's adopted offset project protocols. Québec-issued offset credits can be used by California covered entities, within the same eight percent quantitative usage limit described above, to meet a portion of their compliance obligation.

Electronic Compliance System. The Compliance Instrument Tracking System Service (CITSS) is a software program developed to hold and retire compliance instruments (ARB allowances and offset credits) and to record transactions regarding compliance instruments (e.g., purchases, trades between account holders).

Market Oversight. ARB continues to put a priority on market oversight to ensure success in reducing emissions and the integrity of the California carbon market. ARB also established a team focused on monitoring and oversight of market activity and market participants. ARB monitors the auctions during the three-hour bidding window and reviews submitted bids to determine if there are any indications of anti-competitive behavior. In addition to engaging in ongoing analysis and modeling, ARB is collaborating with several organizations including: the U.S. Commodity Futures Trading Commission; the Federal Electricity Regulatory Commission; the California Independent System Operator (CAISO); and the State Attorney General's Office, to anticipate, detect, and respond to market manipulation. The Regulation imposes holding limits and auction purchase limits, as well as other restrictions on auction and trading activity, to prevent participants from acquiring undue market power.

Fuels in Cap-and-Trade. Beginning January 1, 2015, transportation fuels and residential and commercial burning of natural gas and propane were covered by the Cap-and-Trade Program, resulting in a broad program scope covering approximately

85 percent of California's GHG emissions. Including fuels in the program will help achieve the objective of reducing emissions not only by 2020, but also help to drive the long-term transition to cleaner fuels well into the future.

Broad Cap-and-Trade Program coverage spreads the compliance obligation across many sectors, increasing the certainty that the overall AB 32 target will be met. This coverage also allows for capped entities to obtain the lowest cost GHG emission reductions, which in turn minimizes the overall impact of the Cap-and-Trade Program. Including fuels under the cap will also provide significant air quality co-benefits, by providing reductions in criteria emissions.

The Low Carbon Fuels Standard and Cap-and-Trade are complementary; the two programs work together to encourage the development, deployment, and demand for clean fuels. Investments made to comply with one program will result in reduced compliance requirements for the other program, ensuring the price impact on wholesale fuels is not additive.

2. Recent Developments – July through December 2014

New ARB activities to support the Cap-and-Trade Program during the second half of 2014 included: continued development and Board approval of proposed amendments to the Regulation, continued development and approval of updates to compliance offset protocols, a joint allowance auction with Québec, and ongoing issuance of compliance offset credits. These activities are described in more detail below, along with a discussion of litigation, and contracts that support the Cap-and-Trade Program.

Adoption of Proposed Regulation Amendments. To enhance implementation and oversight of the Cap-and-Trade Program, respond to Board direction, and address stakeholder concerns, staff proposed regulatory amendments on July 18, 2014, which were approved by the Board on September 18, 2014 through Resolution 14-31. In that Resolution, the Board directed staff to make further amendments that had been proposed by staff in Attachment B to the Resolution, and were made available for public comment in early October 2014. The rulemaking documents and Board Resolution 14-31 are available at: <http://www.arb.ca.gov/regact/2014/capandtrade14/capandtrade14.htm>. Staff submitted the final rulemaking package to the Office of Administrative Law (OAL) on November 14, 2014. OAL approved the package on December 31, 2014 and the regulation amendments are legally effective as of January 1, 2015.

The following are the most significant changes to the Regulation:

- Changes to the definitions for several products that are used to determine allowance allocation to industrial facilities.
- Adding provisions to change registration requirements and requirements for the disclosure of corporate associations for CITSS account holders.

- Adding a provision to include a compliance obligation for imported carbon dioxide.
- Adding provisions to incorporate updated Livestock Projects, U.S. Forest Projects and Ozone Depleting Substances Projects Compliance Offset Protocols.
- Adding provisions to change the allowance allocation amounts for the Metropolitan Water District and the City of Shasta Lake.

In December 2014, the Board considered additional proposed amendments to the offset protocols. Staff has evaluated and proposed amendments to incorporate by reference the updated U.S. Forest Projects Compliance Offset Protocol. This update would extend project eligibility to regions of Alaska. Staff has also evaluated and proposed amendments to incorporate the newly proposed Rice Cultivation Projects Compliance Offset Protocol. The Board is expected to consider the approval of these amendments in the first half of 2015.

Compliance. The first annual surrender obligation under the Cap-and-Trade Regulation occurred on November 3, 2014. Covered entities were required to submit compliance instruments sufficient to cover thirty percent of their 2013 emissions by that date. All covered entities successfully transferred sufficient allowances to their accounts to meet their compliance obligations.

Auctions. On August 18, 2014, ARB held a quarterly auction, selling only California allowances. That auction included 2014 vintage allowances and State-owned 2017 future vintage allowances, along with allowances consigned by the utilities. As with all auctions, prior to certification of the auction results, ARB staff and the Market Monitor carefully evaluated the auction, and determined that the auction process and procedures complied with the requirements of the Cap-and-Trade Regulation.

On November 25, 2014, ARB conducted the first joint allowance auction with Québec under the linkage agreement between ARB and Québec, which was effective January 1, 2014. Future joint auctions will continue to include both California and Québec allowances. Before the first joint auction, a successful joint practice auction was held on August 7, 2014.

The funds raised by the sale of allowances consigned by utilities are to be returned to ratepayers in accordance with rules set by the California Public Utilities Commission³ (CPUC) or their governing boards. The remaining funds received from the sale of State-owned allowances are deposited into the State's Greenhouse Gas Reduction Fund, to be allocated in accordance with the Cap-and-Trade Auction Proceeds Investment Plan and State Budget. In sum, about \$969 million was raised by the sale of State-owned allowances at the first nine auctions through December 31, 2014. More information on Cap-and-Trade auction proceeds is provided in Section II. D. of this

³ In Decision D1212033 (Decision Adopting Cap-and-Trade Greenhouse Gas Allowance Revenue Allocation Methodology for the Investor-Owned Electric Utilities), the CPUC directed the utilities to distribute the auction proceeds to ratepayers.

report. Detailed results from the auctions are available at:
<http://www.arb.ca.gov/cc/capandtrade/auction/auction.htm>.

Reserve Sale. Reserve sales are scheduled to occur each quarter. No covered entities or opt-in entities indicated an intent to bid for allowances by the bid guarantee deadlines for the reserve sales held through December 2014. Therefore, no reserve sales scheduled to date have been held.

Offsets. ARB continues the steps necessary to support carbon offsets, which reduce the costs of compliance with the Regulation, and encourage investments in sustainable practices throughout the nation's economy. As of December 31, 2014, ARB has: (1) accredited 97 specially trained third-party offset verifiers, and certified 18 verification bodies to serve as partners in evaluating the quality of offset projects submitted for approval; (2) continued to oversee and coordinate with the three existing approved offset project registries that help evaluate compliance-grade carbon offset projects under the Regulation; (3) updated the listing of additional early action projects to bring the total to 101, and updated the listing of additional compliance projects to bring the total to 108 (listing signifies these projects are moving toward potential issuance of ARB compliance offset credits); and (4) conducted a thorough desk review of 100 percent of the compliance projects' requests for issuance, and audited either in-person or through desk review, 100 percent of the offset protocol project verifications to date. At this time, ARB only issues compliance offset credits for verified offset projects developed using the five approved offset protocols, and that are located within the continental United States. ARB issues compliance credits for those projects that comply with the full requirements set forth in the applicable offset protocol in the Regulation. To date, ARB has issued over 15 million compliance offset credits. ARB will continue to audit a large percentage of verifications to assure verification activities are conducted accurately and according to the Regulation.

Invalid Compliance Offset Credits. In May 2014, approximately 4.3 million ozone depleting substance (ODS) compliance offset credits were temporarily removed from accounts in connection with an investigation into the destruction of these substances at the Clean Harbors Incineration Facility in El Dorado, Arkansas. On November 14, 2014, the Executive Officer made a final determination that 88,995 of these offset credits were invalid. They were determined to be invalid because the ODS incineration facility was not operating "in accordance with all local, state or national environmental and health and safety regulations" during the time of ODS destruction. All holders of the invalidated offsets were officially notified by ARB. Additionally, on November 14, the ODS offset credits not subject to invalidation were returned to the CITSS accounts from which they were removed on May 29, 2014.

Cap-and-Trade Litigation. In the second half of 2014, there was activity on two of the three court cases against ARB regarding the Cap-and-Trade Program. This section describes those two cases and future reports will cover the third case, *Citizens Climate Lobby and Our Children's Earth Foundation v. California Air Resources Board*, if there are significant developments.

On November 13, 2012, the California Chamber of Commerce filed a lawsuit, *California Chamber of Commerce et al. v. California Air Resources Board et al.*, in Sacramento Superior Court to challenge ARB's authority to conduct an auction under the Cap-and-Trade Program. Alternatively, the California Chamber of Commerce alleges that if the court finds that authority exists in AB 32 for the auction, then the court should find that the auction and the sale of allowances by the State at auction constitute an unconstitutional tax. The lawsuit asks the judge to issue a decision prohibiting ARB from conducting future auctions, and asks for judicial declarations that the auction provisions of the Regulation are invalid and unenforceable, and impose an unconstitutional tax. ARB maintains that AB 32 provided it with authority to develop a Cap-and-Trade Program, including an auction, and that the auction does not constitute a tax. A hearing on the merits of the petition was held on August 28, 2013.

On April 16, 2013, Morningstar Packing Company filed a similar suit to the California Chamber of Commerce case noted above, *Morningstar Packing Company et al. v. California Air Resources Board et al.* The primary difference between this case and the California Chamber of Commerce case is that Morningstar adds claims that AB 1532 (Pérez, Chapter 807, Statutes of 2012), SB 535 (De León, Chapter 830, Statutes of 2012), and SB 1018 (Budget and Fiscal Review Committee, Chapter 39, Statutes of 2012) pursuant to the provisions of Proposition 26, cannot act to save the auction provisions of the Cap-and-Trade Program from tax challenges because these bills were not passed with a super-majority vote. Morningstar asserts that to the extent these bills (AB 1532, SB 535, and SB 1018) were designed to authorize, ratify, or otherwise adopt the auction provisions of the Cap-and-Trade Regulation, these bills would be considered unconstitutional taxes under Proposition 26. ARB filed an answer to the petition on May 29, 2013, denying the claims in the petition. This case was deemed "related" to the California Chamber of Commerce case and thus was also heard on August 28, 2013.

On November 12, 2013, the court issued a joint decision on both the California Chamber of Commerce and Morningstar Packing Company cases, denying the two petitions and finding in favor of ARB on all counts. Specifically, the Court found that "the sale of allowances is within the broad scope of authority delegated to ARB in AB 32." The judge upheld ARB's auction provisions, noting the extensive public outreach and stakeholder engagement throughout the Cap-and-Trade Program development. He also held that the Legislature's passage of several bills in 2012 directing the use of auction proceeds helped to "ratify" the Legislature's original grant of authority in AB 32. With respect to the taxation issue, the judge found that "on balance," the auction operates "more like traditional regulatory fees than taxes" because its primary purpose is regulatory in nature. In support of this finding, the judge relied on the restrictions imposed by the 2012 legislation requiring auction proceeds to "be used to further the regulatory purposes of AB 32." He noted that existing cases are not on point, as the auction is different from other fees that have been assessed. However, he found that the amount charged for allowances bears a "reasonable relationship with the covered entities' (collective) responsibility for the harmful effects of GHG emissions."

The court's decision became final on December 20, 2013. The California Chamber of Commerce and National Association of Manufacturers filed their notices of appeal on February 19 and March 7, 2014, respectively, in the Third District Court of Appeal, which has found the appeal unsuitable for mediation. The California Chamber of Commerce, Morning Star Packing Company, and the National Association of Manufacturers filed their opening briefs between October 17 and October 20, 2014. The answering briefs of the Air Resources Board, Environmental Defense Fund, and Natural Resources Defense Council are due February 4, 2015. Appellants will then file reply briefs, and outside parties wishing to convey their views may file amicus briefs. Oral arguments may occur in mid- to late-2015.

Cap-and-Trade Program Contracts. Academia and private contractors are helping ARB achieve the goals of AB 32 while minimizing the impact of the Cap-and-Trade Program on California industry. Current contracting efforts are directed at conducting the auctions and reserve sales, monitoring the carbon market, measuring and monitoring the potential for GHG emissions leakage, helping ARB develop emissions efficiency benchmarks in order to allocate allowances to minimize leakage, implementing the forest offset protocol, developing a new compliance offset protocol for methane reduction from rice cultivation, and monitoring the biological impacts of forest projects. Key on-going contracts are discussed in recent developments, and contracts in development are discussed in the upcoming milestones section below.

Cap-and-Trade Program Administration Contracts:

As part of collaborating with other jurisdictions, administrative support functions for the Cap-and-Trade Program have been transitioned to WCI, Inc. WCI, Inc.'s approach to coordinating administrative support is to have each jurisdiction specify its administrative requirements, and then for WCI, Inc. to provide support that meets these specifications. Coordinating administrative support through WCI, Inc. benefits California and the other jurisdictions. Coordinated support ensures that all cap-and-trade programs in the participating jurisdictions use the same highly secure infrastructure, including the allowance tracking system and auction platform. Coordinated support also ensures that analyses performed to support market monitoring in each jurisdiction are conducted consistently and effectively for the entire compliance instrument market across all the programs. Finally, coordinated support enables the programs to share the cost of developing and maintaining program infrastructure, thereby reducing the costs for each jurisdiction. The following four program administration contracts were initially established by ARB to initiate California's Cap-and-Trade Program; the work has been transitioned to WCI, Inc.-administered contracts.

- WCI, Inc. entered into a contract with Markit Group Limited for the purpose of enabling and conducting joint auctions and jurisdictional reserve sales of California and Québec GHG emission allowances. This work builds upon the effort by California to implement allowance auctions and reserve sales for its Cap-and-Trade program. This work is currently focusing on enhancing functionality for joint auctions and jurisdictional reserve sales.

- WCI, Inc. entered into a contract with Deutsche Bank National Trust Company for the purpose of providing escrow services for California and Québec as they begin to hold joint auctions and jurisdictional reserve sales. This work builds upon the effort by California to contract for financial services in support of auctions and reserve sales.
- WCI, Inc. entered into a contract with Monitoring Analytics LLC for the purpose of enabling multi-jurisdictional monitoring for California and Québec linked auctions and linked markets in GHG compliance instruments and related derivatives. This work builds upon the effort by California for market monitoring of its Cap-and-Trade Program, and enables the additional work required to expand the monitoring effort to include Québec and to monitor the market as a whole.
- WCI, Inc. entered into a contract with SRA International to provide continued technology development and support to bring CITSS to maturity as well as to provide hosting services for CITSS.

Other Cap-and-Trade Program Contracts:

- ARB entered into an agreement with the University of California Energy Institute on April 1, 2012 to establish a market simulation group (MSG) to help ARB staff identify opportunities for program improvement. MSG held meetings with stakeholders to identify market rules or situations that might lead to market disruptions that could be investigated through simulation analysis. MSG has completed the simulation analysis and provided results and recommendations to ARB in spring 2014. ARB posted the final report on its website on July 7, 2014. More information on the MSG and the final report can be found at: <http://www.arb.ca.gov/cc/capandtrade/simulationgroup/simulationgroup.htm>.
- In collaboration with economic researchers from Resources for the Future and the University of California at Berkeley, ARB continued leakage research efforts to establish a baseline for how industries have historically responded to energy price changes and to identify metrics to evaluate future leakage risk. Any changes in leakage risk determinations would require regulatory amendments, which would need to be in place before industrial allocation occurs for the third compliance period in fall 2017.
- ARB initiated a study with the California Polytechnic University in San Luis Obispo and the University of California (UC) to analyze the ability of the food processing sector to pass on regulatory costs to consumers and to the agricultural sector. The analysis will be used to assess leakage risk, which will inform the allocation of allowances for the sector in the third compliance period. Researchers are currently collecting facility data and anticipate providing preliminary results in 2015.

- ARB has contracted with the University of California at Davis to develop recommendations for a monitoring system for unanticipated adverse biological impacts caused by the U.S. Forest Protocol. This work supports ARB's efforts to use an adaptive management approach to address unanticipated forest impacts that could occur as part of the implementation of the Cap-and-Trade Program. The report containing the UC Davis recommendations will be released in 2015.
- ARB has contracted with California Polytechnic State University, San Luis Obispo, to provide technical forestry support to ARB staff, taking into account programmatic, policy, biometric, modeling, biology, and harvest management activities. The contract will support development of guidance to simplify highly complex calculations, and increase the understanding and accessibility of protocol requirements under ARB's compliance offset protocol for forestry projects.
- ARB has contracted with Michigan State University to update software to facilitate reporting of the required data and streamline calculation of emission reductions from adoption of eligible farming practices under the proposed rice methane protocol. This contract will aid in keeping project costs down and limit the time farmers have to spend complying with protocol requirements.
- ARB has a contract in place with Lawrence Berkeley National Laboratory to conduct a scoping study on existing carbon capture and storage quantification methodologies appropriate for California's specific geology and hydrology. The goal is to move towards development of a monitoring, verification, and accounting methodology that is appropriate for incorporation into the Cap-and-Trade Program and Low Carbon Fuel Standard Program.

3. *Upcoming Milestones – January through June 2015*

Below is a brief summary of some of the upcoming milestones ARB is working to achieve during the first half of 2015. More information on ARB activities and upcoming public meetings related to the Cap-and-Trade Program can be found at:

<http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>.

