



The 2014-15 Budget: Cap-and-Trade Auction Revenue Expenditure Plan

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Summary

The Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006 [AB 32, Núñez/Pavley]), commonly referred to as AB 32, established the goal of reducing greenhouse gas (GHG) emissions statewide to 1990 levels by 2020. In order to help achieve this goal, the California Air Resources Board (ARB) adopted a regulation to establish a cap-and-trade program that places a “cap” on the aggregate GHG emissions from entities responsible for roughly 85 percent of the state’s GHG emissions. As part of the cap-and-trade program, the ARB conducts quarterly auctions where it sells emission allowances. These auctions are likely to generate billions of dollars in state revenue over the coming years. The Governor’s 2014-15 budget proposes to appropriate \$850 million in auction revenue to various state programs, including programs related to sustainable communities, clean transportation, energy efficiency, natural resources, and waste diversion.

In order to minimize the negative economic impact of cap-and-trade, it is important that auction revenues be invested in a way that maximizes GHG emission reductions for a given level of spending. In reviewing the Governor’s proposed expenditure plan for cap-and-trade auction revenue, we find that there is significant uncertainty regarding the degree to which each investment proposed for funding will achieve GHG reductions. This uncertainty is the result of several factors, including there being only limited data and analysis provided by the administration, as well as the fact that the level of emission reductions achieved would depend on the specific projects funded by departments. Consequently, it is very difficult for the Legislature to have assurance that the specific package of programs proposed by the administration would achieve the greatest reduction per dollar invested possible, or whether a different set of programs might yield better outcomes in a more cost-effective manner.

Given these concerns, we recommend that the Legislature direct ARB to develop metrics for departments to use in order to prospectively evaluate the potential GHG emission benefits of proposed projects, as well as direct the board to establish a set of guidelines for how departments should incorporate these metrics into their decision-making processes. Having such metrics to use as part of departments’ decision-making processes when determining how program funding will be spent would provide greater certainty regarding the potential GHG emission reductions of projects being considered for funding.

BACKGROUND

Assembly Bill 32 established the goal of reducing GHG emissions statewide to 1990 levels by 2020. Among other provisions, the legislation directed ARB to develop a plan encompassing a set of regulations and programs that, taken together, would be a means for the state to achieve its 2020 GHG reduction target in a cost-effective manner. This plan is commonly referred to as the AB 32 Scoping Plan. The original scoping plan was adopted by ARB in December 2008 and identified various regulations and programs such as the state's Renewables Portfolio Standard, Low Carbon Fuel Standard, and energy efficiency programs. (At the time of this analysis, ARB is considering an update to the scoping plan.) In order to fund administrative activities associated with implementing the plan, AB 32 authorized ARB to assess a fee on the state's largest GHG emitters. This fee, which is commonly referred to as the AB 32 Cost of Implementation (COI) fee, provides roughly \$40 million annually to various state departments that have roles in developing, implementing, and evaluating the regulations and programs included in the scoping plan.

Assembly Bill 32 also authorized (but did not require) ARB to include, as part of the scoping plan, a market-based mechanism to reduce the state's GHG emissions. The legislation defined a market-based mechanism as a system that includes an annually declining limit on GHG emissions, as well as a trading component whereby sources of GHG emissions may buy and sell carbon allowances in order to comply with the regulation. Such a system is commonly referred to as a cap-and-trade program.

How Cap-and-Trade Works to Reduce Emissions

The Concept of the Cap. A cap-and-trade program sets a limit or cap on aggregate emissions. Typically, the cap declines over time, ultimately arriving at the target emission level. In order to operationalize the cap, the regulator administering the program creates allowances equal to the numeric value of the cap. For example, if the cap were 100 million tons of carbon dioxide emissions, the regulator would create 100 million allowances, each equal to one ton of emissions. The regulator then requires specified emitters to obtain allowances equal to their total emissions in a given period of time. Because the cap declines and allowances become more scarce over time, allowance prices (which we discuss below) would be expected to increase. As allowances become more expensive, regulated parties have a greater incentive to find ways to reduce their emissions in order to avoid having to purchase as many of the relatively more expensive allowances. Consequently, to the extent that it is less expensive for a regulated entity to reduce its emissions—for example, by installing a more efficient technology—than it is to purchase allowances, the entity will reduce its emissions. As such, it is the supply and demand for allowances, affected by the scarcity of allowances created by the declining cap, that forces the achievement of the environmental goal of reducing emissions to a targeted level.

Distribution of Allowances. Three ways regulators can distribute allowances are to (1) distribute all available allowances for free, (2) distribute all allowances via an auction, or (3) have some portion allocated for free while the other portion is auctioned. The way in which allowances are distributed affects the overall cost of compliance for regulated parties (which,

in turn, affects consumers, businesses, and the economy at large). The way in which allowances are distributed, however, does not impact the program's environmental goal. This is because, as addressed above, it is the declining cap, not the manner in which allowances are distributed, that achieves the environmental goal of the program. Once allowances have been distributed, entities can then "trade" (buy and sell on the open market) the allowances in order to obtain enough to cover their total emissions for a given period of time.

