Cap-and-Trade Auction Proceeds
Third Investment Plan:

Fiscal Years 2019-20 through 2021-22

January 2019

State of California

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PROGRAM WEBPAGE

For more information on this topic,
please see the program website for Administration activities at:
http://www.arb.ca.gov/auctionproceeds.

DOCUMENT AVAILABILITY

Electronic copies of this document in English and Spanish and related materials can be found at: www.arb.ca.gov/cci-investmentplan. Alternatively, paper copies may be obtained from the California Air Resources Board's Public Information Office, 1001 I Street, 1st Floor, Visitors and Environmental Services Center, Sacramento, California, 95814, (916) 322-2990.

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PUBLIC INPUT

Two workshops were held during September 2018 in Fresno and Los Angeles to obtain public input in response to the Cap-and-Trade Auction Proceeds Draft Third Investment Plan: Fiscal Years 2019-20 through 2021-22.

The California Air Resources Board held a public hearing November 16, 2018 to obtain public input on the Cap-and-Trade Auction Proceeds Revised Draft Third Investment Plan: Fiscal Years 2019-20 through 2021-22.

Written comments submitted for the workshops and hearing are available at: http://www.arb.ca.gov/cci-investmentplan.

LIST SERVE FOR DISTRIBUTION OF NOTICES

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Agency Abbreviations

CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CalOES	California Governor's Office of Emergency Services
CalRECYCLE	California Department of Resources Recycling and Recovery
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CHSRA	California High-Speed Rail Authority
CNRA	California Natural Resources Agency
Coastal Commission	California Coastal Commission
Conservation Corps	California Conservation Corps
CPUC	California Public Utilities Commission
CSD	California Department of Community Services & Development
DWR	California Department of Water Resources
SCC	California State Coastal Conservancy
SGC	California Strategic Growth Council
WCB	California Wildlife Conservation Board

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

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Executive Summary

California is investing more than $9 billion of Cap-and-Trade auction proceeds through the California Climate Investments program. Agencies, individuals, and businesses invest these funds in the State's low carbon future by providing cleaner vehicles and energy, more transit options, modern housing near jobs and services, additional tree cover, forest and watershed improvements, healthy soils, recycling opportunities, and housing upgrades to cut energy use.

In the first Investment Plan, the State focused on reducing greenhouse gas (GHG) emissions. Through an iterative, annual budget process with the Legislature, and the development of a second Investment Plan, investments continued to emphasize GHG emission reductions, support vulnerable communities, improve local air quality, and provide other benefits. The current suite of programs is achieving these objectives and advances not just the climate and equity goals in the transportation, energy, natural and working lands, and waste sectors, but also the additional priorities established by the previous Administration and the Legislature. California Climate Investments programs now reach even more people, homes, businesses, and communities statewide. The success and evolution of California Climate Investments set the stage for the next decade in which the existing programs can expand and innovate to support a statewide transformational shift toward a more sustainable future.

Californians and our communities need transformative investments now. These investment programs, coupled with community leadership and leveraged with additional support, can, and must, accomplish more. First, the incentives provided by California Climate Investments must continue to support individuals, agencies, businesses, organizations, and communities as they envision and develop a low carbon, safe, accessible California. Second, the California Climate Investments programs can produce even greater GHG emission reductions and other benefits. California Climate Investments programs can improve air quality and provide important health benefits, support jobs that are needed for disadvantaged and low-income communities to transition to a low carbon future, fund research needed to further reduce GHG emissions, and prepare for climate change by creating more resilient communities, infrastructure, and natural lands. Third, we know that disadvantaged and low-income communities are disproportionately burdened by climate change. These same communities tend to face greater barriers to accessing these funds and successfully implementing projects that let them participate in the climate solution. To reach all Californians, we must improve funding equity and provide more investment benefits to these communities.