- ARB will continue to hold joint auctions with Québec as scheduled in the Regulation. These allowances will be eligible to be used to meet any compliance obligations for 2015 GHG emissions. As described previously, as of January 1, 2015, GHG emissions from transportation fuels and residential and commercial burning of natural gas and propane were covered by the Cap-and-Trade Program, and suppliers of these fuels must submit compliance instruments to cover their GHG emissions starting with their 2015 emissions.
- ARB is developing a multi-phase proposal to assess the effects (benefits and potential impacts) of AB 32 programs on disadvantaged communities. The key objective is to introduce a quantitative mechanism to gauge the effectiveness of AB 32 programs with respect to disadvantaged communities. This effort will be

integrated with the Cap-and-Trade Adaptive Management process, and ARB aims to present this proposal at public meetings anticipated to be held in 2015. ARB's approach is described in Chapter 6, Section C of the First Update to the Climate Change Scoping Plan, on ARB's website at <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>.

- Following the December Board hearing, staff expects to propose 15-day changes to a new offset project protocol for avoided methane emissions from changes in rice cultivation practices. After a public comment period, staff will bring the proposed changes for this protocol and the US Forest protocol for Board consideration in mid-2015.

B. Low Carbon Fuel Standard

1. *Background*

ARB approved the Low Carbon Fuel Standard Regulation (LCFS) in 2009 with requirements to reduce the carbon intensity (CI) of gasoline and diesel fuels by at least 10 percent by 2020. This standard sets declining annual targets between 2011 and 2020. The LCFS will reduce GHG emissions from the transportation sector in California by about 15 MMT in 2020. These reductions account for almost 19 percent of the total GHG emission reductions needed to achieve the State's mandate of reducing GHG emissions to 1990 levels by 2020.

The LCFS requires regulated parties to electronically submit all quarterly progress and annual compliance reports to ARB. To this end, ARB developed the LCFS Reporting Tool, a secure, interactive, web-based system, through which all regulated parties are required to report data on fuel volumes and CI. Through these reports, providers of transportation fuels must demonstrate that the mix of fuels they supply meets LCFS CI standards for each annual compliance period. Each fuel in the mix is assigned a CI value, based on the "life cycle" GHG emissions associated with the production, transportation, and use of fuels in motor vehicles. Each fuel's complete life cycle, from "well-to-wheels" (or from "seed-to-wheels" for biofuels made from crops), represents that fuel's "fuel pathway." To date, there are nearly 250 individual fuel pathways that regulated parties can use to describe the GHG emissions associated with their fuels.

Pursuant to the Board's direction, ARB continues to collaborate with stakeholders on evaluating CI for crude oils, and other technical assessments related to low-energy-use refining. Also, ARB continues to analyze, and recommend for approval, numerous lower CI fuel pathways for which fuel producers have applied--confirming that innovations are occurring in the fuel sector. Also of note, California is attracting significant investments in the development of advanced biofuels. In order for advanced biofuels to be available in sufficient quantities, investment in these fuels needs to occur. ARB has been monitoring investment in biofuels and has seen a slow, but steady, increase in investment. This is true both in California and nationwide. Private equity investments into low-CI fuel projects in North America have totaled \$4.85 billion since

2007.⁴ In 2012, active, low-carbon fuel projects received \$1.45 billion in new private equity investments.⁵ Of these funds, approximately \$2.3 billion, or 47 percent, has been invested in California biofuels companies.⁶

Cumulatively through the end of June 2014, there have been a total of about 8.72 million metric tons of credits and 5.22 million metric tons of deficits, for a net total of about 3.50 million metric tons of credits.⁷ This excess means that regulated parties are over-complying with the LCFS, generating additional LCFS credits that can be used for future compliance when the standard becomes more stringent. In addition to banking credits, regulated parties have begun trading credits. Both of these developments are positive indicators that the LCFS is functioning as intended.

Despite these positive indicators, the petroleum refining industry is concerned about compliance with the LCFS in future years when the standard becomes more stringent. Specifically, the petroleum refining industry believes that lower-CI liquid biofuels they prefer to blend with conventional gasoline and diesel fuel are not being developed quickly enough in commercial quantities and will not be available. Staff continues to believe that the availability of these advanced biofuels will grow sufficiently to meet demand. Additionally, liquid biofuels are just one of several paths that refiners can take to comply with the LCFS. They can also purchase LCFS credits in the marketplace from producers of lower-CI fuels, such as electricity, natural gas, biogas, and hydrogen, or they can invest in the production of these fuels to generate their own LCFS credits.

In December 2009 and early 2010, three lawsuits were filed against ARB over the LCFS—two in federal court and one in State court. The federal lawsuits were brought by trade associations of ethanol producers and refiners who claim that the LCFS is preempted under the federal Energy Independence and Security Act (EISA) of 2007 and violates the dormant Commerce Clause of the U.S. Constitution (either because the LCFS impermissibly regulates activities beyond California's borders or because it discriminates against out-of-State corn ethanol by assigning corn ethanol from the Midwest a CI value higher than that of corn ethanol made in California). Plaintiffs claim that corn ethanol will eventually be excluded from the California market in favor of more advanced biofuels that have a lower CI value. In contrast, ARB showed that many corn ethanol producers from the Midwest have in fact registered fuels with ARB CI values well below gasoline and, indeed, even less than California corn ethanol. The LCFS program allows for a determination of individualized CI numbers for each facility, provided that certain criteria are met.

⁴ E2 "[Advanced Biofuel Market Report 2013](#)".

⁵ Ibid. Annual investment data collected from August 2012 – August 2013.

⁶ Data from PricewaterhouseCoopers/Data by Thomson Reuters, Cleantech, and Collaborative Economics. Investment data tracked from 2006.

⁷ ARB "[2014 LCFS Reporting Tool \(LRT\) Quarterly Data Summary – Report No. 2](#)"

In December 2011, the lower court ruled against ARB on the dormant Commerce Clause claims and issued a preliminary injunction against ARB but did not address the federal EISA preemption issue. In April 2012, the Ninth Circuit granted ARB's request for a stay of the preliminary injunction, which allowed ARB to resume enforcement of the LCFS regulation during the pendency of the lawsuit.

On September 18, 2013, a three-judge panel of the Ninth Circuit ruled that the ethanol provisions in the LCFS are not facially discriminatory and remanded the case for the district court to determine whether the ethanol provisions discriminate in purpose or effect. Furthermore, the Ninth Circuit ruled that the LCFS crude oil provisions do not discriminate either facially or in purpose or effect. The Court left the LCFS in place. The plaintiffs filed for *en banc* hearing with the Ninth Circuit which the court subsequently denied. The U.S. Supreme Court acted on June 30, 2014, denying three petitions for certiorari. The denial was without comment; the practical effect was to leave standing the Ninth Circuit Court of Appeals decision.

In August 2011, a State court case alleged that ARB did not fully comply with the Administrative Procedure Act and the California Environmental Quality Act when adopting the LCFS. In November 2011, the State Superior court ruled in favor of ARB on all fourteen causes of action raised by the plaintiffs. The plaintiffs appealed the case, and on July 15, 2013, the Court of Appeal (Fifth District, Fresno) issued its opinion, finding that ARB had committed some procedural violations in adopting the Regulation but holding that the LCFS would remain in effect and that ARB can continue to implement and enforce the LCFS while ARB corrects certain aspects of the procedures by which the LCFS was originally adopted. Accordingly, ARB staff is continuing to implement and enforce the LCFS while preparing for the Board's consideration in 2015 a consolidated regulation package that responds to the Court's decision and contains additional amendments important for the continued success of the LCFS program. Meanwhile, the 2013 LCFS standards, which represent a 1.0 percent decrease in carbon intensity from the 2010 baseline values for gasoline and diesel, will remain in effect through 2015.

2. Recent Developments – July through December 2014

LCFS Rulemaking. In addition to the eight public workshops conducted during the first six months of 2014 related to the proposed re-adoption of the LCFS, ARB conducted an additional seven public workshops during the last six months of 2014. In addition to the proposed re-adoption of the LCFS, staff is proposing amendments to the LCFS regulation currently in place. Proposed amendments include:

- Revised compliance schedule
- Cost containment mechanism
- Revised indirect land use (ILUC) values
- Electricity credits for mass transit and electric forklifts
- Low-energy-use refineries provision
- Refinery GHG reduction credit provision

- Amended innovative technologies for crude oil production
- Additional fuel pathways
- Amended fuel pathway protocol
- Miscellaneous revisions for clarity and enhancement

Staff briefed the Board in July 2014 on the status of the LCFS rulemaking process. Staff will release the Initial Statement of Reasons related to this rulemaking in January, 2015.

LCFS Contracts. ARB is working with various universities to update the ILUC values for corn ethanol, sugarcane ethanol, and soy biodiesel, while also developing ILUC values for palm oil, canola oil, and sorghum. Recommendations on ILUC values will undergo independent academic review. Because the LCFS is at the forefront of life cycle assessments—taking into account the GHG emissions related to the production, transport, and use of transportation fuels—it has required significant technical assistance from academia and private contractors. Most of the contracts that support LCFS implementation are directed at estimating ILUC for numerous alternative fuels.

In order to place these contracts in context, it is helpful to consider how ILUC occurs. An ILUC impact is initially triggered when an increase in the demand for a crop-based biofuel begins to drive up prices for the necessary feedstock crop. This price increase motivates farmers to devote a larger proportion of their cultivated acreage to that feedstock crop. Supplies of the displaced food and feed commodities subsequently decline, leading to higher prices for those commodities. The lowest-cost way for many farmers to take advantage of higher commodity prices is to bring non-agricultural lands into production. Converting open space to agriculture releases carbon sequestered in soils and vegetation. This land use conversion causes an “indirect” impact by contributing to increasing carbon dioxide emissions.

While there is general consensus that ILUC occurs, there is uncertainty regarding the size of the impact, which is modeled because it cannot be directly measured. The model used to estimate ILUC has undergone numerous revisions, and there are many assumptions that must be made when considering the inputs to the model. Because of the complexity of the model and the uncertainties associated with ILUC, ARB has contracted with academic institutions, including the University of California at Berkeley, the University of California at Davis, Purdue University, and the University of Wisconsin, to assist with these analyses.

Alternative Diesel Fuel Regulation. Because of the incentives provided by both the LCFS and the federal renewable fuel standard, the California fuels market is experiencing an increase in innovative motor vehicle fuels that are produced from renewable sources and have lower carbon intensity, relative to conventional fuels. Most notably, diesel fuel alternatives (such as biodiesel and dimethyl ether) are becoming more prevalent and as fuel proponents endeavor to bring these fuels to market, they face a complex set of federal and State regulations. To help facilitate this growing trend of diesel fuel alternatives, staff is developing a new regulation that can provide a

systematic and clear process that will ensure environmental protections, while supporting rapid deployment of these fuels that may help meet the objectives of AB 32.

In 2013, staff held three public workshops to solicit comments from stakeholders regarding a proposed regulation that will govern the commercialization of new alternative diesel fuels for on-road motor vehicles. Two more workshops were held in 2014 to further discuss updated regulation proposals. Staff had planned to release a proposed regulatory package to be considered for adoption by the Board during the last half of 2014, but this was postponed until the first half of 2015.

This rulemaking effort follows several years of research and analysis to determine the air emissions and other environmental impacts of both renewable diesel and biodiesel as viable petroleum diesel fuel replacements. These two fuels are currently used in blends containing conventional petroleum-based diesel fuel, and as they become more prevalent in the market will serve to displace petroleum-based diesel fuel. Renewable diesel is chemically indistinguishable from petroleum diesel and thus subject to the current petroleum diesel regulations; it is not covered by the Alternative Diesel Fuel Regulation. Conversely, biodiesel is chemically different than petroleum diesel fuel and staff's current proposed regulation will establish it as the first alternative diesel fuel.

In general, the proposed regulation contains a three-stage process for new alternative diesel fuels to enter the commercial market: (1) the identification of any pollutants of concern associated with new alternative diesel fuels, (2) the significance level at which emissions may increase, and (3) appropriate mitigation measures required to ensure current air quality protections. In addition to the three-stage commercialization process, the proposed regulation also contains specific provisions for biodiesel to address potential nitrogen oxides (NOx) increases associated with its use.

3. Upcoming Milestones – January through June 2015

Below is a brief summary of some of the upcoming milestones for LCFS and related programs during the first half of 2015. More information on activities and upcoming public meetings related to the LCFS can be found at: <http://www.arb.ca.gov/fuels/lcfs/lcfs.htm>.

The first ARB Board hearing to consider the re-adoption of the LCFS and the adoption of the Alternative Diesel Fuel Regulation is scheduled for February 19, 2015. The 45-day comment period preceding the ARB Board hearing will commence on January 2, 2015. Based on the comments and testimony received, the Board will direct staff to continue its work on the proposed LCFS and Alternative Diesel Fuel regulations. Staff will return to the Board in summer 2015 to address the environmental impact comments received and staff's proposed responses. Should the Board decide to re-adopt the LCFS and adopt the Alternative Diesel Fuel Regulation, they will do so at this second hearing. Staff would then continue to complete the rulemaking effort, which would occur in the second half of 2015.

C. Advanced Clean Cars

1. *Background*

ARB developed the Advanced Clean Cars Program to reduce emissions from the transportation sector that achieve California's long-term climate goals, and to provide a comprehensive approach to further reduce criteria and GHG emissions from light-duty vehicles beyond 2016. This recent Program closely aligns the Low Emission Vehicle, Zero Emission Vehicle (ZEV), and GHG light-duty vehicle standards to lay the foundation for the next generation of ultra-clean vehicles. Specifically, the Advanced Clean Cars Program includes more stringent GHG emission standards, tighter criteria pollutant standards, and increased ZEV production requirements for 2017-2025 model year passenger cars and trucks. This suite of regulations will reduce GHG emissions by about 3.1 MMT in 2020, approximately 4 percent of the total needed to achieve the AB 32 target for that year. These regulations are furthering California's progress toward near- and long-term climate goals, as well as aiding attainment of ambient air quality standards.

Zero Emission Vehicles. In January 2012, ARB approved the Advanced Clean Cars Program through rulemaking. The ZEV Program was amended as part of the rulemaking, increasing the zero emission vehicle requirements over time to about 15 percent of new car sales in 2025. The ZEV Program focuses attention on commercialization of battery electric vehicles, hydrogen fuel cell electric vehicles, and plug-in hybrid electric vehicles. The ZEV Program will continue as a distinct but complementary program in California and the ten other states that have also adopted it. The program is a critical element toward meeting the 2050 GHG emissions reduction goal established by Executive Order B-16-2012, which sets a target to reduce GHG emissions for the transportation sector by 80 percent below 1990 levels.

GHG Light-Duty Vehicle Standards. More stringent GHG emission standards were developed through a joint effort with the United States Environmental Protection Agency (U.S. EPA) and the National Highway Traffic Safety Administration (NHTSA) that evaluated available and emerging GHG emission reduction technologies for light-duty vehicles. These requirements will reduce new car carbon dioxide emissions by about 36 percent and new truck carbon dioxide emissions by about 32 percent during the model years 2016 through 2025. In October 2012, U.S. EPA finalized similar GHG emission standards while NHTSA finalized fuel economy standards, which will each yield similar GHG emissions reductions. Subsequently, in November 2012, the Board approved amendments to the Advanced Clean Cars regulations that allow vehicle manufacturers to demonstrate compliance with ARB regulations based on compliance with the federal standards, providing a path for vehicle manufacturers to meet a single set of national GHG emission standards through the 2025 model year. On December 27, 2012, U.S. EPA approved ARB's request for a waiver under the Clean Air Act, giving California the "green light" on its Advanced Clean Cars package of regulations.

Because of the technology-forcing nature of the standards and California's commitment to a national program, ARB is conducting a mid-term review of the adopted standards for model years 2022 to 2025 in collaboration with U.S. EPA and the National Highway Traffic Safety Administration. The target release date for the agencies' joint technical assessment is in mid-2016, with a staff update to the Board in fall of 2016. This review will be used to inform ARB and the federal agencies whether to maintain the standards as adopted or consider revising them. To date, the automobile industry has outperformed the GHG standard by a substantial margin.⁸

2. Recent Developments – July through December 2014

Incentives for Introduction of ZEVs and Fueling Stations. In addition to ZEV regulatory efforts, ARB works with the California Energy Commission (CEC) and local administrators to provide financial incentives that further encourage market adoption of clean vehicles and equipment via the Air Quality Improvement Program and, starting in FY 2014-15, Low Carbon Transportation investments from the Greenhouse Gas Reduction Fund. So far, the Clean Vehicle Rebate Project (CVRP) has provided over \$140 million to incentivize the purchase or lease of about 80,000 ZEVs and plug-in hybrids for use on California's roadways.

In September 2014, Governor Brown signed SB 1275 (De León), Chapter 530, requiring ARB to develop CVRP eligibility requirements linked to income and to ramp down incentive levels over time.

Advanced Clean Cars Update to the Board

Staff reported to the Board on the Advanced Clean Cars program in October. The report updated the Board on progress implementing the low emission vehicle GHG regulation, particulate matter measurement capabilities, and the status of the ZEV Program. It also explained the roles of ARB and its federal partners in assessing different aspects of the mid-term review. The presentation pointed out that availability of ZEV models has increased dramatically in the last three years and automakers are currently over complying with the ZEV requirements.