California's Cap-and-Trade Program

In conjunction with the AB 32 Scoping Plan, ARB adopted a cap-and-trade regulation that places a cap on aggregate GHG emissions from entities responsible for roughly 85 percent of California's total GHG emissions. While these entities are not assigned an individual reduction target, entities that emit at least 25,000 metric tons or more of carbon dioxide equivalent (CO₂e) per year are subject to the cap-and-trade regulation and are therefore considered to be "covered entities." When the program is fully operational, approximately 600 of the state's largest emitters of GHGs will be subject to the regulation, including oil producers, refiners, and electricity generators. In order to comply with the regulation, a covered entity must obtain one allowance (or equivalent thereof) for every metric ton of CO₂e that it emits during a given compliance period.

Under ARB's cap-and-trade program, covered entities have an opportunity to obtain allowances in multiple ways. The ARB has designed its cap-and-trade program to provide a portion of allowances for free, while another portion are available for purchase at quarterly auctions. Covered entities also have the opportunity to trade allowances in the open market. Over time, the cap on aggregate annual emissions will gradually

decline from 409 million metric tons of CO₂e in 2012 to 341 million metric tons of CO₂e in 2020. As the cap declines, the number of allowances ARB makes available will decline proportionately. Thus, a covered entity will need to determine if it is more cost-effective to purchase allowances or to reduce its emissions (such as by making energy efficiency upgrades in its facility).

Cap-and-Trade Auction Revenue

Revenue Collected to Date. Between November 2012 and November 2013, ARB conducted five auctions that have generated a total of \$532 million in state revenue. The *2013-14 Budget Act* included provisions to loan \$500 million of this amount to the General Fund. (The Governor's budget proposes to repay \$100 million of that amount in 2014-15.) In addition, the 2013-14 budget provided \$578,000 to the Office of Environmental Health and Hazard Assessment (OEHHA) for the development of a method for identifying disadvantaged communities, which we discuss in more detail below.

Future Auction Revenues. The amount of revenue that future allowance auctions will generate will depend on the price of allowances and the number of allowances purchased versus allocated for free. The price of allowances could range greatly depending on demand for allowances relative to the cost of directly reducing GHG emissions, the state of the economy, and other factors. The ARB has adopted regulations to keep auction prices within a certain range by setting a minimum and maximum price for allowances sold at auctions—from \$10 per ton of emissions to \$40 per ton of emissions. Under ARB's current auction schedule, over the life of the program, roughly half of all allowances will be allocated at auctions, with the remainder allocated for free. We note, however, that ARB is currently considering a change to increase the amount of allowances allocated for free to 60 percent.

California's cap-and-trade program is expected to raise billions of dollars in auction revenues from 2012 through 2020. The actual amount of revenue that will be raised is difficult to predict, particularly because of the uncertainty about future allowance prices. Using ARB's floor and ceiling prices for allowances, and assuming that ARB provides 60 percent of all allowance for free, the total cap-and-trade revenues from all auctions through 2020 could range from \$12 billion to \$45 billion. Several economists who have evaluated California's cap-and-trade program have estimated that, over the life of the program, average allowance price may be in the \$15 to \$20 range. If this were to occur, total revenue for the program through 2020 could be roughly \$15 billion. To the extent that ARB does not increase the percentage of free allowances, the above revenue estimates would be higher.

Prior Legislative Direction for Use of Revenue.

Three statutes enacted in 2012 provide some requirements and direction on the use of cap-and-trade auction revenue.

- ***Chapter 39, Statutes of 2012 (SB 1018, Committee on Budget and Fiscal Review).*** Chapter 39 created the Greenhouse Gas Reduction Fund (GGRF), into which all auction revenue is to be deposited. The legislation requires that before departments can spend monies from the GGRF, they must prepare a record specifying: (1) how the expenditures will be used, (2) how the expenditures will further the purposes of AB 32, (3) how the expenditures will achieve GHG emission reductions, (4) how the department considered other non-GHG-related objectives, and (5) how the department will document the results of the expenditures.
- ***Chapter 807, Statutes of 2012 (AB 1532, Perez).*** Chapter 807 directed the Department of Finance to develop and periodically update a three-year investment plan that identifies feasible and cost-effective GHG emission reduction investments. Chapter 807 also requires that cap-and-trade auction revenues be used to reduce GHG emissions and, to the extent feasible, achieve co-benefits such as job creation, air quality improvements, and public health benefits.
- ***Chapter 830, Statutes of 2012 (SB 535, de León).*** Chapter 830 requires that 25 percent of auction revenue be used to benefit disadvantaged communities. Chapter 830 also requires that 10 percent of auction revenue be invested in disadvantaged communities.