Investment Plan Recommendations for the Legislature

1. Continue to invest in existing programs and prioritize programs that:
   - Emphasize meaningful community input in program modifications and project solicitation and design, and fund community-led projects, both community-wide and small-scale.
   - Achieve near-term climate and health benefits and contribute to long-term transformation to low carbon communities and ecosystems that are adaptable and resilient.
2. Provide funding certainty over multiple years for more of the existing California Climate Investments programs to better support Legislative priorities.
3. Support job training and apprenticeship opportunities, with a focus on disadvantaged communities, to provide the state's workforce with the job skills necessary to transition to a low carbon economy.

This Investment Plan recommends continued funding for existing California Climate Investments programs and additional funding for job training and apprenticeship opportunities to support the state's transition to a low carbon economy.
In public workshops designed to solicit feedback on California Climate Investments, stakeholders consistently asked for jobs and job training opportunities, particularly for priority populations. These public comments are in alignment with the requirements of AB 398[1], which directed the Workforce Development Board to report to the Legislature on the need for increased education, career technical education, job training, and workforce development resources to help industry, workers, and communities transition to economic and labor-market changes related to statewide GHG emissions reduction goals. This Investment Plan recommends additional funding to support these job training needs identified by both the Legislature and the public.

It should be noted that the Cap-and-Trade Program is a market-based mechanism that places a statewide cap on GHG emissions by issuing a limited number of allowances per year. The number of state allowances purchased and the selling price of future allowances are uncertain because they can be affected by factors that are difficult to predict, including overall economic activity, covered entities' cost of emission reducing alternatives, market expectations about future allowance price, industry expectations about future statutory or regulatory changes, and the degree to which other state policies reduce GHGs. Consequently, annual revenues generated from Cap-and-Trade auction proceeds are uncertain and may potentially be lower in the future than the amount of auction proceeds generated in the past.

In addition, over the past several years, the Legislature has committed 60 percent of Greenhouse Gas Reduction Fund (GGRF) monies to continuous appropriations for transportation, transit, and housing programs, while also committing to ongoing funding

[1] AB 398 (E. Garcia, Chapter 135, Statutes of 2017).

for manufacturing tax credits and fire prevention activities. Therefore, even though there may be billions more in Cap-and-Trade auction proceeds available in the coming years, the amount of Cap-and-Trade proceeds available for appropriation to both existing and additional programs may be considerably less than in previous years.

Fortunately, the California Climate Investments program has a solid foundation established by past budget appropriations, legislative direction, and the hard work and commitment of State agencies, project partners, and community members. It is consistently producing tangible and important benefits statewide. The continuing evolution of California Climate Investments allows the focus of this Investment Plan to extend beyond individual programs to the broad potential for true transformation of California's neighborhoods and communities within the next decade. Our State's ambitious climate goals require innovation, inclusive action, and an optimistic mindset. While these investments alone will not achieve the State's ambitious climate, air, and equity goals, they are a critical step on California's path to transform our State to a low carbon and resilient future.

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

I. Introduction

California is investing more than $9 billion of Cap-and-Trade auction proceeds in programs designed to help meet the State's climate, air quality, and environmental justice[2] goals. This Cap-and-Trade Auction Proceeds Third Investment Plan: Fiscal Years 2019-20 through 2021-22 (Investment Plan) builds on ongoing accomplishments in implementing previous Investment Plans; notably, the creation and implementation of programs that directly reduce GHG emissions and benefit disadvantaged and low-income communities. This Investment Plan identifies current funding priorities and future opportunities to continue to create an equitable, sustainable future. This Investment Plan also identifies the need for broad transformational change that California Climate Investments can support as the State works toward its 2030 climate target, the new policy of 100 percent clean energy by 2045,[3] and the new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045.[4]

The first (2013) and second (2016) Investment Plans[5] identified funding priorities for early investments made with the State's portion of auction proceeds, called California Climate Investments. In accordance with statutory requirements, the previous Investment Plans identified the State's greenhouse gas (GHG) emission reduction targets and goals, analyzed gaps in State strategies to meet those goals, identified priority investments that would achieve feasible and cost-effective GHG emission reductions,[6] and included statutory investments minimums for disadvantaged communities.[7] These Investment Plans also focused recommendations on quantifiable and direct GHG emission reductions at a project level.