Advanced Clean Cars Contracts. ARB continues to pursue several contracts to support overall implementation of the Advanced Clean Cars Program and the midterm review due in 2018.

- ARB has contracted with UC Davis to conduct research on the ZEV market. The objective is to capture statewide data on consumer attitudes, barriers, and motivators toward purchasing ZEVs. The purpose of the research is to identify the factors that influence new-vehicle purchase decisions and the areas where additional policies, incentives, or outreach could be implemented to facilitate

⁸ <http://www.epa.gov/oms/climate/ghg-report.htm>

greater adoption rates of cleaner cars. The project is called, “New Car Buyers’ Valuation of Zero Emission Vehicles.”

- ARB has also contracted with UC Davis to conduct research on household-level plug-in electric vehicle usage and charging behavior in order to quantify emission benefits. The project is called, “Advanced Plug-in Electric Vehicle Travel and Charging Behavior.”
- ARB has selected University of California at Los Angeles to evaluate trends in the emerging ZEV market relative to policy and market factors. The project is called, “Examining Factors That Influence ZEV Sales in California.”
- ARB has contracted with Control-Tec to evaluate the potential for road load reduction strategies (e.g., aerodynamics, rolling resistance, and mass reduction) to contribute to GHG emission reductions. The project is called, “Technical Analysis of Vehicle Load-Reduction Potential for Advanced Clean Cars.”

3. *Upcoming Milestones – January through June 2015*

Below is a brief summary of some of the upcoming milestones for Advanced Clean Cars during the first half of 2015. More information on staff’s activities and upcoming public meetings on this program can be found at:

http://www.arb.ca.gov/msprog/consumer_info/advanced_clean_cars/consumer_acc.htm.

- Staff will return to the Board twice in 2015 to modify the ZEV regulation. The first item will adjust the ZEV requirements for intermediate volume manufacturers in recognition of their smaller size and to give them more time to bring ZEV technologies to market. The second item will adjust the use of battery swapping technology to qualify a battery electric vehicle for fast refueling credit under the ZEV regulation.
- ARB staff continues its work on the mid-term review of the Advanced Clean Cars Program, in consultation with the Board. In conjunction with the U.S. Environmental Protection Agency (U.S. EPA) and the National Highway Traffic Safety Administration, ARB is assessing the technology used, compliance rates, and costs associated with the greenhouse gas emission standards for light-duty vehicles. Additionally, California is reviewing the adopted particulate matter standards and the ZEV regulation, as well as market uptake of ZEVs and plug-in hybrid electric vehicles.
- ARB staff will continue implementing CVRP and will start developing pilot projects to increase the deployment of advanced technology vehicles, including ZEVs, in disadvantaged communities.

- ARB staff will incorporate the requirements of SB 1275 (De León) requiring income-based eligibility for rebates and a ramping down of rebate amounts over time, in the 2015-16 Funding Plan, which is scheduled to be considered by the Board in June.

D. Landfill Methane

1. *Background*

On June 25, 2009, the Board approved a regulation that reduces emissions of methane from municipal solid waste (MSW) landfills. The landfill methane control measure is a discrete early action measure. The Landfill Regulation, which became effective in June 2010, requires owners and operators of certain MSW landfills to install gas collection and control systems. It also requires owners of landfills with existing and newly installed gas collection and control systems to operate them in an optimal manner.

ARB originally estimated that there would be a reduction of about 0.4 MMT of CO₂e as a result of bringing 14 MSW landfills into compliance with the Regulation by 2020. The implementation and enforcement of this measure for the remaining estimated 204 affected MSW landfills (including those with gas collections systems already installed) is expected to result in an additional estimated emission reduction of 1.1 MMT of CO₂e in 2020. ARB is working with the California Department of Resources Recycling and Recovery (Cal Recycle) to further refine the estimated emission reductions from the measure as additional studies become available.

The Landfill Regulation allows the local air districts to voluntarily enter into a Memorandum of Understanding (MOU) with ARB to implement and enforce the Landfill Regulation and to assess fees to cover their costs. ARB developed the MOU template in consultation with representatives from the California Air Pollution Control Officers Association. Upon signing the MOU, primary enforcement authority is transferred to the local air district. ARB retains its right to enforce the Landfill Regulation, if necessary.

Having local air districts participate in the enforcement process capitalizes on their expertise (many air districts regulate other types of emissions from landfills), takes advantage of their physical location closer to the sources, and reduces the State's cost of implementing the Landfill Regulation. This collaboration is an example of a partnership between ARB and the local air districts, working together to achieve the goals of AB 32.

2. *Recent Developments – July through December 2014*

During the second half of 2014, ARB worked to increase enforcement activities with inspections, audits, and compliance assistance training. More information on ARB activities and any upcoming public meetings can be found at: <http://www.arb.ca.gov/cc/landfills/landfills.htm>.

- To date, 22 air districts have signed the MOU. ARB continues to work with the remaining local air districts to encourage their participation in the MOU.
- ARB has provided training to 19 local air districts that have signed the MOU to assist them in implementing and enforcing the Regulation. Two local air districts that had not signed the MOU, along with several local public works agencies, were also present at the training sessions. Other local air districts that are considering signing the MOU have expressed interest in training within their regions.
- Out of the original 14 MSW landfills that were listed as uncontrolled in ARB's Staff Report: Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from MSW Landfills (May 2009), 6 have now installed landfill gas collection and control systems.
- ARB is working on the MOU with local air districts in order to further refine the information contained in the State's landfill database.

3. *Upcoming Milestones – January through June 2015*

- ARB plans to offer additional training sessions to interested local air districts, and to make available a modified version of this training to landfill owners and operators and interested governmental agencies.
- ARB will continue conducting audits through inspections, reviewing documents, and coordinating with local air districts to ensure compliance with the Landfill Regulation.
- ARB will continue to focus enforcement activities on landfills located in districts that have not signed an MOU because these landfills have a greater potential for elevated methane emissions.
- ARB is exploring modifying the Landfill Regulation to streamline recordkeeping and reporting requirements and evaluate the effectiveness of the current surface methane emission limits.

E. Crude Oil and Natural Gas Production, Processing, and Storage

1. *Background*

The initial Scoping Plan proposed the development of a measure to reduce venting and fugitive GHG (methane) emissions associated with oil and gas production, processing, and storage. The methane emissions come from various sources, such as storage tanks, compressor seals, and leaking components such as valves, flanges, and connectors. In 2009, ARB undertook a survey of the industry to improve the emissions inventory for this sector. The survey results show that about 1.3 million metric tons of CO₂e come from vented and fugitive sources in the oil and natural gas production,

processing, and storage sector. Vented emissions are intentional, and fugitive emissions are unintentional, releases of gases to the atmosphere.

This effort was not originally envisioned to address well stimulation, which includes hydraulic fracturing (or fracking). However, with the passage of SB 4 (Pavley, Chapter 313) in 2013, ARB has expanded its investigation to consider and reduce methane, Volatile Organic Compound (VOC), and toxic air contaminant emissions resulting from well stimulation activities. Pursuant to SB 4, ARB staff is working with the local air pollution control and air quality management districts, as well as with the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR) and other relevant State agencies, to coordinate efforts and maximize the effectiveness of measures to address well stimulation emissions.

2. *Recent Developments – July through December 2014*

- In order to begin to understand the air emissions from hydraulic fracturing and other well stimulation activities in California, ARB entered into a contract in August 2013 with a testing contractor to measure GHG, volatile organic compound, and toxic air contaminant emissions from these activities at a very limited number of sites. In the second half of 2014, testing continued at a second oil field with a second operator, and a third pre-testing site visit occurred with a third operator at a third oil field.
- ARB continued working with air districts' staff to discuss possible methane control strategies, as well as implementation and enforcement approaches.
- In August and December 2014, ARB held two public workshops as part of the regulatory development for the Crude Oil and Natural Gas Production, Processing, and Storage Regulation. Staff discussed background, emission estimates, and preliminary regulatory concepts, and requested specific information to aid in the development of a Standardized Regulatory Impact Assessment and Environmental Analysis.
- ARB finalized a memorandum of agreement (MOA) with DOGGR and air districts to outline respective authorities regarding well stimulation, pursuant to SB 4.
- ARB hired a contractor to measure methane leak concentrations and flow rates at California oil and natural gas facilities, develop methane concentration to flow rate correlation factors, and evaluate different types of methane leak detection equipment.

3. *Upcoming Milestones – January through June 2015*

- ARB plans to hold at least one additional public workshop for the Crude Oil and Natural Gas Production, Processing, and Storage Regulation to discuss estimated costs, environmental impacts, and draft regulatory language.

- ARB plans to present the proposed Crude Oil and Natural Gas Production, Processing, and Storage Regulation to the Board.
- All of the contracted emissions testing from hydraulic fracturing and other well stimulation activities should be completed. A final report from the testing contractor will be completed.

II. ARB ACTIVITIES TO SUPPORT AB 32

This section focuses on major AB 32 support activities identified in the supplemental budget language: the Update to the AB 32 Scoping Plan, coordination with entities outside California, implementation of SB 375 sustainable communities' plans, and the use of Cap-and-Trade auction proceeds. Also included is information on the development of the Sustainable Freight Strategy, which will drive further actions to provide significant benefits for climate, regional air quality and localized health risk reduction.

A. Scoping Plan

1. *Background*

AB 32 requires ARB to take the lead, in close coordination with other State agencies, to prepare and adopt a Scoping Plan that describes how the State will reduce GHG emissions to 1990 levels by 2020. The initial Scoping Plan was first approved by the Board in December 2008, and contained a range of GHG emission reduction actions that could be taken. These actions include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade program, and an AB 32 program implementation fee to fund the program.

AB 32 requires that the Scoping Plan be updated every five years. The Board approved the first update to the Scoping Plan (Update) in May 2014. The Update reflects public input and recommendations from business, environmental, environmental justice, and community-based organizations.

The Update was developed by ARB in collaboration with the Climate Action Team and reflects the input and expertise of a range of State and local government agencies.

The Update identifies nine key sectors for ongoing action to reduce GHG emissions. These sectors include:

- Energy
- Transportation
- Agriculture
- Water
- Waste Management
- Natural and Working Lands
- Short-Lived Climate Pollutants (such as methane, black carbon, and fluorinated gases such as refrigerants)
- Green Buildings
- Cap-and-Trade.

AB 32 directs ARB to convene an Environmental Justice Advisory Committee (Committee) to advise it in developing the Scoping Plan and any other pertinent matter in implementing the bill. ARB reconvened the Committee to provide advice on the development of the Update. The Committee provided recommendations on the Update that focused on each Scoping Plan sector and overarching environmental justice policy.

ARB also convened a panel of economic experts to serve as advisors during the development of the Update and to provide recommendations for evaluating the economic impacts associated with AB 32. ARB consulted with the economic advisors⁹ on the best means of assessing economic impacts to date, and about estimating future impacts of existing or new emission reduction strategies.

In addition, a group of distinguished scientists¹⁰ with expertise in observed climate change in California, in projection of future climate change impacts, and in short-lived climate pollutants, provided input on the latest climate science discussion. This latest discussion further underscores the urgent need to accelerate GHG emission reductions to avoid the most severe impacts of climate change. The Update also highlights the more recent understanding of the importance of short-lived climate pollutants (e.g., black carbon, fluorinated gases, and methane.) It commits ARB to developing a comprehensive strategy by 2015 to fast-track reductions of these pollutants, consistent with SB 605 (Lara), Chapter 523, Statutes of 2014, which will deliver significant public health and climate benefits in the very near-term.

The Update affirms California is on track to meet the AB 32 goals. Since 2008, ARB has worked with other State and local agencies to implement the climate change programs outlined in the initial Scoping Plan. California has undertaken a number of notable groundbreaking climate change initiatives including the first in the nation

⁹ List of Economic Advisors, First Update to Scoping Plan, Page 120
http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

¹⁰ List of Scientific Expert Reviewers, First Update to Scoping Plan, Page 8
http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

economy-wide Cap-and-Trade Program (see page 3,) the Low Carbon Fuel Standard (see page 13,) the Advanced Clean Cars Program (see page 19,) a 33 percent Renewable Portfolio Standard (see page 34,) and the Sustainable Communities program (see page 37.) Many of these actions have been bold and ambitious.

The Update builds upon the framework of the initial Scoping Plan by outlining priorities and recommendations for the State to achieve its long-term GHG emission reduction objectives of 80 percent below 1990 levels by 2050. New actions, lead agency assignments, and anticipated due dates for key sector areas are identified that will move the State further along the path to meeting its long-term climate, air quality, and public health goals. The Update noted that the scope and scale of criteria pollutant emission reductions necessary to meet federal air quality standards will be similar to that needed to meet long-term climate targets. Achieving both objectives will require close alignment of programs and investments to leverage resources for maximum benefit.

Progressing toward California's long-term climate goals will require that GHG emission reduction rates be significantly accelerated. Emissions from 2020 to 2050 will be required to decline at more than twice the rate of that which is needed to reach the 2020 statewide emissions limit. The Update recommends establishing a mid-term statewide GHG emission reduction target that would frame the next suite of emission reduction measures and ensure continued progress toward meeting our long-term goals. The target will ensure that the State stays on course and expands upon the progress we have made to date so that we can achieve our long-term objective of reducing California's GHG emissions to the scientifically recognized level necessary for doing our part to meet a global goal of climate stabilization.

2. Recent Developments -- July through December 2014

Since Board approval of the Scoping Plan Update in May 2014, several of the recommendations in the Update are currently being implemented, and plans to implement other recommendations are on the horizon. See the sections on Cap-and-Trade, LCFS, Advanced Clean Cars, Sustainable Communities, Oil and Gas, Sustainable Freight, and Cap-and-Trade Auction Proceeds, in this report for a description of the current activities related to each of these programs.

The following are highlights of Scoping Plan Update recommendations that were initiated in the second half of 2014 but that have not been covered in other sections of this document. Some of the workgroups that are called for in the Update have been convened, and others are scheduled to be convened in 2015.

- Discussions are on-going among the State's energy agencies regarding the energy sector recommendations identified in the Update.
- The California Natural Resources Agency, in conjunction with the California Environmental Protection Agency (CalEPA), has convened an interagency work

group to develop a Forest Carbon Plan. The first meetings of the interagency workgroup, called the Forest Climate Action Team (F-CAT), occurred in August, October, and December. Subcommittees within the F-CAT have met more frequently. In December, CAL FIRE launched the F-CAT web site at <http://www.fire.ca.gov/fcat/>.

- On September 21, Governor Brown signed SB 605 (Lara), directing ARB to develop a Short-Lived Climate Pollutant (SLCP) Strategy by January 1, 2016, in alignment with the commitment in the Update.

3. *Upcoming Milestones – January through June 2015*

- In spring 2015, ARB expects to hold public workshops to discuss the concepts of a SLCP Strategy. The Strategy will address current research activities related to black carbon, methane, and fluorinated gases. The Strategy will focus on identifying research gaps, emission inventories for each pollutant, current control measures being implemented, and potential new measures to provide additional reductions.
- Public workshops hosted by the F-CAT are planned for early 2015. F-CAT meetings will continue bi-monthly, working toward producing the Forest Carbon Plan by the end of 2016. The California Natural Resources Agency and CalEPA are lead agencies for developing the Forest Carbon Plan document.
- California's Department of Resources Recycling and Recovery will continue discussions with the Department of General Services on the State Agency Buy Recycled Campaign to identify potential improvements in the procurement of recycled-content products.
- As part of its Adaptive Management Program, ARB will hold public workshops and provide an update to the Board in 2015 on defining an appropriate approach to assessing the effects of the Cap-and-Trade program on disadvantaged communities.

More information on ARB activities regarding Scoping Plan implementation can be found at: <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>.

B. Coordination with Other Entities Outside of California

1. *Background*

AB 32 requires ARB to “consult with other states, the federal government, and other nations to identify the most effective strategies and methods to reduce greenhouse gases, manage greenhouse gas control programs, and to facilitate the development of integrated and cost-effective regional, national, and international greenhouse gas reduction programs.” Pursuant to this requirement, and in the spirit of expanding

international action to address global climate change, ARB engages with interested jurisdictions outside of California.

ARB works closely with other entities at the local, State, regional, national, and international levels to ensure that the rigorous standards established by California are understood and potentially implemented by other jurisdictions. Where other states and nations are developing or implementing their own GHG reduction programs, ARB looks to coordinate with committed partners to expand action to tackle global climate change by sharing California's programs, policies and best practices so that their program designs complement California's efforts and benefit the State to the maximum extent feasible.

One focus of ARB's efforts has been with partner jurisdictions in the Western Climate Initiative (WCI) to build an integrated, regional carbon market and expand cost-effective emission reduction opportunities. These efforts have included developing the administrative support activities managed by the Western Climate Initiative, Inc. (WCI, Inc.).

ARB has worked with Québec to link cap-and-trade programs. After satisfying the requirements of Senate Bill 1018 (Committee on Budget and Fiscal Review, Chapter 39, Statutes of 2012), and completing the Linkage Readiness Report requested by the Governor, the California and Québec cap-and-trade programs were linked on January 1, 2014. This linkage enables compliance instruments to be transferred among participants in the two programs. Linkage also enables allowance auctions to be conducted jointly. See Section 1, A. Cap-and-Trade, for more information.