Potential Litigation Over Use of Auction

Revenues. Given the scope of cap-and-trade and the amount of revenue that the auctions are likely to generate, it is reasonable to expect litigation over the coming years regarding how these revenues can be used. In 2012, the California Chamber of Commerce filed a lawsuit against the ARB claiming that cap-and-trade auction revenues constitute illegal tax revenue. In November 2013, the superior court ruled that the "charges" from the auction have characteristics of a tax as well as a fee, but that, on balance, the charges constitute legal regulatory fees. This ruling is subject to appeal. It is also possible that even if ultimately determined to be a fee, the courts would put limits on how the revenues can be used, just as all other state fees have spending constraints. Final decisions from the appellate courts on these issues would likely take years.

GOVERNOR'S PROPOSALS

The Governor's budget includes the first expenditure plan for cap-and-trade revenues (aside from the small amount provided in 2013-14 for OEHHA to identify disadvantage communities). As shown in Figure 1 (see next page), the plan proposes to spend \$850 million in 2014-15, all from the GGRF, on various programs. (The administration proposes \$31 million in 2013-14 for these activities.) The administration's expenditure plan provides the same level of funding for most programs in 2015-16 as it proposes for 2014-15. However, the administration is proposing that beginning in 2015-16, 33 percent of all GGRF revenues be continuously appropriated to the High-Speed Rail Authority (HSRA) for the state's high-speed rail project. These funds would support the construction of the project's Initial Operating Segment (IOS), which is estimated to cost \$31 billion and be completed by 2022. At this time, the administration has not provided an estimate of projected cap-and-trade auction revenues; thus, it is unclear how much funding would go to high-speed rail in 2015-16 and beyond.

The proposed expenditure plan provides funding to 11 different departments and boards to administer 23 distinct program components, such as energy efficiency projects, low-emission vehicle rebates, and the state's high-speed rail system. The administration states that it took into consideration several factors when developing its cap-and-trade expenditure plan, including consistency with ARB's investment plan for GHG reductions, the Governor's overarching energy and transportation policy priorities, the ability to meet Chapter 830's requirements regarding disadvantaged communities, and other potential co-benefits (such as the public health benefits of reducing air pollution). The Governor's budget also includes a partial repayment of \$100 million of the 2013-14

budget loan to the General Fund. In regards to the remaining loan balance, the Governor is proposing budget trailer legislation specifying that when the remaining \$400 million is repaid, the funds will be directed to HSRA. Below, we provide a description of each proposal.

Sustainable Communities and Clean Transportation

High-Speed Rail—HSRA. The Governor's budget requests \$250 million in 2014-15 to support construction of the high-speed rail system. Specifically, this includes (1) \$58.6 million for environmental planning and permitting for the first phase of the project (which would extend from San Francisco to Anaheim) and (2) \$191.4 million to purchase land and partially support construction for the Initial Construction Segment (which would extend 130 miles from Madera to Bakersfield). According to the administration, the availability of a high-speed rail system in California will reduce vehicle miles traveled in cars, as well as planes, thereby reducing total GHG emissions. As described above, the administration also proposes budget trailer legislation to continuously appropriate 33 percent of GGRF revenues to HSRA beginning in 2015-16.

Low Carbon Transportation—ARB. The Governor's budget requests \$30 million in 2013-14, \$200 million in 2014-15, and \$200 million in 2015-16 to support the expansion of ARB's existing clean transportation program. This program funds a range of programmatic activities such as incentive programs for zero and low-emission passenger vehicles, clean buses and trucks, and sustainable freight technology. Of the additional funding proposed for the program, ARB will receive \$2 million annually for 15 new positions to administer additional grants and monitor

Figure 1

Governor's 2014-15 Cap-and-Trade Expenditure Plan*(In Millions)*

Department	Activity	Amount
Sustainable Communities and Clean Transportation		
High-Speed Rail Authority	Rail planning, land acquisition, and construction	\$250.0
Air Resources Board	Low-emission vehicle rebates	200.0
Strategic Growth Council	Transit oriented development grants	100.0
Caltrans	Intercity rail grants	50.0
Energy Efficiency and Clean Energy		
Community Services and Development	Low-Income Weatherization Program	\$80.0
General Services	Energy efficiency upgrades in state buildings:	
	Zero Net Energy Buildings	\$10.5
	Energy Retrofit Loan Program	8.5
	Distributed renewable generation at state buildings	1.0
	Subtotal	(\$20.0)
Food and Agriculture	Reducing agricultural waste:	
	Grant funding for dairy digesters	\$12.0
	Agricultural greenhouse gas research	5.0
	Biofuel standards	3.0
	Subtotal	(\$20.0)
Water Resources	Water Action Plan—water use efficiency:	
	Water efficiency grants	\$10.0
	State Water Project upgrades	10.0
	Subtotal	(\$20.0)
Natural Resources and Waste Diversion		
Forestry and Fire Protection	Fire prevention and urban forestry:	
	Grants for urban and community forestry	\$18.0
	Vegetation management program	12.7
	Forest legacy program	8.4
	Reforestation services	5.1
	Research at demonstration state forests	2.6
	Forest pest control programs	1.7
	Regulation of timber harvests	1.4
	Subtotal	(\$50.0)
Fish and Wildlife	Water Action Plan—wetlands restoration	\$30.0
CalRecycle	Waste diversion:	
	Grant programs to encourage diversion of waste from landfills	\$20.0
	Loan program for recycling and composting facilities	10.0
	Subtotal	(\$30.0)
	Total	\$850.0

CalRecycle = California Department of Resources Recycling and Recovery.

funded projects. In addition, the Governor's budget proposes \$2.6 million and ten new positions to support ARB's administration of the cap-and-trade expenditure plan. Specifically, ARB staff would develop metrics for other departments to use to evaluate the effectiveness of their programs at reducing GHG emissions.