In implementing the objectives in previous Investment Plans, the Legislature has appropriated funding from the Greenhouse Gas Reduction Fund (GGRF) to California Climate Investments. In 2014, 60 percent of GGRF monies were committed to continuous appropriations for transportation, transit, and housing programs. In 2017 and 2018, the Legislature also committed to providing ongoing funding for manufacturing tax credits[1] and fire prevention activities.[8] These ongoing expenditures decrease the funding available each year for other priorities. Drawing from the Governor's annual budget proposal, the Legislature appropriates the remaining funds annually to other California Climate Investments programs that provide grants, vouchers, and other funding incentives to support climate goals.

Proceeds have fluctuated with each auction cycle and future proceeds are unpredictable, which highlights the importance of periodically evaluating the California Climate Investments program and appropriating funds judiciously and deliberately. It is

[2] Discussion of environmental justice is available at: https://calepa.ca.gov/envjustice/.
[3] SB 100 (De León, Chapter 312, Statutes of 2018).
[4] Executive Order B-55-18 to Achieve Carbon Neutrality.
[5] Investment plans are available at: www.arb.ca.gov/cci-investmentplan.
[6] AB 1532 (Pérez, Chapter 807, Statutes of 2012).
[7] SB 535 (De León, Chapter 830, Statutes of 2012).
[8] SB 901 (Dodd, Chapter 626, Statutes of 2018).

more important than ever to carefully consider new expenditures and ensure that existing programs are maximizing priority benefits with their appropriations.

Collectively, California Climate Investments now includes nearly 40 programs administered by 19 State agencies. Projects span the State and major sectors that affect GHGs, including transportation, land use, energy, natural and working lands, and waste. These produce quantifiable GHG benefits and other economic, environmental, and public health benefits, including lower energy and transportation costs, better access to jobs and job training, reduced criteria air pollutant and toxic air contaminant emissions, and more resilient ecosystems.

Investments implemented through 2017 will reduce an estimated 23.2 million metric tons of carbon dioxide equivalent ($MMTCO_2e$), plus reductions in the range of 64.9 to 84.1 $MMTCO_2e$ expected from full implementation of the High-Speed Rail system over the first 50 years of its operating life. More than half of the $2 billion in projects implemented through 2017 benefits communities disproportionally burdened by, and vulnerable to, multiple sources of pollution. Agencies continue to implement the additional $6 billion appropriated by the Legislature with even more stringent requirements for investing in disadvantaged and low-income communities.[9,10]

In 2017, the Legislature passed Assembly Bill (AB) 398,[1] which identified seven additional funding priorities for California Climate Investments, and requires a report on a workforce development strategy for a low carbon economy. These new priorities reinforce and expand on the seven original investment priorities established in AB 1532 (Box 1)[6], and the AB 1532 requirement, as feasible, to support air quality, jobs, and disadvantaged communities and lessen the impacts of climate change. Focusing future appropriations on the AB 398 priorities will help meet the State's short- and long-term climate targets, improve air quality, sustain natural and working lands, and prepare the State for climate impacts that cannot be avoided.

[9] 2018 *Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds*. Available at: www.arb.ca.gov/cci-annualreport.
[10] AB 1550 (Gomez, Chapter 369, Statutes of 2016).

Box 1. Legislative Priorities in Addition to GHGs

Legislative Priorities in Addition to GHGs

AB 1532

1. Energy Efficiency and Renewable Energy
2. Low Carbon Transportation including Transit, Freight, and Advanced Technology Vehicles and Fuels
3. Natural Resources: Water Use and Supply, Resource and Land Conservation and Management, Forestry, and Sustainable Agriculture
4. Strategic Planning for Sustainable Infrastructure, Transportation, and Housing
5. Waste Diversion, Reduction, and Reuse
6. Research, Development, and Deployment of Innovative Technologies and Practices
7. Partnerships for Local and Regional Program Implementation

AB 398

1. Air Toxics and Criteria Pollutants
2. Low and Zero Carbon Transportation
3. Sustainable Agricultural Practices
4. Healthy Forests and Urban Greening
5. Short-lived Climate Pollutants
6. Climate Adaptation and Resiliency
7. Climate and Clean Energy Research