Governor Brown, ARB and other agencies have also been working with several entities in China to advance their efforts to reduce GHG emissions and combat air pollution. China has recently become the world's leading emitter of GHG emissions and addressing GHG emissions from China is critical to addressing global climate change. Similarly, many cities in China are suffering from hazardous air pollution, some of which drifts across the ocean to California. Sharing California's leading expertise on reducing air pollution can provide mutual benefits to China, California and global climate. Accordingly, California and China entered into a number of agreements in 2013 and 2014, and have undertaken several activities under these agreements. These activities are summarized in the International section of this report and in previous annual and semi-annual reports to the JLBC.

2. *Western Climate Initiative (WCI)*

The WCI is a collaboration of independent jurisdictions working together to identify, evaluate, and implement policies to tackle climate change at a regional level. WCI was originally established by 5 states and grew to 11 states and provinces including: Washington, Oregon, Montana, Utah, New Mexico, Arizona, California, British Columbia, Ontario, Manitoba, and Québec. California participated in the WCI as part of the effort to carry out the requirements of AB 32.

Following extensive consultation with stakeholders, the WCI jurisdictions released comprehensive recommendations for designing and implementing an emissions trading program. As a result of California's coordination efforts, the WCI recommendations are consistent with the design of ARB's Cap-and-Trade Program. This consistency helps facilitate opportunities for linking California's program with other jurisdictions.

No WCI activities were conducted in the second half of 2014. Further information on WCI can be found at: <http://www.westernclimateinitiative.org>.

3. *Western Climate Initiative, Inc.*

Throughout the WCI collaboration, the WCI jurisdictions discussed the concept of having regionally coordinated administrative support for the jurisdictions' respective emissions trading programs. In November 2011, WCI, Inc. was created to fulfill this administrative role.

WCI, Inc. is a non-profit corporation that focuses solely on providing administrative support, and is separate from WCI. WCI, Inc. coordinates administrative services to cap-and-trade programs developed and implemented by states and provinces. The Board of Directors for WCI, Inc. includes officials from the provinces of Québec and British Columbia, and the State of California. The services provided by WCI, Inc. can be expanded to support jurisdictions that join in the future.

The coordinated administrative support from WCI, Inc. benefits California and the other program participants in several ways:

- Coordinated support ensures that all the linked programs use the same highly secure program infrastructure, including the allowance tracking system and auction platform.
- Coordinated support ensures that analyses performed to support market monitoring in each jurisdiction are conducted consistently and effectively for the entire compliance instrument market across all the linked programs.
- Coordinated support enables the linked programs to share the cost of developing and maintaining program infrastructure, thereby reducing the costs for each jurisdiction.

WCI, Inc.'s approach to coordinating administrative support is to have each jurisdiction specify its administrative requirements, and then for WCI, Inc. to provide support that meets these specifications. Currently, British Columbia, California, and Québec participate in WCI, Inc. California and Québec are currently implementing cap-and-trade programs to reduce GHG emissions.

Most of the administrative support provided by WCI, Inc. is highly technical or specialized and has been developed through the use of contractors. WCI, Inc. is undertaking the following activities:

- Coordinating the development and administration of the Cap-and-Trade Compliance Instrument Tracking System Service (CITSS);
- Coordinating the development and administration of an allowance auction platform. The auction platform is used by California and Québec to auction emission allowances under their cap-and-trade programs and conduct reserve sales;
- Coordinating the performance of analyses to support market monitoring performed by each jurisdiction of allowance auctions and allowance and offset certificate trading; and
- Coordinating auction and reserve sale financial administration, which includes evaluation of bid guarantees and settlement (transferring the payments from the auction and reserve sale purchasers to the sellers).

Whereas WCI has focused on collaboration of emissions trading policies, WCI, Inc. is solely administrative in nature. All policymaking and regulatory authority for each jurisdiction's program is retained by each jurisdiction. According to the WCI, Inc. bylaws, its administrative activities must "...conform to the requirements of State and Provincial programs..." The requirements are defined by the participating jurisdictions, such that WCI, Inc. must execute its administrative role in conformance with the requirements established by ARB and the other jurisdictions.

Section 4 of this report provides the semi-annual update to the Legislature on the activities of WCI, Inc. Please see this section for further information.

4. *Other Federal and State Governments*

ARB coordinates with entities at the state, federal, and international levels that have or are developing program elements similar to California's to ensure that important provisions are as consistent as possible, where appropriate. This coordination ensures that the State's and stakeholders' investment in developing California regulations facilitates future broadening of policies to other jurisdictions and strengthens California's ability to compete in the global economy.

ARB works closely with federal agencies including: U.S. EPA, the U.S. Department of State, the U.S. Agency for International Development, the Commodity Futures Trading Commission, and the Federal Energy Regulatory Commission, on climate change issues.

The Mandatory Reporting Regulation for GHG emissions is modeled on, and periodically updated to maintain consistency with, U.S. EPA's GHG reporting rule. In

2014, ARB continued to work with U.S. EPA on further consolidating reporting systems to both reduce regulatory burden on reporting entities and increase data accuracy and integrity. The CITSS compliance system for California's Cap-and-Trade Regulation was built in cooperation with U.S. EPA on the framework used in other cap-and-trade systems, including the federal Acid Rain Program and the Northeast states' Regional Greenhouse Gas Initiative. The industrial emissions benchmarking methodology used in California's Cap-and-Trade Program was developed in coordination with partners in other U.S. states, Canadian provinces, and the European Union. In the second half of 2014, ARB continued coordinating with the Commodity Futures Trading Commission and Federal Energy Regulatory Commission to strengthen carbon and related energy market monitoring, oversight, and enforcement.

In his June 2013 memorandum, President Obama called on U.S. EPA to build on the leadership that many states, cities, and companies have already shown in reducing carbon pollution from the power sector as U.S. EPA develops its own GHG emission standards under section 111(d) of the Clean Air Act. U.S. EPA subsequently asked states to provide feedback on specific issues, including state experiences with carbon pollution reduction programs. In December 2013, ARB, along with CPUC, CEC, CAISO, and air districts, provided recommendations to U.S. EPA on the most effective strategies for achieving GHG reductions in the electricity sector. The California agencies encouraged U.S. EPA to establish an approach that is rigorous and equitable, achieves significant carbon pollution reductions, and utilizes the flexibilities inherent in the power grid to support cost-effective compliance. The agencies also encouraged U.S. EPA to establish a standard that recognizes the significant progress made by many states, including California, and provides states with the authority to reach emissions targets through a variety of compliance options.

On June 2, 2014, U.S. EPA released the Clean Power Plan proposal, which for the first time seeks to cut carbon pollution from existing power plants nationwide. Power plants account for roughly one-third of all domestic GHG emissions. With the Clean Power Plan, U.S. EPA is proposing guidelines that build on trends already underway in states and the power sector. By 2030, U.S. EPA's plan will result in reducing carbon emissions from the power sector by 30 percent below 2005 levels nationwide, which is equal to the emissions from powering more than half the homes in the United States for one year. It will also cut emissions that lead to smog and soot by more than 25 percent, which will better protect public health, while reducing energy bills. The Clean Power Plan will be implemented through a state-federal partnership under which states develop plans to identify either current or new electricity production and pollution control policies to meet the goals of the proposed program. State plans to meet the proposed compliance goals are due to U.S. EPA in June 2016, with an additional two years allowed if states submit a multi-state compliance plan. Preliminary evaluation of the proposed rule indicates that California's existing programs to increase energy efficiency, encourage renewable energy and reduce climate changing emissions from the power sector put the State in a strong position to meet the proposed goal. ARB will work closely with U.S. EPA to ensure that investments made by California entities to comply with AB 32 are fully credited under U.S. EPA's final rule.

On September 9, 2014, ARB, held a joint public workshop with CEC and CPUC to present preliminary analyses showing that California will be able to meet the proposed rule's emissions targets using existing energy programs, such as the 33% Renewable Portfolio Standard, as long as these programs continue through the 2030 compliance period.¹¹ The workshop also provided an opportunity for stakeholders to provide their viewpoints on the Clean Power Plan, and provide feedback on state agencies' proposed comments as detailed in the Clean Power Plan Discussion Paper.¹² On November 25, 2014, ARB submitted formal comments developed jointly with the CEC, CPUC, and CAISO on the proposed Clean Power Plan, taking into consideration comments received from stakeholders during the September 9 workshop.¹³ Staff continues to communicate with U.S. EPA and stakeholder groups to explore potential rule implementation approaches, as well as to look for opportunities to collaborate with other western states.

U.S. EPA and ARB also routinely coordinate on advanced transportation and fuels, including the relationship between the federal Renewable Fuels Standard and the California Low Carbon Fuel Standard. Furthermore, ARB's work with U.S. EPA and its federal partners was instrumental to the success of the Advanced Clean Cars Program.

ARB has also been working with other states and provincial governments on low carbon fuels issues to share insights gained from developing and implementing California's LCFS. To facilitate the use of consistent methodologies, staff continues to work closely with Oregon, Washington, and British Columbia on ARB's web-based LCFS Reporting Tool. Regulated parties use the Reporting Tool to report the volumes and carbon intensities of the transportation fuels that they have introduced into the California fuels market; therefore, it is used for both reporting and compliance purposes. ARB signed software License Agreements with all three jurisdictions, which enabled Oregon, Washington, and British Columbia to use the LCFS Reporting Tool for data collection in their jurisdictions. Work continues with these governments regarding the technical details of making elements of the Reporting Tool available, including security, program maintenance, and update capabilities.

In October 2013, Governor Brown signed the Pacific Coast Action Plan on Climate and Energy with Governor John Kitzhaber of Oregon, Governor Jay Inslee of Washington, and Premier Christy Clark of British Columbia. Among other activities, the agreement commits each jurisdiction to reduce GHG emissions by putting a price on carbon, transforming markets for energy efficiency, and adopting or maintaining low carbon fuel standards.

To further the objectives of the Action Plan, ARB staff involved with California's LCFS has been collaborating with staff in British Columbia, Washington, and Oregon on their

¹¹ <http://www.arb.ca.gov/cc/powerplants/powerplants.htm>

¹² http://www.arb.ca.gov/cc/powerplants/meetings/discussion_paper.pdf

¹³ <http://www.arb.ca.gov/cc/powerplants/ca-comments-2014-clean-power-plan.pdf>

LCFS programs. ARB staff and Executive Office members have met several times and participated in multiple conference calls with their counterparts within the Pacific Coast Collaborative to discuss the design elements and challenges of a low carbon fuel standard. Finally, staff participates in a routine, bi-weekly conference call with Washington staff on their development of an LCFS.

ARB continues to engage in discussions with other governmental agencies outside of California to share information and experiences about the design of programs aimed at reducing emissions from deforestation and forest degradation, and to begin evaluating whether and how such programs could potentially be included in California's Cap-and-Trade Regulation in the future. ARB does not currently accept any offset credits from outside of the United States, and any future inclusion would require new rulemaking. A description of this ongoing engagement is included in the first update to the AB 32 Scoping Plan, which describes ARB's involvement with the Governors' Climate and Forests Task Force and the importance of continuing to assess tropical forests in order to address climate change. ARB staff presented an update to the Board in July 2014 regarding ARB's work on this topic.

5. *International*

California has advanced several strategic national and international partnerships in the second half of 2014, including an MOU with Mexico. This MOU, which was signed by the Governor in Mexico City on July 28, 2014, provides for cooperation on emissions trading systems and vehicles, as well as forest management, air quality, and wildfires. Significant activities with Mexico pursuant to the MOU are currently being planned and are expected to occur during 2015.

In addition, in the second half of 2014, ARB staff met with three delegations from Mexico to discuss climate change issues, which included agricultural impacts, climate change policies' effects on energy markets, and the design and implementation of California's Cap-and-Trade program.

ARB is also participating in the India-California Air Pollution Mitigation Program (ICAMP), a World Bank-sponsored project to reduce black carbon emissions from the transportation sector in India. The project was kicked off by ARB Chairman Mary D. Nichols at a November 2014 event in Delhi, India. Further work on the project is anticipated during the first half of 2015.

Governor Brown, ARB and other agencies, including CalEPA and the California Energy Commission, have also been working with several entities in China to advance their efforts to reduce GHG emissions and combat air pollution. China has recently become the world's leading emitter of GHG emissions and is critical to addressing global climate change. Similarly, many cities in China are suffering from hazardous air pollution, some of which drifts across the ocean to California. Sharing California's leading expertise on reducing air pollution can provide mutual benefits to China, California and global climate. Accordingly, California and China entered into a number of agreements in

2013 and 2014, and have undertaken several activities under these agreements. In 2013, California formalized working relationships with China on climate programs. Activities related to the relationship in the second half of 2014 include:

- In June 2014, ARB staff participated in a workshop in Beijing hosted by the International Council on Clean Transportation and the China Automotive Technology and Research Center regarding energy-efficient and low carbon light-duty vehicles.
- On July 29, 2014, ARB staff participated in a video conference with a delegation of officials from the Chinese National Development and Reform Commission (NDRC) to discuss GHG reporting and emissions trading. The delegation was in Washington, D.C. visiting U.S. EPA's GHG Reporting Unit.
- On September 5-7, 2014, Deputy Executive Officer Dr. Alberto Ayala made a presentation titled: "California ZEVs for meeting clean air and climate goals" at the International Forum on Chinese Auto Industry in Tianjin.
- On September 26, 2014, ARB staff met with a delegation led by the Vice Mayor of Shenzhen Municipal People's Government to discuss California's Advanced Clean Cars Program, ZEV policies, and Mobile Source Credit Creation programs, as well as the incorporation of vehicle emissions into Shenzhen's emissions trading system. While at ARB's El Monte facility, the delegation toured the vehicle emissions laboratory.
- In November and December 2014, a delegation of 21 officials from the Beijing Environmental Protection Bureau visited California for three weeks for a training program on air pollution control policies, standards, governance, and science. While in California, they visited ARB's El Monte vehicle emissions lab and met with ARB staff in Sacramento.
- On December 8-9, 2014, ARB hosted a delegation from the Chinese NDRC for an in-depth discussion on California's Cap-and-Trade program.

ARB has also received a number of visiting delegations from other countries interested in California's climate change policies. During the second half of 2014, ARB received 9 foreign delegations to discuss climate change policies, including delegations from Germany, France, Japan, and Bangladesh. In addition, on September 29-30, 2014, Deputy Executive Officer Edie Chang participated in a conference in Seoul, South Korea, to support implementation of Korea's carbon emissions trading system, which will launch on January 1, 2015.

In December, administration and legislative representatives from California, including Secretary Matt Rodriquez, OPR Director Ken Alex, and Senate Pro Tem Kevin De León, attended the United Nations Conference of Parties (COP) in Lima, Peru. Representatives participated in numerous panels and side events including a side event with Mexico highlighting the need for action on short-lived climate

pollutants and a side event with China on the implementation of the California-China MOU. There was significant interest in California's successful GHG reduction programs from other subnational jurisdictions, countries, and non-governmental organizations. Secretary Rodriguez addressed the COP general assembly in a session focused on subnational action.

ARB has also participated in meetings of the Partnership for Market Readiness, a multilateral World Bank initiative that brings together more than 30 developed and developing countries to share experience and build capacity for climate change mitigation efforts, particularly those implemented using market instruments. In November 2014, ARB became a Technical Partner of the Partnership for Market Readiness.

California's climate change policies and programs have generated strong interest from other states, countries and subnational jurisdictions. Many governments are adopting or looking to adopt their own climate-related policies in recognition of the real threat of climate change, and in preparation for the international climate change negotiations towards a new global climate treaty that will take place in 2015.

As California's programs have continued to gain international attention and recognition, requests to host delegations, visit other states and countries, and enter into partnerships have continued and increased. The Governor has recently signed MOUs with Peru and Israel, and more countries and jurisdictions have expressed interest as well. As a result, the number of strategic international partnerships and initiatives is anticipated to increase in 2015.

C. SB 375 – Sustainable Communities Plans

1. *Background*

SB 375 (Steinberg, Chapter 728, Statutes of 2008), also known as the Sustainable Communities and Climate Protection Act, reduces GHG emissions from passenger vehicles through improved regional transportation and land use planning. SB 375 directs regions to integrate development patterns and transportation networks in a way that achieves passenger vehicle GHG emissions reductions while addressing housing needs and other regional planning objectives.

ARB is required to set regional GHG emission reduction targets for passenger vehicles for 2020 and 2035 for the State's federally designated Metropolitan Planning Organizations (MPO). Each MPO is then required to adopt and submit to ARB a sustainable communities strategy (SCS) that uses land use and transportation strategies to reduce the region's passenger vehicle GHG emissions. ARB's statutory responsibility under SB 375 is to then accept or reject an MPO's determination that its SCS would, if implemented, meet the targets. An MPO must develop an alternative planning strategy if its SCS fails to meet ARB targets.

In 2010, ARB set the regional GHG emission reduction targets required under SB 375. In the four most heavily populated regions of the State, the Board-approved targets (See Table 1-1) are expected to achieve per capita GHG emissions reductions of 7 to 8 percent by 2020, and between 13 and 16 percent in 2035, compared to 2005 levels. Achieving these targets means statewide GHG emissions reductions of over 3 MMT in 2020 and 15 MMT in 2035. The regions include Southern California, the Bay Area, San Diego, and the Sacramento Metropolitan Area.

Under the law, ARB has specific statutory responsibility to determine whether the SCS, if implemented, would achieve the GHG emission reduction targets. In July 2011, ARB staff released to the public a methodology that details how ARB will evaluate MPO SCSs in order to fulfill its responsibility under the law. ARB’s methodology can be found at http://www.arb.ca.gov/cc/sb375/scs_review_methodology.pdf.