Sustainable Communities—Strategic Growth Council (SGC). The SGC is comprised of eight members representing six state agencies, the Governor's Office of Planning and Research (OPR), and a public member appointed by the Governor. The SGC is responsible for coordinating a variety of state programs and activities related to sustainable communities and the environment, such as the implementation of Chapter 728, Statutes of 2007 (SB 375, Steinberg), commonly referred to as SB 375, which incorporates sustainable community development into transportation planning. The Governor's budget requests \$100 million in 2014-15 and \$100 million in 2015-16 to establish a SB 375-related grant program within OPR to be administered by SGC. While details of the program have not been developed at the time of this analysis, OPR indicates that grants could be available for local government sponsored projects that implement a regional "sustainable communities strategy" plan as required by SB 375. Specifically, funding could support transit capital and operating costs, bicycle facilities, development near transit stations, and other projects intended to reduce vehicle miles traveled. According to the administration, priority would be given for activities serving disadvantaged communities. Under the Governor's budget, \$800,000 of the proposed \$100 million from the GGRF would be used to support the continued operations of the SGC and relocate it from under the Natural Resources Agency to OPR.

Rail Modernization—California Department of Transportation (Caltrans). The Governor's

budget proposes \$50 million in 2014-15 and 2015-16 for Caltrans to implement a new rail modernization grant program. According to the administration, grant funds would support projects intended to enhance mass transit operations in the state, with the intent of increasing transit ridership and reducing vehicle miles traveled in cars. For example, grants could be given to projects to integrate the payment and fare systems of high-speed rail, intercity rail, commuter rail, and transit systems. Grants could also be provided for marketing efforts intended to increase ridership.

Energy Efficiency and Clean Energy

Low-Income Weatherization—Department of Community Services and Development (CSD). The Governor's budget requests \$80 million in 2014-15 and \$80 million in 2015-16 for CSD to continue funding its existing weatherization and solar programs. In recent years this program has been largely funded by one-time federal monies. The CSD's federal Weatherization Assistance Program provides low-income Californians with weatherization services such as weather stripping, insulation, and water heater replacement. In addition to weatherization services, in recent years CSD has used federal funds to operate programs that install solar photovoltaic systems on low-income homes. Of the annual amount of cap-and-trade auction revenue proposed for CSD, \$4.6 million would support 10.5 new temporary positions, 14 existing positions that had previously been funded by federal funds, and consulting services to administer the program and evaluate program effectiveness.

Green State Buildings—Department of General Services (DGS). The Governor's budget requests \$20 million in both 2014-15 and 2015-16 for DGS to support energy efficiency and renewable energy programs. First, \$10.5 million would help convert 12 state-owned facilities to be "zero

net energy” by implementing a combination of energy efficiency measures and renewable power generation so that the buildings do not use any more energy than they generate over the course of a year. Second, \$8.5 million would support the expansion of the existing Statewide Energy Retrofit Loan Program, which loans funding to departments for energy efficiency projects. Third, \$1 million would be used to install renewable energy generation at state buildings. Of the total requested, the Governor’s budget proposes \$1.3 million each year to support nine new positions for program administration.

Agricultural Energy—California Department of Food and Agriculture (CDFA). The Governor’s budget requests \$20 million in both 2014-15 and 2015-16 for CDFA to support three new programs related to agriculture energy.

- \$12 million in grants to fund “digesters” that capture methane from animal waste in order to generate electricity or create transportation fuel.
- \$5 million for research related to GHG emissions from fertilizer application and agriculture management practices that reduce those emissions.
- \$3 million to develop technical standards that would allow low-carbon agricultural biofuels to be sold in California.

Under the Governor’s proposal, some of the requested funding—\$1.4 million in 2014-15 and \$1.5 million in 2015-16—would support 15 existing positions that are currently funded from various funds such as motor oil fees.

Water Use Efficiency—Department of Water Resources (DWR). The Governor’s budget proposes \$20 million in both 2014-15 and 2015-16 for DWR to support water-energy efficiency activities. For each year, the proposed funding would be split

equally for (1) grants to local agencies to fund water conservation measures intended to reduce the amount of energy used to move, treat, and heat water; and (2) upgrading two generating units on the State Water Project (SWP) to become more energy efficient. In addition, \$1 million of the proposed annual funding would support 3.5 existing positions (previously funded by bond funds) to administer the above grants.