AB 398 also requires a report on Workforce Development and Job Training

During the comment and workshop period of this Investment Plan, and in numerous public discussions on California Climate Investments in 2016, 2017, and 2018, organizations, agencies, communities, and other stakeholders identified aspects of the California Climate Investments program that should be improved. This Investment Plan validates the need for these improvements by characterizing them as “gaps” that can be addressed through recommendations made in this document. In making these recommendations, this Investment Plan highlights the opportunities California Climate Investments present to help the State achieve the transformational changes needed for a low carbon future. These include key opportunities for supporting environmental justice, equitable project access and outcomes, especially with respect to health; technical assistance; community-driven projects, both small scale and community-wide; more employment opportunities; and better outcome assessment. These opportunities also include incorporating adaptation and resiliency components into current projects

that will support long-term 2045 energy and carbon neutrality goals, as well as 2050 climate targets.[11]

The current suite of California Climate Investments programs is well-positioned to continue implementing important projects and address these gaps. Many programs have increased technical assistance and are focused on providing meaningful benefits, and doing more in the future is a priority recommendation. Now is the time for existing California Climate Investments programs to identify long-term investments that will transform communities to help meet California's climate goals, align with Legislative and Administration priorities to further decarbonize the economy, advance clean air goals, and improve ecosystem resiliency.

This Investment Plan builds on the successful ongoing implementation of previous Investment Plans and identifies how existing programs can further the priorities identified by the Legislature as well as address the gaps identified by stakeholders. To better communicate the achievements of California Climate Investments to the Legislature and public, as well as meet requirements of Senate Bill (SB) 1464,[12] this Investment Plan includes a description of metrics for agencies to use in reporting the outcomes of California Climate Investments in a consistent and transparent way. This Investment Plan also describes, as required in SB 1464, how existing California Climate Investments programs support the State's climate regulations, policies, and programs.

II. State Climate Objectives and Strategies

In 2006, the Legislature passed AB 32, the California Global Warming Solutions Act of 2006,[13] which marked the beginning of the State's climate change program and secured the State's role as a national and global leader in reducing GHG emissions. The landmark legislation built on decades of environmental leadership and stewardship in the State, and set the stage for continuing progress to reduce both GHG emissions and air pollution. In 2016, the Legislature passed SB 32, which set a 2030 GHG emission reduction target of 40 percent below 1990 levels, or 260 $MMTCO2_e$.[14] In 2018, the Legislature passed SB 100, which commits the State to a policy of 100 percent renewable and zero-carbon electricity generation by 2045 for energy supplying California retail customers and State agencies. Governor Brown also signed Executive Order B-55-18 in 2018, which establishes a statewide goal to achieve net carbon neutrality, the point at which the removal of carbon pollution from the atmosphere meets or exceeds emissions, by 2045 or earlier. The Executive Order specifies that net carbon neutrality is in addition to reducing greenhouse gas emissions, and emphasizes

[11] The Under2Coalition memorandum of understanding (MOU) agreement commits each co-signing government to limit emissions to 80 to 95 percent below 1990 levels. More information is available at: https://www.under2coalition.org/under2-mou.
[12] SB 1464 (De León, Chapter 679, Statutes of 2016) requires the Investment Plan to assess how proposed investments interact with current State regulations, policies, and programs, evaluate if and how those proposed investments could be incorporated into existing programs, and recommend metrics that would measure progress and benefits from the proposed programmatic investments.
[13] AB 32 (Núñez, Chapter 488, Statutes of 2006).
[14] SB 32 (Pavley, Chapter 249, Statutes of 2016).

the importance of carbon sequestration in natural and working lands, air quality, economic resiliency, and climate adaptation and biodiversity, including the protection of the State water supply, water quality, and native plants and animals. These issues are already being addressed in California Climate Investments programs that support conservation easements, ecosystem restoration, reduced emissions of criteria pollutants along with GHGs, and workforce development. California Climate Investments that incentivize solar energy support renewable energy, and all California Climate Investment programs are designed to help achieve the State's ambitious climate and air pollution strategies.