Table 1-1: Metropolitan Planning Organization (MPO) Region	Targets *	
	2020	2035
Southern California Association of Governments (SCAG)	-8	-13
Metropolitan Transportation Commission (MTC)	-7	-15
San Diego Association of Governments (SANDAG)	-7	-13
Sacramento Area Council of Governments (SACOG)	-7	-16
8 San Joaquin Valley Councils of Governments	-5	-10
Tahoe Metropolitan Planning Organization	-7	-5
Shasta Regional Transportation Agency	0	0
Butte County Association of Governments	+1	+1
San Luis Obispo Council of Governments	-8	-8
Santa Barbara County Association of Governments	0	0
Association of Monterey Bay Area Governments	0	-5

* Targets are expressed as percent change in per capita GHG emissions relative to 2005.

Of the major MPOs, San Diego’s SCS was adopted by the San Diego Association of Governments in October 2011, followed by the Southern California Association of Governments’ and the Sacramento Area Council of Governments’ plans in 2012, and the Metropolitan Transportation Commission’s plan in 2013. Staff presented status updates to the Board on the development of these plans. Based on staff’s evaluation, ARB’s Executive Officer accepted all four SCSs through Executive Orders on behalf of the Board. In December 2012, the Tahoe and Butte MPOs adopted their respective plans; in August 2013 the Santa Barbara region adopted its plan; and in June 2014 the Monterey Bay region adopted its plan. The Board approved resolutions accepting these four SCSs.

2. Recent Developments –July through December 2014

By September 2014, all eight of the San Joaquin Valley MPO Boards adopted their SCSs. ARB staff has begun to evaluate these plans. While all eight San Joaquin Valley MPOs have adopted their 2014 regional transportation plans containing their SCSs, two of those regions' SCSs (those for Merced and Madera) do not meet the GHG emission reduction targets. As a result, the Merced County Association of Governments and the Madera County Transportation Commission will prepare alternative planning strategies. ARB staff's technical evaluation of the San Joaquin Valley SCSs has been enhanced as a result of the Fresno MPO providing ARB with a copy of their travel model.

The remaining MPOs, San Luis Obispo and Shasta, are now in the process of developing their first SCSs as part of their next Regional Transportation Plan updates. In addition, some MPOs, including SANDAG, SCAG, SACOG, and MTC have begun development of their second SCSs.

Following the Board's direction earlier this year, staff began to develop recommendations for a process to update the targets. Staff conducted two meetings for individual stakeholders and four public workshops. Public input helped to inform staff on recommendations which are documented in a staff report released October 15, 2014. This staff report and its recommendations were presented to the Board at the October 24th Board meeting for discussion, and can be accessed at http://www.arb.ca.gov/cc/sb375/staff_report_sb375_targets_update.pdf.

Staff convened a group of modeling experts to participate in an Interregional Travel Workgroup which has met three times over the past six months. The purpose of this workgroup is to understand how interregional travel is currently estimated, and to explore alternative methodologies that could be used to improve these estimates for use in future SCS development.

ARB staff participated in an advisory group to the Strategic Growth Council (SGC) as it developed guidelines and implementation criteria for SGC's Affordable Housing and Sustainable Communities (AHSC) Program funded through the Greenhouse Gas Reduction Fund. This program funds projects that reduce GHG emissions by supporting more compact, infill development patterns, encouraging active transportation and transit usage, and protecting agricultural land from sprawl development.

Sustainable Communities Contracts. ARB is providing funding for several research efforts that are contributing critical data and information that will help strengthen the technical foundation of SB 375 and identify important data gaps and research needs. One set of contracts with University of California researchers focused on identifying the impacts of key transportation and land use policies on vehicle use and GHG emissions based on the existing scientific literature. The results of the literature reviews can be found on ARB's website at <http://arb.ca.gov/cc/sb375/policies/policies.htm>. ARB held a research seminar in October 2014 to share the results of this research with the public.

Another set of contracts focused on the modeling tools used by regional governments to quantify the impacts of different land use and transportation strategies on regional travel characteristics. A contract with Smart Mobility, Inc. has provided a comprehensive review of various state-of-the-practice activity-based and land use models that are either currently in use or under development in California.

In addition, ARB is providing funding for several research projects to support land use and transportation planning, including research on: the economic benefits and costs of smart growth strategies, effects of complete streets on travel behavior, the relationship between transit-oriented development and displacement of low-income residents and effectiveness of anti-displacement policies, the impact of light rail transit on travel behavior in Southern California, and modeling household vehicle and transportation choice and usage. In addition, ARB is funding three research projects aimed at finding solutions to the exposure of sensitive land uses to near-roadway pollution. More details on these research projects as well as information on completed and future research may be found on ARB's website at:

<http://www.arb.ca.gov/research/sustainable/landuse.htm>.

3. *Upcoming Milestones – January through June 2015*

As each additional MPO adopts an SCS, ARB staff will evaluate the plan to determine whether the SCS, if implemented, would achieve the GHG emission reduction targets. ARB will periodically report to the Board on these actions. More information on staff's activities and upcoming meetings can be found at:

<http://www.arb.ca.gov/cc/sb375/sb375.htm>.

- ARB staff will begin review of the SCSs from the San Luis Obispo and Shasta regions once they are submitted to ARB, which is expected in the first quarter of 2015.
- In the first half of 2015, ARB staff will begin its evaluation of SANDAG's second SCS and will provide the Board an informational update in May 2015.
- By mid-2015, ARB staff will complete its technical evaluations of several SCSs from the San Joaquin Valley MPOs, and will release written reports prior to returning to the Board with staff recommendations on each MPO's GHG determination.
- ARB staff will work with the MPOs, as directed by the Board, to develop target recommendations for updating their emission reduction targets.
- ARB staff will continue to meet with stakeholders, in a roundtable format, at key milestones in the target update process to advance the development of tools, metrics, and methods for estimating co-benefits of SCS implementation; and to facilitate a discussion about best practices and lessons learned for future SCS development.

D. Cap-and-Trade Auction Proceeds

1. *Background*

A portion of the allowances required for compliance with the Cap-and-Trade Regulation are sold at quarterly auctions and reserve sales. The auctioned allowances are a mix of State-owned allowances, Québec-owned allowances, and allowances consigned to auction by electric utilities. The Legislature and Governor approve the expenditure of the State's portion of these auction proceeds (which does not include the proceeds from Québec-owned allowances or allowances consigned to auction by the utilities) to invest in projects that support the goals of AB 32. Strategic investment of proceeds furthers AB 32 implementation, including support of long-term, transformative efforts to improve public and environmental health and develop a clean energy economy.

State-owned allowances: In 2012, the Legislature passed and Governor Brown signed into law three bills—AB 1532 (Pérez, Chapter 807), SB 535 (De León, Chapter 830), and SB 1018 (Budget and Fiscal Review Committee, Chapter 39)—that established the Greenhouse Gas Reduction Fund (GGRF) to receive the State's portion of the auction proceeds and provided the framework for how those auction proceeds will be allocated. This legislation established the broad categories of GHG emission-reducing projects that may be funded, including investments in:

- Clean and efficient energy;
- Low-carbon transportation;
- Natural resource conservation and management and solid waste diversion; and,
- Sustainable infrastructure and strategic planning.

In addition to reducing GHG emissions in California, the implementing legislation established the following goals for this funding, where applicable and feasible:

- Maximize economic, environmental, and public health benefits;
- Create jobs;
- Complement efforts to improve air quality;
- Invest in projects that benefit disadvantaged communities;
- Provide opportunities for businesses, public agencies, nonprofits, and others to participate in efforts to reduce GHG emissions; and,
- Lessen the impacts and effects of climate change.

At least 25 percent of program funding is to be directed to projects that provide benefits to disadvantaged communities and at least ten percent of program funding must be

spent on projects located in disadvantaged communities. CalEPA is required to identify these communities for investment purposes.¹⁴

AB 1532 established a two-step process for allocating proceeds from the sale of State-owned allowances. The two-step process involves developing an investment plan and then appropriating the funds through the annual Budget Act, in accordance with that investment plan.

1. *Three-Year Investment Plan*: The Department of Finance, in consultation with ARB and other State agencies, developed and submitted to the Legislature the first three-year Cap-and-Trade Auction Proceeds Investment Plan (Investment Plan)¹⁵ identifying priority programs for investment of proceeds to support achievement of the State's GHG emission reduction goals.
2. *Annual Budget Appropriations*: Funding is appropriated by the Legislature and Governor through the annual Budget Act, consistent with the Investment Plan.

On March 1, 2014, Governor Brown signed SB 103 (Budget and Fiscal Review), Chapter 2, Statutes of 2014, to provide \$70 million in GGRF monies to three State agencies for projects that improve water use efficiency and reduce GHG emissions associated with water conveyance. On June 20, 2014, Governor Brown signed the FY 2014-15 Budget Act and SB 862 (Budget and Fiscal Review), Chapter 36, a budget trailer bill, which establishes requirements for State agencies receiving appropriations of GGRF monies in FY 2014-15 and later years. The Budget appropriated approximately \$832 million in GGRF monies to 11 agencies for projects that reduce GHG emissions and provide benefits to the State's most disadvantaged communities. Three of these agencies, the Strategic Growth Council, the California Department of Transportation, and the California High-Speed Rail Authority, received continuous appropriations. See Table 1-2.

Prior to expending funds, each department must complete an Expenditure Record pursuant to SB 1018. ARB reviews these expenditure records and posts them on the ARB website.

¹⁴ CalEPA and the Office of Environmental Health Hazard Assessment identify disadvantaged communities based on a tool called the California Communities Environmental Health Screening Tool (CalEnviroScreen). For more information on CalEnviroScreen: <http://oehha.ca.gov/ej/ces042313.html>

¹⁵ The first three year Cap-and-Trade Auction Proceeds Investment Plan can be found here: <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/auctionproceeds.htm>

Table 1-2: Appropriations for Greenhouse Gas Reduction Fund Programs (as of January 1, 2015)		
Program and State Agency	FY2013-14 Millions	FY2014-15 Millions
High Speed Rail (California High-Speed Rail Authority)		\$250
Transit and Intercity Rail Capital Program (California Department of Transportation/California Transportation Commission)		\$25
Low Carbon Transit Operations Program (California Department of Transportation to local agencies)		\$25
Affordable Housing and Sustainable Communities (Strategic Growth Council)		\$130
Low Carbon Transportation (California Air Resources Board)	\$30	\$200
Weatherization Upgrades/Renewable Energy (Department of Community Services and Development)		\$75
Energy Efficiency in Public Buildings (California Energy Commission)		\$20
Agricultural Energy and Operational Efficiency and Water Efficiency (California Department of Food and Agriculture)	\$10	\$15
Water-Energy Efficiency (Department of Water Resources)	\$30	
Wetlands and Watershed Restoration (Department of Fish and Wildlife)		\$25
Sustainable Forests (California Department of Forestry and Fire Protection)		\$42
Waste Diversion (California Department of Resources Recycling and Recovery)		\$25
Total Program Funding	\$70	\$832

2. Recent Developments – July through December 2014

Cap-and-Trade Auction Proceeds related activities in the second half of 2014 included:

- Utility Auction Proceeds: For the auctions held through the end of December 2014, the IOUs have received a total of \$1,521,374,848 from the sale of allocated allowances and publicly-owned utilities have received a total of \$156,288,155 from the sale of allocated allowances.

- IOUs began providing a credit to ratepayers on utility bills as part of implementing the CPUC decision pursuant to SB 1018. This credit appears on utility bills twice per year, in April and October.
- The Legislature approved two budget requests from ARB that provide staff resources to enhance the quantification and reporting of benefits for all projects, including consistency across programs. These new resources will: (a) develop and update calculation methodologies and support the administering agencies, and (b) develop and implement overarching program guidance for all GGRF investments (including meeting the disadvantaged community requirements) and provide a consolidated, online project reporting system for use by all agencies.
- In August 2014, ARB released the Interim Guidance to Agencies Administering Greenhouse Gas Reduction Fund Monies: Expenditure Record and Fiscal Procedures to guide agencies appropriated GGRF monies in developing the Expenditure Record required by SB 1018. As of December 31, 2014, ARB has concurred with the following FY 2014-15 expenditure records, which have been posted at: <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/arb-interim-guidance-expenditure-record-fiscal-procedures-8-6-14.pdf>.
 - High-Speed Rail Authority: Initial Operating Segment and Design Work on the Statewide High-Speed Rail System
 - Air Resources Board: Low Carbon Transportation
 - Department of Food and Agriculture: Alternative and Renewable Fuels
 - Department of Food and Agriculture: Dairy Digester Research and Development
 - Department of Resources Recycling and Recovery: Organics Diversion and Recycling
 - Department of Community Services and Development: Weatherization and Renewable Energy
- In summer 2014, ARB updated the public portal for auction proceeds information at <http://www.arb.ca.gov/auctionproceeds>. The website includes background information on the auction proceeds program, guidance documents for appropriated agencies, expenditure records, and information on funded programs.
- In late-August and early-September, CalEPA and ARB held workshops on CalEPA's proposed identification of disadvantaged communities and ARB's preliminary interim guidance to State agencies to ensure investments maximize benefits to disadvantaged communities. In September 2014, the Board approved ARB's Investments to Benefit Disadvantaged Communities: Interim Guidance to Agencies Administering Greenhouse Gas Reduction Fund Monies. The interim guidance provides recommended approaches for agencies to maximize benefits for disadvantaged communities, as well as consistent criteria that will be applied to determine if a project benefits a disadvantaged community.

- On October 31, 2014, CalEPA designated the top 25 percent of census tracts in California as disadvantaged communities, as identified by the CalEnviroScreen tool. CalEnviroScreen ranks communities on socioeconomic and environmental pollution burdens. More information is available on CalEPA's website: <http://www.calepa.ca.gov/EnvJustice/GHGInvest/>.
- To ensure project benefits and outcomes can be consistently reported to the Legislature and included in annual reports required by AB 1532, ARB continues to work with implementing agencies to develop program materials, consistent with statute, to ensure projects reduce GHG emissions, maximize benefits to disadvantaged communities, and estimate GHG emission reductions from potential projects. Interim approaches are being developed for this fiscal year. Recently, ARB has worked closely with the Strategic Growth Council on the Affordable Housing and Sustainable Communities Program and the Department of Food and Agriculture and the Department of Water Resources on water efficiency projects.

3. Upcoming Milestones – January through June 2015

- The next two Cap-and-Trade auctions for FY 2014-15 are scheduled to take place on February 18, 2015 and May 21, 2015.
- ARB will continue working with agencies that receive the State portion of Cap-and-Trade auction proceeds to develop full funding guidelines. While the expenditure record and SB 535 interim guidance documents are a first step, the full funding guidelines will incorporate the interim guidance with additional direction to help agencies meet the statutory requirements. This guidance includes, but is not limited to, methodologies for calculating GHG emission reductions and assessing co-benefits, as well as project tracking and reporting requirements. Administering agencies will be responsible for incorporating the Interim Guidance and Full Funding Guidelines into their programs. ARB intends to present the full funding guidelines to the Board for approval in mid-2015.
- In March 2015, ARB and Department of Finance will deliver a report, per AB 1532, to the Legislature on the progress of the programs funded with auction proceeds.
- The Administration will begin the process to update the three-year investment plan, which is due in January 2016 with the 2016-17 Governor's Budget.

Greenhouse Gas Reduction Fund

The GGRF was created via SB 1018 as a special fund in the State Treasury. ARB is responsible for the fiscal management of the fund, with expenditures authorized by the Legislature and the Governor through legislation. Table 1-3 shows the proceeds deposited into the GGRF from the auctions (from the sale of State-owned allowances), including the auction held jointly with the Canadian province of Québec on November 2014.

Table 1-3: Proceeds from the Sale of State-Owned Allowances Deposited in the Greenhouse Gas Reduction Fund (as of December 31, 2014)	
November 2012 Cap-and-Trade auction 1	\$55,760,000
February 2013 Cap-and-Trade auction 2	\$83,923,548
May 2013 Cap-and-Trade auction 3	\$117,580,484
August 2013 Cap-and-Trade auction 4	\$138,494,503
November 2013 Cap-and-Trade auction 5	\$136,799,446
February 2014 Cap-and-Trade auction 6	\$130,706,470
May 2014 Cap-and-Trade auction 7	\$71,140,023
August 2014 Cap-and-Trade auction 8	\$98,741,583
November 2014 Cap-and-Trade joint auction 1 (Québec)	\$135,983,387
State auction proceeds total	\$969,129,444

E. Sustainable Freight Strategy

1. *Background*

The trucks, locomotives, ships, harbor craft, aircraft, cargo handling equipment, and transport refrigeration units that carry and move freight in California are significant sources of air pollution. Freight transport equipment and associated facilities like ports, railyards, airports, freeways, distribution centers, and border crossings contribute over ten percent (and growing) of the GHG emissions in the State, as well as a significant portion of the black carbon emissions that also contribute to climate change. The diesel engines that power these freight sources are responsible for over half of the diesel soot that increases the health risk in nearby communities, and nearly half of all nitrogen oxide emissions that result in regional ozone and fine particulate matter pollution in California.