Natural Resources and Waste Diversion

Fire Prevention and Urban Forestry—California Department of Forestry and Fire Protection (CalFire). The Governor’s budget requests \$50 million for each of the next two years to expand seven existing programs at CalFire. Specifically, the proposed funding would support (1) local assistance grants for urban and community forestry; (2) CalFire’s vegetation management program, which is a cost-sharing program with landowners designed to reduce the risk of wildland fire; (3) the forest legacy program, which invests in forestlands to prevent conversion to non-forest use; (4) reforestation services; (5) research at demonstration state forests and cooperative wildlands; (6) forest pest control programs; and (7) the forest practice program, which regulates timber harvests. According to the administration, each of these programs would reduce GHG emissions by increasing the number and health of forests, as well as reducing the frequency and severity of wildland fires. Of the total amount proposed, CalFire would receive \$2.5 million in 2014-15 to support 13 new positions (growing to \$2.6 million and 14 positions in 2015-16) for program implementation.

Wetland and Watershed Restoration—Department of Fish and Wildlife (DFW). The Governor’s budget requests \$30 million in 2014-15 and 2015-16 to support DFW’s wetland restoration efforts. The proposed funding would support

grants for ecosystem restoration throughout the state—including in the Delta, on the coast, and in mountain meadows—which would increase the amount of land that can naturally capture and store carbon. The proposed funding would also support measures to reduce the energy needed to transport water to wetlands currently managed by DFW. Of the total amount requested, the Governor proposes \$2.2 million in 2014-15 to support 17 new positions (increasing to \$3 million and 27 positions in 2015-16) for program implementation.

Waste Diversion—California Department of Resources Recycling and Recovery (CalRecycle). The Governor’s budget requests \$30 million for each of the next two years for CalRecycle to support projects designed to increase recycling and composting. Specifically, the administration

proposes \$20 million for grants to expand existing facilities or develop new facilities that process organic or recyclable materials, and \$10 million to establish a new revolving loan fund to provide low-interest loans to encourage the establishment or expansion of recycling businesses. These two programs are intended to reduce GHG emissions by (1) redirecting organic waste from landfills to anaerobic digestion facilities, which would reduce methane emissions at landfills; and (2) increasing recycling, which could produce fewer GHG emissions than the manufacturing of new products. Of the amount proposed, the budget provides CalRecycle with \$392,000 in 2014-15 to support four new positions (\$477,000 and five positions in 2015-16) for program implementation.

FINDINGS AND LEGISLATIVE CONSIDERATIONS

In reviewing the Governor’s proposed expenditure plan for cap-and-trade auction revenue, we find that there is significant uncertainty regarding the degree to which each investment proposed for funding would achieve GHG reductions. This uncertainty is the result of several factors, including there being only limited data provided by the administration. While we acknowledge that estimating emission reductions is challenging, the uncertainty that is created increases the risk that the administration’s plan would not maximize GHG reductions with the level of funding available. Consequently, it is very difficult for the Legislature to have assurance that the specific package of programs proposed by the administration would achieve the greatest reduction per dollar invested possible, or whether a different set of programs might yield better outcomes in a more cost-effective manner. In this section, we also note that some GHG reductions

may not occur until after 2020, the statutory goal for reaching 1990 levels. In addition, we find that the Governor’s plan raises some implementation and coordination issues.

Various Uncertainties Make It Unlikely Proposal Will Maximize GHG Reductions

In order to minimize the negative economic impact of cap-and-trade, it is important that auction revenues be invested in a way that maximizes GHG emission reductions for a given level of spending. Maximizing emission reductions reduces the demand for allowances, thereby putting downward pressure on the price of allowances. This, in turn, reduces the overall cost for covered entities to comply with AB 32, which reduces the potential costs that would be borne by consumers, businesses, energy ratepayers, and the economy at large. While the administration has provided some information to suggest that proposed activities

may reduce GHG emissions at some level, there is significant uncertainty regarding how much emissions would be reduced by the administration's proposed investments, thereby making it unlikely that the total package of activities proposed by the Governor would maximize GHG emission reductions.

Proposed Activities Could Contribute to GHG Reductions. . . . Departments have provided our office with some research and other information suggesting that certain types of activities proposed in the plan have the potential to reduce GHG emissions. For example, according to CDEA, the proposal to fund dairy digesters would reduce GHG emissions by 15,000 to 21,600 metric tons per year by capturing the methane emissions from animal waste. In addition, wetland restoration could sequester GHG emissions. According to DFW, estimates of the carbon storage potential from restored wetlands and meadows range widely, but can be as much as 25 metric tons of CO₂e per acre restored per year. The amount of carbon stored depends on numerous factors, including: (1) the type of wetland, (2) whether the land is adequately maintained, (3) the type of vegetation in the ecosystem, (4) the rate at which the soil accumulates, and (5) whether the restoration increases methane emissions.