A. Scoping Plan Climate Strategy

AB 32 requires the California Air Resources Board (CARB) to develop a Climate Change Scoping Plan (Scoping Plan) that describes the approach to reduce the State's GHG emissions to 1990 levels by 2020, and to update the plan at least once every five years. The Scoping Plan is discussed in this Investment Plan because it provides an overview of several key regulations, policies, and programs that interact with California Climate Investments. CARB approved the first Scoping Plan in 2008 and the First Update to the Scoping Plan in 2014. CARB's 2017 Climate Change Scoping Plan[15] identifies how the State can meet the 2030 GHG emission reduction target while advancing the State's 2050 target of reducing GHG emissions to 80 percent below 1990 levels. The 2017 Scoping Plan was a multi-agency effort to identify a suite of economically viable and technologically feasible policies, based on a balanced mix of strategies that also improve public health, invest in disadvantaged and low-income communities, protect consumers, and support economic growth, jobs, and energy diversity.

California's climate policy portfolio identified in the 2017 Scoping Plan includes:

- Increasing energy efficiency and renewable energy.
- Decreasing dependence on transportation fossil fuels and instead encouraging deployment of alternative fuels.
- Putting millions of zero-emission vehicles on the road.
- Supporting sustainable community development.
- Improving the efficiency of the freight sector and advancing zero-emission technology within the freight and heavy-duty sector.
- Reducing emissions from high global warming potential gases.
- Continuing a Cap-and-Trade Program that caps emissions in our largest economic sectors.
- Investing in our communities throughout the State to further reduce emissions.

Details of the 2017 Scoping Plan policy portfolio are provided in the 2017 Scoping Plan and are summarized in Table 1.

[15] Available at: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

Table 1. Summary of the 2017 Scoping Plan Policy Portfolio

Policy	Primary Objective	Highlights	Implement-ation Time Frame
SB 350[16]	Reduce GHG emissions in the electricity sector.	• Load-serving entities file plans to achieve GHG emissions reduction planning targets while ensuring reliability and meeting the State's other policy goals cost-effectively. • Achieve 50 percent Renewables Portfolio Standard. • Double energy efficiency savings in natural gas and electricity end uses statewide.	2030
Low Carbon Fuel Standard	Transition to cleaner/ less-polluting fuels.	• Reduce carbon intensity of fuels, as included in the Mobile Source Strategy.	2030
SB 1383[17]	Implement Short-Lived Climate Pollutant Reduction Strategy[18] to reduce potent GHG emissions	• Reduce methane and hydrofluorocarbon (HFC) emissions 40 percent below 2013 levels by 2030. • Reduce anthropogenic black carbon emissions 50 percent below 2013 levels by 2030.	2030
Post-2020 Cap-and-Trade Program	Reduce GHG emissions across the largest GHG emission sources	• Continue the existing Cap-and-Trade Program with declining caps to ensure the State's 2030 target is achieved.	Ongoing
California Sustainable Freight Action Plan[19]	Improve freight efficiency, transition to zero-emission operations, and increase competitiveness of California's freight system.	• Improve freight system efficiency by 25 percent by 2030. • Deploy over 100,000 freight vehicles and equipment capable of zero-emission operation and maximize both zero- and near zero-emission freight vehicles and equipment powered by renewable energy by 2030.	2030

[16] SB 350 (De León, Chapter 547, Statutes of 2015).
[17] SB 1383 (Lara, Chapter 395, Statutes of 2016).
[18] CARB. 2016. *Reducing Short-Lived Climate Pollutants in California*. Available at: https://www.arb.ca.gov/cc/shortlived/shortlived.htm.
[19] State of California. California Sustainable Freight Action Plan website. Available at: http://www.casustainablefreight.org/.