ARB has adopted a series of regulations to reduce the diesel pollution and health risk near freight facilities over the last decade. U.S. EPA and other federal agencies have promulgated national emission standards and supported international agreements for cleaner ships, ship fuels, and aircraft. In addition, the State's largest ports have developed their own plans to cut air pollution. The railroads have implemented voluntary emission reduction agreements to bring the cleanest locomotives to California. Businesses and government have made substantial investments in lower-emission technology and fuels. The combined impact on diesel particulate matter emissions is dramatic – a 70 percent or higher risk reduction at the largest ports and an approximately 75 percent risk reduction at California's highest risk railyards since 2005.

Despite this progress, California will need to transform the freight transport system to further reduce the localized health risk around freight facilities, meet State and federal air quality standards, and achieve long-term climate goals. Without further action, the

cancer risk to residents living near major freight hubs will remain elevated. In 2016, ARB will be submitting a State Implementation Plan (SIP)¹⁶ for ozone to U.S. EPA, as required by the Clean Air Act, in response to the recent tightening of the health-based air quality standard for ozone. ARB's 2012 *Vision for Clean Air: A Framework for Air Quality and Climate Planning* showed that meeting ozone health-based standards and climate goals will require similar transformative emission reduction strategies. The success of the SIP will depend on a successful transition of the current California freight system to one with zero or near-zero emissions over the long-term.

In 2013, ARB launched the Sustainable Freight effort to develop a sustainable freight strategy for California. ARB staff conducted outreach with freight industry representatives; local, State and federal government agencies; and community and environmental advocates to discuss the need for transformation and to seek input on a collaborative process throughout 2014. ARB staff participated in over 180 individual meetings and conference calls with over 220 organizations representing local, State, national, and international interests to identify, prioritize, and discuss various concepts that will move California towards a sustainable freight transport system. The California Department of Transportation (Caltrans) and the California Energy Commission (CEC) were also undertaking complementary planning activities. Caltrans focused on infrastructure, to support development of a Freight Mobility Plan and to meet new federal directives for freight planning. CEC developed the Integrated Energy Policy Report to provide policy recommendations regarding the conservation of resources; protecting the environment; ensuring reliable, secure, and diverse energy supplies; and enhancing the State's economy. ARB is pursuing opportunities to integrate these efforts.

In 2014, ARB also began technology assessments to evaluate the current state and projected development over the next 5 to 10 years of mobile source technologies and fuels. These technology and fuels assessments will support state level planning and regulatory efforts, including Sustainable Freight Strategy development, SIP development, and ARB's mobile source control program.

2. Recent Developments – July through December 2014

A broad coalition of interests is needed to develop a California vision for a sustainable freight transport system, define the system changes (logistics, infrastructure, equipment) needed to implement the vision, secure support and public/private funding, and build/deploy the system. This approach offers the potential to help meet the State's air quality, climate, energy, and economic needs with a clean freight system that aligns with and supports a competitive logistics industry and associated jobs.

¹⁶ Federal clean air laws require areas with unhealthy levels of criteria air pollutants (e.g., ozone and inhalable particulate matter) to develop State Implementation Plans (SIPs). SIPs are comprehensive plans that describe how an area will attain national ambient air quality standards (NAAQS). The 1990 Amendments to the federal Clean Air Act set deadlines for attainment based on the severity of an area's air pollution problem.

ARB activities in the second half of 2014 included:

- Continued stakeholder engagement to identify, prioritize, and discuss various concepts that will move California towards a sustainable freight transport system.
- Released the sustainable freight concepts suggested by stakeholders.
- Conducted five public forums across California to solicit further public input.
- Participated in the development of the California Freight Mobility Plan through the California Freight Advisory Committee and the California Transportation Plan 2040 through the Policy and Technical Advisory committees.
- Modified the development process after extensive consultation with stakeholders. Concluded that the most effective way to advance air quality goals is to develop an initial document that describes the State's vision and options for a clean freight system.
- Worked closely with other State and local agencies to shift from *coordinating* on multiple freight plans to instead *integrating* the State's freight planning.

3. Upcoming Milestones – January through June 2015

- ARB staff will continue engagement with all freight stakeholders including transportation, energy, business, industry, and environmental justice groups. ARB staff will also continue coordination on other transportation planning efforts.
- ARB will work with our sister agencies: Caltrans, CEC, and the Governor's Office of Business and Economic Development (GO-Biz) to integrate State planning.
- ARB staff will develop a draft document in spring 2015 that will facilitate focused follow-up discussions with other agencies and stakeholders on strategies and options to help meet air quality and climate goals. The draft document will include identification of both regulatory and voluntary levers to accomplish a zero/near-zero emission freight system, based on what we know to date. The document will articulate outstanding questions on technology, infrastructure, and economics that need to be addressed in 2015. And it will include near-term actions for 2015 to further reduce the health risk in communities near freight hubs.
- ARB staff will provide the Board with an informational update on these activities in April 2015.

III. GREENHOUSE GAS EMISSIONS AND REDUCTIONS

ARB periodically updates estimates of GHG emissions in California, which change over time as the science advances, growth forecasts are revised, and California makes progress in reducing emissions. ARB and international climate change organizations use the scientifically established global warming potential (GWP) values developed by the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report, which includes updated GWP values for GHGs.¹⁷ ARB expresses the emissions of other non-carbon dioxide GHGs in terms of carbon dioxide equivalent (CO₂e), which factor in how long the GHG remains in the atmosphere and how strongly it absorbs energy relative to carbon dioxide.

For the 2014 Scoping Plan Update, ARB adjusted the 2020 statewide GHG emissions limit based on the updated GWP values from the IPCC Fourth Assessment Report and the level of 1990 GHG emissions. As a result, the 2020 emissions limit is now 431 MMT of CO₂e. ARB currently estimates that GHG emissions in 2020 would be 509 MMT of CO₂e in a “business as usual” (BAU) scenario without the State’s actions to reduce GHGs. Therefore, the new reduction required, based on the 2014 Scoping Plan Update, is 78 MMT CO₂e by 2020. In the previous version of the 2020 BAU scenario projected in 2010 using GWP values from the IPCC Second Assessment Report, the 2020 BAU was 507 MMTCO₂e, the 2020 emissions limit was 427 MMTCO₂e, requiring a reduction of 80 MMTCO₂e.

ARB maintains and updates the statewide GHG emission inventory to track California’s progress toward the 2020 statewide emissions limit. To determine if California is on track to achieve the AB 32 emission reduction goal, ARB projects 2020 emissions under a “business as usual” (BAU) scenario and subtracts the estimated reductions from adopted and anticipated measures expected by 2020 to demonstrate that the Program is on course to achieve the 2020 emissions limit (see Table 1-4).

To meet the target, the climate program must reduce 78 MMT of CO₂e emissions by 2020. California is on track to achieve this AB 32 goal. Table 1-4 shows the expected GHG reductions from sector-based measures.

¹⁷ The initial Scoping Plan relied on the IPCC’s 1996 Second Assessment Report to assign the GWPs of greenhouse gases. Recently, in accordance the United Nations Framework Convention on Climate Change, international climate agencies have agreed to begin using the GWP values in the IPCC’s Fourth Assessment Report that was released in 2007. These more recent GWP values incorporate the latest available science and are therefore regarded as more accurate than the prior values.

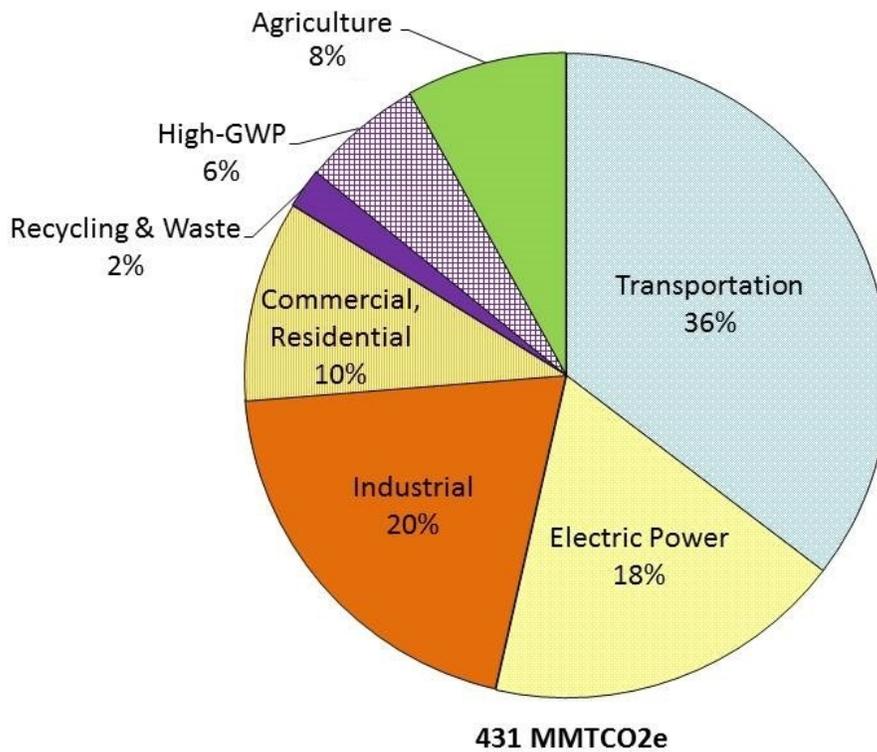
Table 1-4: Meeting the 2020 Emissions Target	
Category	2020 (MMTCO₂e)**
AB 32 Baseline 2020 Forecast Emissions (2020 BAU)	509
Expected Reductions from Sector-Based Measures	
Energy	25
Transportation	23
High-GWP	5
Waste	2
Cap-and-Trade Reductions	23*
2020 Limit	431

*Cap-and-Trade emission reductions depend on the emission forecast.

**Based on IPCC Fourth Assessment Report GWP values.

Figure 1 shows how the 2020 emissions are likely to be spread across the sectors after compliance with the AB 32 target. The Scoping Plan Update focuses on key areas with potential for further emission reductions after 2020. These sectors include transportation, energy, waste, water, and agriculture.

Figure 1
2020 Greenhouse Gas Emissions By Sector
With Adopted Regulations and Programs



ARB regulations and programs providing the greatest GHG reductions align with where ARB is dedicating resources (funded primarily by the AB 32 Cost of Implementation Fee). The Cap-and-Trade and LCFS Programs are the two single largest contributors to meeting the 2020 emission reduction target.

SECTION 2:

ANNUAL AB 32 FISCAL REPORT **(Fiscal Year 2013-14: July 2013-June 2014)**

This report is required annually by the Supplemental Report of the 2012-13 Budget¹⁸ to quantify the major revenues and expenses for ARB to implement the AB 32 program for the prior fiscal year. This report focuses on Fiscal Year (FY) 2013-14. The report format follows the Budget language, from funding received (Cost of Implementation Fee and Cap-and-Trade auction proceeds), followed by ARB expenses for the AB 32 program as a whole and breakdowns by specified major program areas, the total funds from Cap-and-Trade allowance auctions, and concludes with the activities of the Emissions Market Assessment Committee.

I. FY 2013-14 FUNDS RECEIVED AND EXPENDED

This element of the report covers the FY 2013-14 funds received related to AB 32 implementation, as well as the FY 2013-14 funds expended by ARB to support activities that provide climate benefits.

Structure and Funding for Regulatory Activities. The resources estimated in this section of the report are used to support all activities that provide a climate benefit, whether as the primary objective, or as a co-benefit. In each year, ARB's resources to support the climate program equal or exceed the amount budgeted exclusively for AB 32 activities that are funded by the AB 32 Cost of Implementation Fee. ARB relies on other funding sources; the specific source is related to the activity for two reasons.

First, ARB has several measures and program areas that were originally designed to achieve other air quality goals and rely on different funding sources, but nonetheless provide a climate co-benefit by simultaneously reducing GHGs. Although the GHG

¹⁸ Each year, beginning January 10, 2013, CARB shall provide the Legislature an AB 32 fiscal report. This annual report is to be retrospective and is intended to quantify the major revenue and CARB expenses for the AB 32 program for the prior fiscal year. The scope of the annual fiscal report should include: the AB 32 cost of implementation fee revenue, loans repaid, and overall AB 32 program expenses (staff, operations, and contracts) for the prior fiscal year; the total cap-and-trade auction funds; a summary of CARB AB 32 expenditures; the balance for the prior fiscal year; and allowance auction prices in order to assess trends. The annual fiscal report should include an update on activities and findings of the Market Surveillance Committee, as well as track and detail all expenses and revenues, including the following categories: all AB 32 costs, all cap-and-trade costs, low-carbon fuel standards, Renewable Portfolio Standards, Green Building strategy, and Landfill methane capture.

emission reductions associated with these other measures are counted towards achieving the AB 32 target and considered as part of the climate program, those activities may not necessarily be solely funded by the AB 32 Cost of Implementation Fee. For example, the ships-at-berth rule was initiated to reduce the community health risk from ship pollution, but the rule also provides substantial GHG co-benefits associated with using shore-based electrical power rather than burning fuel in onboard engines when the ships are in port.

Second, ARB's regulatory program has grown and evolved to address the agency's responsibilities under State and federal law to improve air quality at the local, regional, and global levels. ARB adopts, implements, and enforces regulations focused on meeting several different objectives:

- Reducing criteria pollutants (like ozone and fine particulate matter) to meet health-based air quality standards in each region;
- Reducing the localized health risk from air toxics (like benzene, hexavalent chromium or diesel particulate matter); and
- Reducing the greenhouses gases and short-lived climate pollutants that contribute to global climate change.

Although the statutory foundation for each of these regulatory programs is distinct, to the extent feasible, ARB looks to develop regulations and comprehensive programs that meet two or more of these objectives simultaneously. This approach enables ARB to use resources most efficiently and benefits the industry by providing a public process that results in a consolidated set of requirements.

A. AB 32 Cost of Implementation Fee for FY 2013-14

Table 2-1 displays the Cost of Implementation Fee Expenditures from the State Budget for FY 2013-14, which shows the budgetary authority for State agencies that use the AB 32 Cost of Implementation Fee revenue.

Table 2-1: AB 32 Cost of Implementation Fee Expenditures (FY 2013-14)		
Department	Positions	Funding
Secretary for Environmental Protection	4	\$562,000
Department of Housing and Community Development	6	\$794,000
Department of Resources Recycling and Recovery	6	\$529,000
Department of Forestry and Fire Protection	1	\$76,000
Department of Water Resources	3	\$274,000
Air Resources Board	158	\$35,924,000
State Water Resources Control Board	2	\$268,000
Department of Public Health	0	\$350,000
State Controller	0	3,000
Total Expenditures and Adjustments	180	\$38,778,000

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

The funds to support the AB 32 programs at multiple agencies, plus the funds needed for loan repayment, establish the total required revenue for the AB 32 Cost of Implementation Fee for FY 2013-14. Discrepancies between agency positions and funding amount are due to differences in contracted dollars and salary adjustments. Table 2-2 shows the required revenue, along with updated information on the revenue actually collected for FY 2013-14. Adjustments include over-collections or under-collections from the previous fiscal year, liquidated invoices (those under 50 dollars), refunds, and employee compensation adjustments made after total required revenue is determined. The value of \$171,000 listed in Table 2-2 below, under “Adjustments from Previous FY Collections,” represents the under-collection of the total fees originally invoiced in the previous fiscal year. The under-collection resulted from adjustment to some entities’ fee-covered emissions after the fee invoices were generated. The adjustment to reported covered emissions occurred for various reasons, including, but not limited to, late discovery of misreporting of emissions or billing errors.

Table 2-2: Total AB 32 Cost of Implementation Fee Expenses and Revenue (FY 2013-14)	
Total Department Expenditures	\$38,778,000
Loan Repayment	\$8,000,000
Adjustments from Previous FY Collections	\$171,000
Total Required Revenue*	\$46,949,000
Fee Revenue Collected for FY 2013-14*	
	\$49,832,000

*The difference between the Fee Revenue Collected and the Total Required Revenue is attributed to the actual personnel costs being less than the budgeted appropriations for personnel costs. This difference is reflected in the Air Pollution Control Fund Condition Statement referenced below and is used to provide a reasonable reserve for economic uncertainties.

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

B. Overall ARB FY 2013-14 Resources to Implement AB 32

The FY 2013-14 State Budget approved ARB to use up to \$35,924,000 from the AB 32 Cost of Implementation Fee to support ARB climate change programs. ARB also relied on \$11,044,000 in funding from other sources for activities that provide a climate co-benefit (e.g., development of the Advanced Clean Cars Regulation that reduces air toxics, criteria air pollutants, greenhouse gases, and short-lived climate pollutants). As shown in Table 2-3, ARB's actual FY 2013-14 resources to support climate change activities and implement AB 32 totaled \$46,968,000.

Table 2-3: Overall ARB FY 2013-14 Expenditures to Support AB 32 (Actual)	
Category	Funding
Personnel and operations expenses (salary, benefits, overhead, equipment, travel, training, etc.)	\$41,141,000
Contract expenditures	\$5,827,000
Total	\$46,968,000

Source: Personnel and operations expenses are obtained from manual monthly tracking reports submitted by ARB staff. Expenses include administrative and legal support combined with a loaded cost per position to cover staffing and overhead costs. All dollars rounded to the nearest thousand.

C. Program-Specific ARB FY 2013-14 Resources to Implement AB 32

1. *Data Sources and Methodology*

Historically, ARB has tracked AB 32 programs and activities to implement AB 32 in totality, not at the level of individual regulations. To comply with all mandates (State laws, regulations, and policies on fiscal programs), ARB uses the CALSTARS system, which is the State’s accounting system.