. . . But Administration Has Not Estimated Likely Reduction Amounts. While some information provided to our office indicates that certain types of proposed activities may reduce GHG emissions at some level, the administration did not conduct any analysis to identify which activities would provide the greatest level of GHG emission reductions. In fact, for some programs, the administration has been unable to provide any data or research to substantiate how much the proposed activity would reduce GHG emissions. For example, at the time of this analysis, both Caltrans and CalFire were unable to provide data

quantifying the potential emission reductions of their proposed activities. In addition, some of the information provided by departments may not be applicable to California. The lack of data makes it difficult for the Legislature to determine how much of a reduction these activities are likely to achieve for the amount proposed to be spent.

Moreover, the type of analysis that would have been most helpful would have included an evaluation of the relative marginal costs and benefits of the different investments. Without this type of analysis, the state has little information with which to make investment decisions. Lack of analytical information leads to increased risk that the activities the state chooses to fund will not achieve the greatest return on investment. While we acknowledge that good data is not always available and this type of rigorous analysis is difficult, we nonetheless find that an effort to estimate potential outcomes would provide important information to allow the Legislature to make informed decisions on how to achieve the greatest return on investment with these hundreds of millions of dollars in new state funds.

Some Activity May Have Happened on the Natural. The lack of an analysis evaluating the degree to which the proposals would result in GHG emission reductions is further complicated because it is unclear to what extent some proposed programs are subsidizing activities that would have happened on the natural (meaning without the support of cap-and-trade auction revenues). This is important because to the extent that GHG reductions would have happened even in the absence of additional funding, the state's efforts do not actually yield additional *net* emission reductions. For example, it is unclear to what extent the incentives provided by ARB's low-emission vehicle program can be credited with consumers' decision to purchase one of these vehicles. This is because some consumers would have purchased

more fuel-efficient vehicles on their own to save on fuel costs, even without a rebate. Likewise, SGC's sustainable communities grant program would provide grant funding for projects such as bike lanes or sidewalks near transit stations that developers might have built anyway to meet local demand, even without the additional funding.

Reduction Levels Would Depend on Specific Projects Selected. The fact that many of the proposals included in the Governor's expenditure plan are grant programs also adds to the uncertain outcomes of the plan. While some of the activities that would ultimately be funded by these programs might be effective at reducing GHG emissions, the level of benefits achieved would depend on the specific projects selected. For example, DFW proposes to restore ecosystems throughout the state to increase the capacity of these lands to store carbon. While ecosystem restoration can reduce GHG emission levels, the total level of reductions from restoration would depend on several factors, including the type of ecosystems restored and the number of acres restored. Similarly, the actual GHG emission reduction benefits that could result from the proposed energy efficiency programs at DGS would also depend on the specific projects selected. The benefits could vary from project to project depending on factors such as the current condition and type of facility, its location, and its current energy consumption levels.

The administration's expenditure plan also includes proposals for several research-related programs, including research for state demonstration forests and evaluations of GHG emissions associated with fertilizer application. This research may have merit and some impact on GHG emissions in the future. However, it is impossible to predict the outcomes or discoveries that will result from the proposed research activities, and those outcomes might depend on exactly how the research is directed. This makes it

unclear what the actual GHG emission reductions would be. It is possible that state funded research could contribute to meaningful technological advancements leading to significant GHG emission reductions in the future, but it is also possible that the research would not yield such benefits.

Some Outcomes Would Depend on Changes in Behavior. In addition, the amount of GHG reductions for some proposed programs would depend on changes in behavior that are difficult to predict. For example, the administration assumes that the high-speed rail, SGC, and Caltrans proposals would result in some individuals shifting their mode of transportation, resulting in a net reduction in vehicle miles traveled in cars. While such changes might very well occur and could result in net GHG emission reductions, it would be difficult to predict with precision the likely marginal net GHG reduction due to these efforts. This uncertainty increases the risk that the administration's plan would not achieve its maximum potential emission reductions.

Some Reductions Would Likely Occur Beyond 2020

We also find that some proposed activities would not contribute significant GHG reductions before 2020, which as mentioned above, is the statutory target for reaching 1990 emissions levels. For example, plans for the high-speed rail system indicate that the first phase of the project will not be operational until 2022. Moreover, the construction of the project would actually generate GHG emissions of 30,000 metric tons over the next several years. The HSRA plans to offset these emissions with an urban forestry program that proposes to plant thousands of trees in the Central Valley. We also note that HSRA's GHG emission estimates for construction do not include emissions associated with the production of construction materials, which suggests that the amount of

emissions requiring mitigation could be much higher than currently planned. Therefore, it is possible that the construction of the IOS may result in a net increase in GHG emissions, even when accounting for proposed offsets.

Similarly, the proposed research projects, forestry, and ecosystem restoration activities might not achieve much of their GHG emission reductions until after 2020. For example, research that results in technological breakthroughs and successful findings might take years to implement; and trees and ecosystems take time to grow and recover.