Policy	Primary Objective	Highlights	Implement-ation Time Frame
Mobile Source Strategy[20]	Reduce GHG emissions and other pollutants from the transportation sector.	• 1.5 million zero-emission vehicles (ZEV), including plug-in hybrid electric, battery-electric, and hydrogen fuel cell vehicles by 2025,[21] and 4.2 million ZEVs by 2030. • Continue ramp up of GHG stringency for all light-duty vehicles beyond 2025. • Reduce GHG emissions from medium-duty and heavy-duty vehicles via the Phase 2 Medium and Heavy-Duty GHG Standards. • Transition to a suite of innovative clean transit options via Innovative Clean Transit. • Last Mile Delivery: New regulation that would result in the use of low NO_x or cleaner engines, and the deployment of increasing numbers of zero-emission trucks—primarily for class 3-7 last mile delivery trucks in California. • Reduce vehicle miles travelled (VMT), to be achieved in part by continued implementation of SB 375[22] and regional Sustainable Community Strategies; forthcoming statewide implementation of SB 743[23]; and potential additional VMT reduction strategies.[24]	Various

The 2017 Scoping Plan acknowledges the need for incentives, such as California Climate Investments, to support and facilitate regulatory and policy efforts to meet GHG reduction targets. Therefore, while the Scoping Plan does not categorize California Climate Investments project-level emission reductions as a quantified emission reduction policy, these investments are critical to ensuring full implementation of many of the policies that are quantified in the Scoping Plan policy portfolio described in Table 1. While the Scoping Plan does not dictate California Climate Investments

[20] CARB. 2016. *2016 Mobile Source Strategy*. Available at: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.
[21] Executive Order B-16-12.
[22] SB 375 (Steinberg, Chapter 728, Statutes of 2008).
[23] SB 743 (Steinberg, Chapter 386, Statutes of 2013).
[24] CARB. *Potential State-Level Strategies to Advance Sustainable, Equitable Communities and Reduce VMT — for Discussion*. Available at: https://www.arb.ca.gov/cc/scopingplan/meetings/091316/Potential%20VMT%20Measures%20For%20Discussion_9.13.16.pdf.

program priorities, it sets a course, along with other more recent initiatives, to 2030 and beyond.

B. Other State Regulations, Policies, and Programs

SB 1464 directs that, in identifying priority programmatic investments, the Investment Plan assess how proposed investments interact with current State regulations, policies, and programs. The examples discussed in the rest of this section are not a comprehensive assessment, but rather provide additional perspective on the beneficial relationships between California Climate Investments and other State initiatives.

The effort to reduce short-lived climate pollutants (SLCP) provides a good example of how California Climate Investments interact with the Scoping Plan and other State policies. SB 605[25] requires CARB to adopt a SLCP Reduction Strategy. SB 1383[17] establishes SLCP reduction goals. The Scoping Plan quantifies the reductions that will result from implementation of the SLCP Reduction Strategy, which include avoiding landfill emissions, capturing methane from dairies to create electricity and fuel, reducing hydrofluorocarbons (HFC), and other actions. However, converting to or adding advanced technology can be costly. Providing incentives can help offset costs and facilitate early adoption of these actions. California Climate Investments provide incentives for dairy farmers to install digesters for methane capture and use. California Climate Investments also provide funding for public and private entities to divert organic materials from landfills, thereby reducing methane emissions from landfills. In addition, SB 1013[26] authorizes a new program to reduce HFC SLCPs. The program includes an incentive component to reduce HFC-based refrigerants, which will become a California Climate Investment program if the Legislature appropriates GGRF monies for the program. SB 1383 additionally requires CARB and the California Department of Food and Agriculture to adopt a regulation to reduce methane emissions from livestock manure and dairy manure management beginning in 2024, but only if early actions toward methane emission reduction goals are not successful. Thus, incentives for early adoption of new technology could prevent the need for regulations that could pose an economic hardship to regulated entities and delay these emissions reductions for years. In addition, many of the projects implemented through California Climate Investments programs would be delayed or not possible without incentives, and therefore, California Climate Investments are complementary and critical to the overall goal of the SLCP Reduction Strategy and SB 1383.