In response to requests by the Legislature to see more detailed information regarding the costs to implement AB 32, ARB has committed to manually track and report on AB 32 expenditures for personnel and operations, plus contracts, for the major elements of the climate program. ARB began collecting information on hours worked in specific AB 32 program areas from all affected employees beginning with the October 2013 pay period. ARB is using these data for current and future reports to the Legislature.

For contract expenses, ARB relied on its records of actual expenditures in FY 2013-14 to support AB 32-related contracts. Some funds for these contracts may have been encumbered in FY 2012-13 or 2013-14, and have not been expended yet.

2. *Retrospective Resources by Program Area*

Table 2-4 shows ARB’s estimate of the resources used to support programs in FY 2013-14 with climate benefits at ARB.

Table 2-4: ARB Expenditure of Funds in FY 2013-14 for Specific Program Activities that Support AB 32			
AB 32 Program Area	Personnel & Operations Expenses	Contract Dollars Expended	Total by Program Area
Cap-and-Trade	\$5,873,000	\$203,000	\$6,076,000
Low Carbon Fuel Standard	\$4,551,000	\$1,255,000	\$5,806,000
Mobile/Transportation	\$8,871,000	\$1,242,000	\$10,113,000
Energy	\$965,000	\$84,000	\$1,049,000
Inventory/Monitoring/ Research/Cost of Implementation Fee	\$7,388,000	\$104,000	\$7,492,000
Scoping Plan	\$1,074,000	\$0	\$1,074,000
Other AB 32 Support Activities	\$12,418,000	\$2,940,000	\$15,358,000
Total	\$41,141,000	\$5,827,000	\$46,968,000

Source: Personnel and operations expenses are obtained from manual monthly tracking reports submitted by ARB staff. Expenses include administrative and legal support combined with a loaded cost per position to cover staffing and overhead costs. All dollars rounded to the nearest thousand.

II. CAP-AND-TRADE ALLOWANCE AUCTION

ARB and its contractors have conducted nine auctions under the Cap-and-Trade Regulation through 2014. The November 25, 2014 auction was the 9th auction, but the first *joint* auction with the Canadian Province of Québec. There were two types of allowances offered — current vintage allowances, including current year allowances from the State and those consigned to auction by the electric distribution utilities, as well as future vintage allowances offered by the State. The joint auction with Québec also included current and future vintage allowances from Québec.

As of this report, the auctions have generated \$969,129,444 in proceeds to the State and \$1,677,663,003 to the utilities. The sale of allowances consigned by utilities was returned to those utilities to be used as directed by the California Public Utilities Commission¹⁹ or the public utilities' governing boards. The \$969,129,444 raised by the sale of State-owned allowances was deposited into the State's Greenhouse Gas Reduction Fund, to be allocated in accordance with the State Budget. The auction results are summarized below in Table 2-5, and are available at:

<http://www.arb.ca.gov/auction>.

Table 2-5: Greenhouse Gas Reduction Fund (as of December 31, 2014)*	
November 2012 Cap-and-Trade auction 1	\$55,760,000
February 2013 Cap-and-Trade auction 2	\$83,923,548
May 2013 Cap-and-Trade auction 3	\$117,580,484
August 2013 Cap-and-Trade auction 4	\$138,494,503
November 2013 Cap-and-Trade auction 5	\$136,799,446
February 2014 Cap-and-Trade auction 6	\$130,706,470
May 2014 Cap-and-Trade auction 7	\$71,140,023
August 2014 Cap-and-Trade auction 8	\$98,741,583
November 2014 Cap-and-Trade joint auction #1	\$135,983,387
Auction proceeds total	\$969,129,444

* Prices are shown in round numbers.

¹⁹ In Decision D1212033 (Decision Adopting Cap-and-Trade Greenhouse Gas Allowance Revenue Allocation Methodology for the Investor-Owned Electric Utilities), the California Public Utilities Commission directed the utilities to distribute the auction proceeds to ratepayers.

III. EMISSIONS MARKET ASSESSMENT COMMITTEE

ARB contracted with national experts to form the Emissions Market Assessment Committee (EMAC), to advise ARB regulatory staff on issues related to the performance and integrity of the emissions market. The contract ran through December 2013. The EMAC concluded its work and finalized an issue paper entitled, "Information Release on Allowance Holdings in the Greenhouse Gas Emissions Cap-and-Trade Market," which may be accessed through the website below.

For more information on the activities and meetings of the EMAC, please see: <http://www.arb.ca.gov/cc/capandtrade/emissionsmarketassessment/emissionsmarketassessment.htm>.

SECTION 3:

**ANNUAL REPORTS ON
AB 32 RESOURCES**
(July 2013-June 2014 and July 2014-June 2015)

Item 3900-001-0001 Air Resources Board Supplemental Report of the 2012-13 Budget²⁰ requires quantification and detailing of ARB's resources to implement AB 32 – prospectively and retrospectively. This prospective report covers the current Fiscal Year 2014-15. This retrospective report focuses on Fiscal Year 2013-14 and therefore includes the same material as previously presented in Section 2: Annual AB 32 Fiscal Report. The format for each report follows the elements of the Budget directive, focusing on quantifying the resources to support five key activities: Cap-and-Trade, Low Carbon Fuel Standard, AB 32 Cost of Implementation Fee, AB 32 Scoping Plan, and the Greenhouse Gas Reduction Fund. The reports also identify the combined resources to support other AB 32-related activities.

Structure and Funding for Regulatory Activities. The resources estimated in this report are those used to support activities that provide a climate benefit, whether as the primary objective, or as a co-benefit. In each year, ARB's resources to support the climate program equal or exceed the amount budgeted exclusively for AB 32 activities that are funded by the AB 32 Cost of Implementation Fee. ARB relies on other funding sources; the specific source is related to the activity. There are two reasons.

First, ARB has several measures and program areas that were originally designed to achieve other air quality goals and rely on different funding sources, but nonetheless provide a climate co-benefit by simultaneously reducing GHGs. Although the GHG emission reductions associated with these other measures are counted towards achieving the AB 32 target and are considered part of the climate program, those activities may not necessarily be fully funded by the AB 32 Cost of Implementation Fee. For example, the ships-at-berth rule was initiated to reduce the community health risk from ship pollution, but the rule also provides substantial GHG co-benefits associated

²⁰ In addition, CARB shall provide two resource reports each year to the Legislature that quantify the CARB AB 32 staffing and operations expenses, as well as CARB contracts, by major AB 32 program area. First, CARB shall provide a prospective resource report with anticipated expenses each year by January 10. Second, CARB shall provide a retrospective resource report each year on or before January 10. The scope of the resources reports is to include the CARB resources (staffing, operations, and contracts) that were used to support major AB 32 program areas (cap-and-trade, low carbon fuel standard, cost of implementation fee, and the update to the AB 32 Scoping Plan). In addition, CARB is to provide an estimate of the combined resources for the other climate change-related activities (implementation of adopted regulations and coordination with other agencies).

with using shore-based electrical power rather than burning fuel in onboard engines when the ships are in port.

Second, ARB's regulatory program has grown and evolved to address the agency's responsibilities under State and federal law to improve air quality at the local, regional, and global levels. ARB adopts, implements, and enforces regulations focused on meeting several different objectives:

- Reducing criteria pollutants (like ozone and fine particulate matter) to meet health-based air quality standards in each region;
- Reducing the localized health risk from air toxics (like benzene, hexavalent chromium or diesel particulate matter); and
- Reducing the greenhouses gases and short-lived climate pollutants that contribute to global climate change.

Although the statutory foundation for each of these regulatory programs is distinct, to the extent feasible, ARB looks to develop regulations and comprehensive programs that meet two or more of these objectives simultaneously. This approach enables ARB to use its resources most efficiently and benefits the industry by providing a public process that results in a consolidated set of requirements.

I. AB 32 PROSPECTIVE RESOURCE REPORT FOR FY 2014-15

The FY 2014-15 State Budget approved ARB to use up to \$39,725,000 from the AB 32 Cost of Implementation Fee to support AB 32 climate change programs. ARB also expects to rely on other sources of funding for activities that provide a climate co-benefit.

A. AB 32 Cost of Implementation Fee for FY 2014-15

Table 3-1 displays the Cost of Implementation fee appropriations for FY 2014-15, which shows the budgetary authority for agencies that use the AB 32 Cost of Implementation Fee revenue.

**Table 3-1: AB 32 Cost of Implementation Fee Appropriations
(FY 2014-15)**

Department	Positions	Funding
Secretary for Environmental Protection	4	\$611,000
Secretary of the Natural Resources Agency	2	\$533,000
Department of Housing and Community Development	6	\$835,000
Department of Resources Recycling and Recovery	6	\$566,000
Department of Forestry and Fire Protection	1	\$559,000
Department of Water Resources	3	\$347,000
Air Resources Board	168	\$39,725,000
State Water Resources Control Board	2	\$570,000
Department of Public Health	0	\$357,000
Department of Food and Agriculture	1	\$143,000
Total Expenditures and Adjustments	193	\$44,245,000

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

The funds to support the AB 32 programs at multiple agencies, and adjustments from prior fee collections, establish the total required revenue for the AB 32 Cost of Implementation Fee for FY 2014-15. Table 3-2 shows the required revenue, along with updated information on the revenue actually collected for FY 2014-2015. Adjustments include over-collections or under-collections from the previous fiscal year, liquidated invoices (those under 50 dollars), refunds, and employee compensation adjustments made after total required revenue is determined. The AB 32 Cost of Implementation Fee Program has collected all billable fees from fee payers. The value of \$490,000 listed in Table 3-2 below, under “Adjustments from Previous FY Collections,” represents the over-collection of the total fees originally invoiced in the previous fiscal year. The over-collection resulted from adjustment to some entities’ fee-covered emissions after the fee invoices were generated. The adjustment to reported covered emissions occurred for various reasons, including but not limited to, late discovery of misreporting of emissions or billing errors.

Table 3-2: Total AB 32 Cost of Implementation Fee Appropriations and Revenue (FY 2014-15)	
Total Department Appropriations	\$44,245,000
Adjustments from Previous FY Collections	-\$490,000
Total Required Revenue*	\$43,755,000
Fee Revenue Collected for FY 2014-15*	\$42,925,000

*The difference between the Fee Revenue Collected and the Total Required Revenue is attributed to the actual personnel costs exceeding the budgeted appropriations for personnel costs. This difference is reflected in the Air Pollution Control Fund Condition Statement referenced below and was expended from the "reasonable reserve for economic uncertainty."

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

Table 3-3 displays the funds appropriated through the FY 2014-15 State Budget from the Greenhouse Gas Reduction Fund, established to receive the proceeds from the sale of State-owned allowances under the Cap-and-Trade Program. Beginning in March 2015, ARB and Department of Finance will begin reporting Greenhouse Gas Reduction Fund expenditures to the Legislature, per AB 1532, with the progress of programs funded by auction proceeds.

Table 3-3: Appropriations for Greenhouse Gas Reduction Fund Programs (as of January 1, 2015)		
Program and State Agency	FY2013-14 Millions	FY2014-15 Millions
High Speed Rail (California High-Speed Rail Authority)		\$250
Transit and Intercity Rail Capital Program (California Department of Transportation/California Transportation Commission)		\$25
Low Carbon Transit Operations Program (California Department of Transportation to local agencies)		\$25
Affordable Housing and Sustainable Communities (Strategic Growth Council)		\$130
Low Carbon Transportation (California Air Resources Board)	\$30	\$200
Weatherization Upgrades/Renewable Energy (Department of Community Services and Development)		\$75
Energy Efficiency in Public Buildings (California Energy Commission)		\$20
Agricultural Energy and Operational Efficiency and Water Efficiency (California Department of Food and Agriculture)	\$10	\$15
Water-Energy Efficiency (Department of Water Resources)	\$30	
Wetlands and Watershed Restoration (Department of Fish and Wildlife)		\$25
Sustainable Forests (California Department of Forestry and Fire Protection)		\$42
Waste Diversion (California Department of Resources Recycling and Recovery)		\$25
Total Program Funding	\$70	\$832

Source: FY 2014-15 Greenhouse Gas Reduction Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>, and from the GGRF Programs Summary at: <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/summaryproceedsappropriations.pdf>. All dollars rounded to the nearest thousand.

B. Overall ARB FY 2014-15 Resources to Implement AB 32

Table 3-4 shows the estimated total ARB resources needed to support AB 32 that will be funded by the Cost of Implementation Fee, the Greenhouse Gas Reduction Fund, and additional sources in FY 2014-15. As noted above, ARB also expects to rely on other sources of funding for activities that provide a climate co-benefit.

Table 3-4: Projected Overall ARB FY 2014-15 Resources to Implement AB 32	
Category	Funding
Personnel and operations expenses (salary, benefits, overhead, equipment, travel, training, etc.)	\$45,843,000
Contracts budgeted	\$3,998,000
Total	\$49,841,000

Source: ARB program management identification of specific personnel and total positions needed to meet FY 2014-15 objectives for each specific program area, including administration and legal support, combined with a loaded cost per position to cover staffing and overhead costs. Costs are estimated from monthly tracking reports for the previous fiscal year submitted by ARB staff. All dollars rounded to the nearest thousand.

C. Program-Specific ARB FY 2014-15 Resources to Implement AB 32

Table 3-5 provides a breakdown by major program area of FY 2014-15 resource estimates for personnel and operations, plus contract dollars allocated, for all ARB activities that provide a climate benefit and support AB 32. The contract dollar amounts allocated show the FY 2014-15 funds that may be encumbered via contracts. Section 1 of this report, the Program Update, provides a discussion of contracts for major program areas.

Table 3-5: Program-Specific ARB FY 2014-15 Resources to Support AB 32			
AB 32 Program Area	Estimated Personnel and Operations Expenses	Contract Dollars Allocated	Estimated Total by Program Area
Cap-and-Trade	\$6,544,000	\$1,400	\$6,545,000
Low Carbon Fuel Standard	\$5,071,000	\$123,000	\$5,194,000
Mobile/Transportation	\$9,885,000	\$594,000	\$10,479,000
Inventory/Monitoring/Research/Fee Regulation	\$8,233,000	\$354,000	\$8,587,000
Scoping Plan	\$1,197,000	\$15,000	\$1,212,000
Energy	1,075,000	\$0	\$1,075,000
Other AB 32 Support Activities	\$13,837,000	\$2,911,000	\$16,748,000
Total	\$45,843,000	\$3,998,000	\$49,841,000

Source: ARB program management identification of specific personnel and total positions needed to meet FY 2014-15 objectives for each specific program area, including administration and legal support, combined with a loaded cost per position to cover staffing and overhead costs. Contract funding refers to FY 2014-15 monies that have been or will be encumbered in this fiscal year, but may be expended through June 2017. Costs are estimated from monthly tracking reports for the previous fiscal year submitted by ARB staff. All dollars rounded to the nearest thousand.

II. AB 32 RETROSPECTIVE RESOURCE REPORT FOR FY 2013-14

Note: the text in this part duplicates the text in Section 2: Annual AB 32 Fiscal Report I-A, through I-C.

A. AB 32 Cost of Implementation Fee for FY 2013-14

Table 3-6 displays the Cost of Implementation Fee Expenditures from the State Budget for FY 2013-14, which shows the budgetary authority for State agencies that use the AB 32 Cost of Implementation Fee revenue.

Table 3-6: AB 32 Cost of Implementation Fee Expenditures (FY 2013-14)		
Department	Positions	Funding
Secretary for Environmental Protection	4	\$562,000
Department of Housing and Community Development	6	\$794,000
Department of Resources Recycling and Recovery	6	\$529,000
Department of Forestry and Fire Protection	1	\$76,000
Department of Water Resources	3	\$274,000
Air Resources Board	158	\$35,924,000
State Water Resources Control Board	2	\$268,000
Department of Public Health	0	\$350,000
State Controller	0	\$3,000
Total Expenditures and Adjustments	180	\$38,778,000

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

The funds to support the AB 32 programs at multiple agencies, plus the funds needed for loan repayment, establish the total required revenue for the AB 32 Cost of Implementation Fee for FY 2013-14. Discrepancies between agency positions and funding amount are due to differences in contracted dollars and salary adjustments. Table 3-7 shows the required revenue, along with updated information on the revenue actually collected for FY 2013-14. Adjustments include over-collections or under-collections from the previous fiscal year, liquidated invoices (those under 50 dollars), refunds and employee compensation adjustments made after total required revenue is determined. The value of \$171,000 listed in Table 3-7 below, under “Adjustments from Previous FY Collections,” represents the under-collection of the total fees originally invoiced in the previous fiscal year. The under-collection resulted from adjustment to some entities’ fee-covered emissions after the fee invoices were generated. The adjustment to reported covered emissions occurred for various reasons, including, but not limited to, late discovery of misreporting of emissions or billing errors.

Table 3-7: Total AB 32 Cost of Implementation Fee Expenses and Revenue (FY 2013-14)	
Total Department Appropriations	\$38,778,000
Loan Repayment	\$8,000,000
Adjustments from Previous FY Collections	\$171,000
Total Required Revenue	\$46,949,000
Fee Revenue Collected for FY 2013-14	
	\$49,832,000

*The difference between the Fee Revenue Collected and the Total Required Revenue is attributed to the actual personnel costs being less than the budgeted appropriations for personnel costs. This difference is reflected in the Air Pollution Control Fund Condition Statement referenced below and is used to provide a reasonable reserve for economic uncertainties.