Plan Raises Several Implementation Issues

Plan Lacks Coordinated Approach to Metrics and Oversight. Under the Governor's proposed approach, each department will be responsible for developing its own set of criteria to determine how to spend its GGRF allocation. This raises several concerns. First, departments will not necessarily have a means to evaluate the potential GHG emission reductions of proposed projects. While ARB intends to provide metrics to departments to evaluate program outcomes, they do not intend to provide metrics to departments to assist in their investment decision-making process. Furthermore, the administration will not provide a means for departments to evaluate potential co-benefits, such as public health impacts. Consequently, it is unclear whether these departments—most of which have no experience evaluating GHG emission reduction programs—will be able to knowledgeably identify the specific activities most likely to reduce GHG emissions.

Second, our understanding is that the administration does not intend to provide departments with specific guidance on how to weigh GHG emission reductions compared to co-benefits or other considerations when evaluating how they will spend their appropriations. It is

therefore unclear, for example, what criteria departments administering grant programs will use to evaluate grant proposals, and whether the level of GHG emission reductions will be given top priority in the scoring of those proposals. Third, the administration has not established GHG reduction goals for the various programs proposed for funding. So, while many programs might ultimately demonstrate that they reduced GHG emissions, it will not be clear whether they achieved more or less than what had been expected at the time the Legislature approved funding for the program.

Coordination Issues Could Affect Certain Programs. In our report *Energy Efficiency and Alternative Energy Programs* (December 2012), we found that the state lacks a comprehensive framework that fully coordinates the state's energy programs. Based on our conversations with CSD and the California Public Utilities Commission (CPUC), it seems that they are making greater efforts to coordinate their programs. As the state makes additional funding available for these types of purposes, it will be important to continue such coordination efforts. For example, under the proposed expenditure plan, CSD would receive \$80 million in additional funding for its low-income weatherization program, which is a statewide program serving low-income utility customers in investor-owned utility (IOU) territory as well as non-IOU territory. We also note, however, that CPUC has directed IOUs to establish similar programs with the goal of funding 100 percent of all cost-effective, energy efficiency projects in low-income communities in each IOUs respective territory by 2020. Based on information from both CSD and CPUC, the two departments are working to coordinate their existing programs to reduce the potential for duplication. Since the Governor's budget would provide additional funding to low-income energy efficiency programs, it would

be important for CPUC to consider if adjustments should be made to IOU programs in order to ensure the cost-effectiveness of both programs. The Governor's expenditure plan also includes a proposal from DGS that would increase the amount of renewable energy at state buildings. This would require that DGS coordinate with the state's energy agencies (such as CPUC) to ensure that the additional electricity generation is accounted for in the state's energy procurement process.

GGRF May Not Be Appropriate Fund Source for SWP. The SWP is a large water storage and delivery system that provides water to homes and farmland throughout the state. Currently, the vast majority of SWP expenditures are funded by payments from the water agencies ("water contractors") that receive water from the project, as they are the direct beneficiaries of the project. The generating unit upgrades proposed by DWR would benefit water contractors by (1) reducing the amount of electricity purchased in order to operate the SWP, (2) reducing the cost SWP would have to pay to purchase allowances to comply with AB 32, and (3) reducing the water used to generate energy, making the water available for delivery to water contractors when needed. Thus, revenues from those contractors may be a more appropriate source for funding these upgrades rather than GGRF. Accordingly, we would recommend that the Legislature reject the proposed use of \$10 million in cap-and-trade auction revenues for this purpose. We note that denying this request does not prevent DWR from performing the upgrades using contractor funds if the department considers the upgrades necessary.

Other Options Available for Legislative Consideration

In addition to considering proposals included in the Governor's budget, the Legislature might want to consider additional options for investing

cap-and-trade revenue. For example, we describe below potential options such as increasing investments in emerging technologies, alternative fuels and transportation, as well as expanding eligibility for the existing program to implement Proposition 39. Many of these options could align with the Legislature's long-term energy goals such as reducing the state's dependency on traditional fuels, increasing the integration of renewables into the electricity grid, and providing funding for public entities to make energy efficiency upgrades. The likely return on investment of these options is unknown. As with other proposals, the Legislature would want to evaluate the potential costs and GHG reductions prior to allocating funds for any of these options.

AB 32 COI Fee. The ARB's 2008 Scoping Plan considers several uses of cap-and-trade revenue, including the potential use of auction revenue to support the costs of administering AB 32. As we described above, such administrative costs are currently paid by the AB 32 COI fee. One option the Legislature could consider is using cap-and-trade revenue to support these costs, thus eliminating the need for the COI fee. This would reduce covered entities' overall cost of compliance with AB 32.

Emerging Technologies. Another option the Legislature could consider is investing in emerging technologies. For example, the Legislature has expressed its interest in the development of energy storage technology and the integration of energy storage into the electricity grid by directing the CPUC to explore options for expanding the use of energy storage by the state's IOUs. However, widespread use of energy storage technology has been limited due to high implementation costs. Carbon capture and sequestration (CCS) is another emerging technological process that is designed to capture carbon dioxide emissions from large industrial sources that burn fossil fuel

or biomass. The technology does this by injecting those emissions into a geological formation that prevents the carbon from being released into the atmosphere. For example, Hydrogen Energy California in Kern County is a pilot project that injects captured emissions into the ground to increase oil production. The ARB's cap-and-trade regulation includes provisions for covered entities to potentially use CCS technology in order to reduce their GHG emissions, thus reducing the compliance obligation. Like energy storage technology, CCS generally is considered cost-prohibitive. Additional funding for these or other emerging technologies, however, could encourage their development, much like the administration has proposed for anaerobic digesters (CalRecycle) and biomass facilities (CDFR). As mentioned above, the Legislature would want to evaluate the potential costs and benefits of investing in these technologies prior to providing funding.