Source: FY 2014-15 Cost of Implementation, Air Pollution Control Fund Condition Statement at <http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/3890/3900FCS.pdf>. All dollars rounded to the nearest thousand.

B. Overall ARB FY 2013-14 Resources to Implement AB 32

The FY 2013-14 State Budget approved ARB to use up to \$35,924,000 from the AB 32 Cost of Implementation Fee to support ARB climate change programs. ARB also relied on \$11,044,000 in funding from other sources for activities that provide a climate co-benefit (e.g., development of the Advanced Clean Cars Regulation that reduces air toxics, criteria air pollutants, greenhouse gases, and short-lived climate pollutants). As shown in Table 3-8, ARB's actual FY 2013-14 resources to support climate change activities and implement AB 32 totaled \$46,968,000.

Table 3-8: Overall ARB FY 2013-14 Expenditures to Support AB 32 (Actual)	
Category	Funding
Personnel and operations expenses (salary, benefits, overhead, equipment, travel, training, etc.)	\$41,141,000
Contract expenditures	\$5,827,000
Total	\$46,968,000

Source: Personnel and operations expenses are obtained from manual monthly tracking reports, submitted by ARB staff. Expenses include administrative and legal support combined with a loaded cost per position to cover staffing and overhead costs. All dollars rounded to the nearest thousand.

C. Program-Specific ARB FY 2013-14 Resources to Implement AB 32

1. *Data Sources and Methodology*

Historically, ARB has tracked AB 32 programs and activities to implement AB 32 in totality, not at the level of individual regulations. To comply with all mandates (State laws, regulations, and policies on fiscal programs), ARB uses the CALSTARS system, which is the State’s accounting system.

In response to requests by the Legislature to see more detailed information regarding the costs to implement AB 32, ARB committed to manually track and report on future AB 32 expenditures for personnel and operations, plus contracts, for the major elements of the climate program. ARB began collecting information on hours worked in specific AB 32 program areas from all affected employees beginning with the October 2013 pay period. ARB is using these data for current and future reports to the Legislature.

For contract expenses, ARB relied on its records of actual expenditures in FY 2013-14 to support AB 32-related contracts. Some funds for these contracts may have been encumbered in FY 2012-13 or 2013-14, and have not been expended yet.

2. *Retrospective Resources by Program Area*

Table 3-9 shows ARB’s estimate of the resources used to support programs in FY 2013-14 with climate benefits at ARB.

Table 3-9: ARB Expenditure of Funds in FY 2013-14 for Specific Program Activities that Support AB 32			
AB 32 Program Area	Personnel & Operations Expenses	Contract Dollars Expended	Total by Program Area
Cap-and-Trade	\$5,873,000	\$203,000	\$6,076,000
Low Carbon Fuel Standard	\$4,551,000	\$1,255,000	\$5,806,000
Mobile/Transportation	\$8,871,000	\$1,242,000	\$10,113,000
Energy	\$965,000	\$84,000	\$1,049,000
Inventory/Monitoring/ Research/Cost of Implementation Fee	\$7,388,000	\$104,000	\$7,492,000
Scoping Plan	\$1,074,000	\$0	\$1,074,000
Other AB 32 Support Activities	\$12,418,000	\$2,940,000	\$15,358,000
Total	\$41,141,000	\$5,827,000	\$46,968,000

Source: Personnel and operations expenses are obtained from manual monthly tracking reports submitted by ARB staff. Expenses include administrative and legal support combined with a loaded cost per position to cover staffing and overhead costs. All dollars rounded to the nearest thousand.

SECTION 4:

**SEMI-ANNUAL UPDATE ON
WESTERN CLIMATE INITIATIVE, INC. ACTIVITIES
(July 2014 – June 2015)**

This report is required by the provisions of Senate Bill 1018 (Chapter 39, Statutes of 2012)²¹, which requires advance notice of any Air Resources Board (ARB) payments to the Western Climate Initiative, Incorporated (WCI, Inc.) over \$150,000 and semi-annual updates on the actions proposed by Western Climate Initiative, Inc. (WCI, Inc.) that affect California government or entities. This update focuses on recent WCI, Inc. actions, as ARB provides separate notices to the Joint Legislative Budget Committee prior to any transfer or expenditure to WCI, Inc. over \$150,000.

I. BACKGROUND

WCI, Inc. is a non-profit corporation that focuses solely on providing administrative support for jurisdictions' cap-and-trade programs, and is separate from the Western Climate Initiative (WCI). WCI, Inc. was formed in 2011 to coordinate administrative services to cap-and-trade programs developed and implemented by states and provinces. The Board of Directors for WCI, Inc. includes officials from the provinces of Québec and British Columbia, and the State of California. The administrative support provided by WCI, Inc. can be expanded to support jurisdictions that join in the future.

The coordinated administrative support from WCI, Inc. benefits California and the other participating programs.

- Coordinated support ensures that all the linked programs use the same highly secure computer program infrastructure, including the allowance tracking system and auction platform.
- Coordinated support ensures that analyses performed to support market monitoring in each jurisdiction are conducted consistently and effectively for the entire compliance instrument market across all the linked programs.

²¹ Government Code, Section 12894(d) "The Chairperson of the State Air Resources Board and the Secretary for Environmental Protection, as the California voting representatives on the Western Climate Initiative, Incorporated, shall report every six months to the Joint Legislative Budget Committee on any actions proposed by the Western Climate Initiative, Incorporated, that affect California state government or entities located within the state."

- Coordinated support enables the linked programs to share the cost of developing and maintaining program infrastructure, thereby reducing the costs for each jurisdiction.

WCI, Inc.'s approach to coordinating administrative support is to have each jurisdiction specify its administrative requirements, and then for WCI, Inc. to provide support that meets these specifications. Currently, British Columbia, California, and Québec participate in WCI, Inc. California and Québec are currently implementing cap-and-trade programs to reduce GHG emissions.

Most of the administrative support provided by WCI, Inc. is highly technical or specialized and has been developed through the use of contractors. WCI, Inc. is undertaking the following activities:

- Coordinating the development and administration of the Cap-and-Trade Compliance Instrument Tracking System Service (CITSS);
- Coordinating the development and administration of an allowance auction platform, used by California and Québec to auction emission allowances under their cap-and-trade programs and to conduct reserve sales;
- Coordinating the performance of analyses to support market monitoring performed by each jurisdiction of allowance auctions and allowance and offset certificate trading; and
- Coordinating auction and reserve sale financial administration, which includes evaluation of bid guarantees and settlement (transferring the payments from the auction and reserve sale purchasers to the sellers).

Whereas WCI has focused on collaboration on emissions trading policies, WCI, Inc. is solely administrative in nature. All policymaking and regulatory authority for each jurisdiction's program is retained by each jurisdiction. According to the WCI, Inc. bylaws, its administrative activities must "...conform to the requirements of State and Provincial programs..." The requirements are defined by the participating jurisdictions, such that WCI, Inc. must execute its administrative role in conformance with the requirements established by ARB and the other jurisdictions.

II. UPDATE

A. Introduction

This report describes the activities of WCI, Inc. from July 2014 through December 2014, and presents WCI, Inc.'s anticipated activities in the first half of 2015.

Highlights of recent activities include:

- The WCI, Inc. Board approved a funding agreement with Québec.
- The WCI, Inc. Board approved a revised budget for calendar year 2015.
- The WCI, Inc. Board hired Greg Tamblyn as the new Executive Director.

In the first half of 2015, WCI, Inc. anticipates continuing to coordinate administrative support to the California and Québec programs. The newly hired Executive Director will continue the development of the organization. As previously reported, an Assistant Director is expected to be hired and located in Québec. Procurements will be initiated for service contracts that expire at the end of 2015.

B. Corporate Governance

WCI, Inc. is governed by a Board of Directors according to its bylaws and the policies adopted by the WCI, Inc. Board. The bylaws and policies are posted on the WCI, Inc. website: <http://www.wci-inc.org/documents.php>. Table 4-1 lists the policies that have been adopted by the WCI, Inc. Board.

Table 4-1: WCI, Inc. Corporate Policies (as of December 31, 2013)
Records Availability Policy (Adopted December 9, 2013)
Open Meeting Policy (Adopted May 8, 2013)
Accounting Policies and Procedures (Adopted May 8, 2013)
Employee Handbook (Adopted April 15, 2013)
Funds Management Policy (Adopted October 30, 2012)
Procurement Policy (Adopted January 12, 2012)
Audit Committee Charter (Adopted November 3, 2011)
Ethical Guidelines and Conflict of Interest Policy (Adopted November 3, 2011, Revised December 9, 2013)
Retention of Business Records Policy (Adopted November 3, 2011)
Whistleblower Protection Policy (Adopted November 3, 2011)

No new policies were adopted by the WCI, Inc. Board during 2014.

However, one change was made to the directors from California: Assembly Member Richard Bloom was appointed by the Speaker of the Assembly in December 2014, replacing Assembly Member Nancy Skinner on the Board. The directors from California as of December 2014 are:

- Secretary for Environmental Protection, Matthew Rodriguez
- Chairman of the Air Resources Board, Mary Nichols

- Assembly Member Richard Bloom, appointed by the Speaker of the Assembly (non-voting director)
- Mr. Kip Lipper, appointed by the Senate Rules Committee (non-voting director).

The WCI, Inc. Board met in publicly noticed open meetings on July 9, 2014, September 26, 2014, and December 5, 2014. Additionally, the Board met in a publicly noticed Executive Session on November 7, 2014. The meeting announcements, agendas, and materials were posted on the WCI, Inc. website.

At the July 9, 2014 meeting, the Board reviewed and approved a funding agreement with the Ministry of Sustainable Development, Environment, and the Fight against Climate Change (MDDELCC) of Québec. When the WCI, Inc. 2014 – 2015 budget was adopted at the annual meeting in December 2013, the Board resolved to review the budget after the California Legislature and Quebec Executive Council took action on their respective budgets. The budget review was conducted at the July 9, 2014 meeting, and no budget changes were proposed.

The WCI, Inc. Board officers were selected at the September 26, 2014 annual meeting of the Board:

- Chair, Matthew Rodriguez (California)
- Vice Chair, Geneviève Moisan, (Québec)
- Treasurer, Mary Nichols (California)
- Secretary, Jean-Yves Benoit (Québec)

The Board also selected the members of the standing committees: the Executive Committee, the Audit Committee, and the Finance Committee.

Also at the September 26, 2014 meeting, the Treasurer provided an evaluation of compliance with the Funds Management Policy, which found that WCI, Inc. is in compliance with the policy. The status of the 2014 budget was provided, along with a review of recent and projected cash flow. The meeting concluded with an Executive Session to discuss procurement and personnel matters.

On November 7, 2014 the Board also met in an Executive Session to discuss procurement and personnel matters.

At the December 5, 2014 meeting, the Board reviewed and approved a revised budget for 2015. The revised budget reflects funds being moved from 2014 to 2015 for activities that were not completed in 2014. Additionally, funds were added to support the procurements planned for 2015. The Board also reviewed estimates of planned expenditures for 2016. The meeting concluded with an Executive Session to discuss procurement, personnel, and legal matters.

The agendas and minutes of the WCI, Inc. Board meetings are posted at:
<http://www.wci-inc.org/documents.php>.

C. Staffing and Operations

In December 2014, the WCI, Inc. Board of Directors hired a new Executive Director, who started work on December 22, 2014. The new Executive Director, Greg Tamblyn, will transition into the position with the assistance of the outgoing Executive Director, Patrick Cummins. No other staff changes have been made since the last report to the JLBC. In addition to the Executive Director, WCI, Inc. staffing includes the following.

- **Project Managers:** WCI, Inc. has two part-time project managers to oversee contracts related to the CITSS, the auction platform, financial administration, and market analysis.
- **Business Services:** WCI, Inc. uses a contractor to support day-to-day business operations and has engaged the services of an accountant.
- **Insurance and Banking:** WCI, Inc. has retained insurance coverage and banking services.
- **Office:** WCI, Inc. has an office in Sacramento.
- WCI, Inc. has contracted for the services of a corporate counsel.

As previously reported, WCI, Inc. is planning to hire an Assistant Director located in Canada to support the Executive Director with all operational and business requirements. Given the transition to the new Executive Director, the hiring of the Assistant Director is anticipated in 2015. The new Executive Director will be working with the Board in 2015 to address any other staffing needs.

D. Delivery Capability

WCI, Inc. has entered into the following contracts to provide support to State and provincial programs.

- **Compliance Instrument Tracking System Service (CITSS) Development and Hosting:** In May 2012, WCI, Inc. contracted with SRA International, Inc. for the continued development of the CITSS. CITSS provides accounts for program participants to hold compliance instruments and to record transactions of compliance instruments with other account holders. Program participants access CITSS online. CITSS is supporting the programs in California and Québec. At the December 5, 2014 Board meeting, the Board approved amending the contract to support additional CITSS development required by the participating jurisdictions in the first half of 2015.
- **Auction Platform:** In January 2013, WCI, Inc. contracted with Markit Group Limited for the continued development of the auction platform. The auction platform is used by program participants to apply for each auction or reserve sale and to enter their bid information. Program participants access the auction platform online. California and Québec use the platform to monitor the auctions and reserve sales, and to ensure that all auction and reserve sale requirements are met.

- Market Analysis: In January 2013, WCI, Inc. contracted with Monitoring Analytics, LLC for analyses in support of market monitoring. The contract supports multi-jurisdictional monitoring for California and Québec linked auctions and linked markets. This work builds upon the substantial efforts by California and Québec for market monitoring.
- Auction and Reserve Sale Financial Administration: In September 2013, WCI, Inc. contracted with Deutsche Bank Trust Company Americas for auction and reserve sale financial administration, which includes evaluation of bid guarantees and settlement (transferring the payments from the auction and reserve sale purchasers to the sellers).
- CITSS Help Desk Support: In October 2012, WCI, Inc. contracted with ICF Incorporated, LLC for help desk services to respond to inquiries from CITSS users.

WCI, Inc. contracts for administrative services in support of jurisdiction programs are posted to the WCI, Inc. website: <http://www.wci-inc.org/documents.php>.

In the first half of 2015, WCI, Inc. anticipates initiating procurements for service contracts that expire in 2015. The participating jurisdictions will provide the specifications for the services required from WCI, Inc., which will inform the basis for conducting the procurements. As specified in the WCI, Inc. Procurement Policy (available at: http://www.wci-inc.org/docs/2012-01-12_WCI-Inc_Procurement_Policy_Final.pdf), the procurement process shall ensure open and effective opportunities for competition in order to obtain the best value for the Corporation. The contracts resulting from the procurements are expected to exceed \$150,000.

E. Budget and Funding

As reported previously, the WCI, Inc. Board adopted the WCI, Inc. budget for calendar years 2014 and 2015 at its December 2013 WCI, Inc. Board meeting. The budget was reviewed at the July 9, 2014 meeting of the Board in light of the State budget enacted in California and the Provincial budget approved in Québec. A revised 2015 budget was reviewed and adopted at the December 5, 2014 Board meeting.

The WCI, Inc. budgets are available on the WCI, Inc. website: <http://www.wci-inc.org/documents.php>.

As reported previously, WCI, Inc. entered into a funding agreement with California that corresponds to the approved budget for calendar years 2014 and 2015. As discussed above, the funding agreement with Québec was reviewed and approved at the July 9, 2014 Board meeting. The share of funding provided by each in 2014 and 2015 was determined in three parts:

- The cost of running WCI, Inc. (personnel and operating costs) is divided equally between ARB and Québec.
- The cost of the cap-and-trade service contracts is divided based on the total emissions covered by each jurisdiction's trading program, 85 percent to ARB and 15 percent to Québec.
- The cost of jurisdiction-specific administrative support is assigned fully to each jurisdiction. This support focuses primarily on the execution of reserve sales that are conducted individually for each of the Québec and California programs using the auction platform and financial administrative services.

Based on this approach, ARB funding for 2014 and 2015 is \$4 million. The fully executed funding agreement is available on the WCI, Inc. website: <http://www.wci-inc.org/docs/13-407%20Final%20STD%20%20213.pdf>.

The Québec funding for 2014 and 2015 is \$1,937,024 (US dollars). The fully executed funding agreement is available on the WCI, Inc. website: <http://www.wci-inc.org/docs/Entente-de-financement-WCI-inc-2014-2015-%20EN-2014-14-07-FINAL.pdf>.

The revised 2015 budget, adopted at the December 5, 2014 Board meeting is consistent with the existing California and Québec funding agreements.

F. Planned Payments to WCI, Inc.

For calendar years 2014 and 2015, ARB's share of the WCI, Inc. budget is \$4 million. The funding agreement with WCI, Inc. specifies that ARB will make quarterly payments to WCI, Inc. The planned payments are presented in Table 4-2.

Table 4-2: Planned Payments from ARB to WCI, Inc. for Calendar Years 2014 and 2015		
Payment	Payment Date	Amount
2014 Q1 Payment	July 15, 2014	\$500,000
2014 Q2 Payment	October 8, 2014	\$500,000
2014 Q3 Payment	December 26, 2014	\$500,000
2014 Q4 Payment	To be invoiced: January 1, 2015	\$500,000
2015 Q1 Payment	To be invoiced: April 1, 2015	\$500,000
2015 Q2 Payment	To be invoiced: July 1, 2015	\$500,000
2015 Q3 Payment	To be invoiced: October 1, 2015	\$500,000
2015 Q4 Payment	To be invoiced: January 1, 2016	\$500,000
Total		\$4,000,000