Alternative and Renewable Fuel and Vehicle Technology (ARFVT) Program. The California Energy Commission (CEC) currently administers the ARFVT—a program geared toward the development and improvement of alternative fuels and alternative fuel technology. Funded primarily by vehicle license and smog abatement fees, the program has an annual budget of roughly

\$100 million and provides grants and loans to public agencies, private businesses, public-private partnerships, and vehicle and technology consortia. In order to encourage further development of these fuels and technologies, the Legislature could consider providing additional funding for these types of investments.

Proposition 39 Program. Passed by the voters in November 2012, Proposition 39 changes corporate income apportionment resulting in increased tax revenues. The measure also requires that for the first five years of implementation a portion of these revenues be used to improve energy efficiency and expand the use of alternative energy in public buildings. The *2013-14 Budget Act* appropriates a total of \$467 million to support a new grant program, a new revolving loan program, and energy-related workforce training for schools and community colleges. The budget also required the CEC to develop guidelines for schools and community colleges to evaluate projects' potential energy benefits. The language of Proposition 39 anticipated additional eligible candidates for this funding—including public hospitals, prisons, and other state buildings. The Legislature could use some cap-and-trade auction revenue to expand Proposition 39 to other public projects besides those at schools and community colleges.

LAO RECOMMENDATIONS

As previously discussed, the amount of revenues that the state will receive from cap-and-trade auctions will be significant, particularly in the long run. Compared to a different mix of investments that could be made with the cap-and-trade auction revenue, the Governor's proposal is unlikely to maximize GHG emission reductions. Therefore, the Legislature will want to consider the most effective use of this revenue. Below, we outline

recommendations that would help improve the likelihood that the state achieves quantifiable GHG emission reductions with this new funding.

Consider Full Array of Options to Meet Legislative Priorities

The Legislature has many options when considering how to use cap-and-trade auction revenue. In appropriating the funding, we

recommend that the Legislature consider a full array of options to help achieve the goals of AB 32 and meet legislative priorities. For example, the Legislature may decide that, while it approves of the Governor's general overall approach to appropriating auction revenue, it may want to increase or decrease funding for specific programs in order to more closely align with legislative priorities or to increase the likelihood that the total package of proposals will maximize GHG emission reductions. In addition to the Governor's budget proposals, the Legislature may wish to consider options like those we discussed above, as well as additional options that would reduce GHG emissions.

In considering its funding options, the Legislature will also want to consider potential legal risks. The use of fee revenue is generally guided by constitutional constraints. While the recent ruling from the superior court found that auction charges constitute legal regulatory fees, it is subject to appeal and does not create a legal precedent. It is possible that there will be additional court decisions in the future that affect how cap-and-trade auction revenues legally can be used. Given these legal uncertainties, funding certain activities with these revenues might be riskier than other activities. Therefore, the Legislature may want to consult with Legislative Counsel when considering its options for spending auction revenues.

Approve ARB Positions but Expand Scope

We find that ARB's proposal to create metrics for the departments to use in order to evaluate the effectiveness of their GGRF-funded projects has merit. As such, we recommend that the Legislature approve the ARB's request for \$2.6 million and ten positions to develop these metrics.

In addition, we recommend the Legislature direct the board to use this staff to develop metrics for departments to use in order to prospectively evaluate the potential GHG emission benefits of proposed projects as well as direct ARB to establish a set of guidelines that includes direction for departments regarding how they should incorporate these metrics into their decision-making processes. Having such metrics to use as part of departments' decision-making process when determining how program funding is spent would provide greater certainty regarding GHG emission reductions for potential projects. While this requirement might delay getting funding "out the door" by a short while, we find that such a short delay would be worthwhile if this were to increase the likelihood that the state could better ensure that the most beneficial projects are being funded.

In order to ensure that all departments use a consistent set of criteria to develop and implement their programs, the ARB should develop guidelines on how criteria such as potential GHG impacts and co-benefits for grant applications are to be weighted. These guidelines should include how the metric is to be used as part of departments' decision-making process. Guidelines should also include parameters and direction for departments' grant making programs. These parameters should align with the primary goal of maximizing GHG emission reductions in a cost-effective way. We further recommend that the Legislature direct the administration to establish GHG reduction goals for each program funded by auction revenues. This would allow departments and the Legislature to evaluate the effectiveness of these programs relative to what was expected at the time of legislative approval.

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This report was reviewed by Brian Brown. The Legislative Analyst's Office (LAO) is a nonpartisan office which provides fiscal and policy information and advice to the Legislature.

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