California Climate Investments are funding the reduction of GHG emissions outside the transportation and energy sectors as well, the most notable example being the early effort to address emissions and carbon sequestration associated with natural lands. Early California Climate Investments in forest health projects that improve forest resiliency to wildfire, drought, and pests are just one example of an effort in the natural and working lands sector to support the State's climate goals. The 2017 Scoping Plan commits the State to finalizing a carbon sequestration and GHG reduction goal for

[25] SB 605 (Lara, Chapter 523, Statutes of 2014).
[26] SB 1013 (Lara, Chapter 375, Statutes of 2018).

natural and working lands, which will give natural resource agencies and programs a specific GHG emission reduction goal to work toward. The 2017 Scoping Plan also directs certain agencies to complete a Natural and Working Lands Climate Change Implementation Plan[27] by November 2018 that will describe the GHG goal and provide a blueprint to achieve it through State-funded conservation, restoration, and management activities. California's approach to sequester carbon and reduce GHGs on natural and working lands will encompass conservation, improved management, and restoration of wildlands, urban forests, farms and ranches, grasslands, coasts, and wetlands. The final Implementation Plan will outline the extent of restoration, conservation, and management activities needed to meet identified climate change goals. California Climate Investments will provide important support for this Statewide, comprehensive effort to stabilize and increase the resiliency of our natural and working lands.

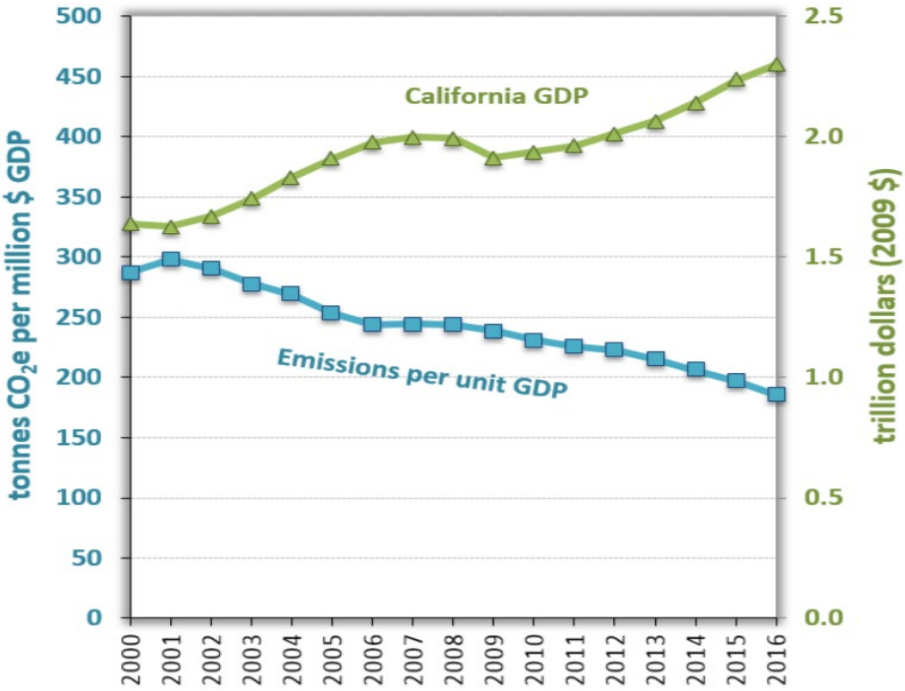
In addition to supporting other State climate initiatives, California Climate Investments have potential to better support local climate strategies. For example, investments could further support the implementation of regional Sustainable Community Strategies adopted under SB 375,[22] implementation of city Climate Action Plans, or the incorporation of project selection criteria that prioritizes projects that are part of a local GHG emission reduction strategy.

In 2016, emissions from routine GHG emitting activities statewide were 429 $MMTCO_2e$, which puts total emissions below the 2020 target of 431 $MMTCO_2e$.[28] The data show that California's GHG emissions continue to decrease and that GHG reduction programs are working. Recognizing that GHG emissions vary from year-to-year, California will continue to implement its GHG reduction programs to ensure the State continues to meet its climate targets in 2020 and beyond. These GHG reductions come while California's economy grows, as shown in Figure 1.

[27] Discussion of the Natural and Working Lands Implementation Plan is available at: http://resources.ca.gov/climate/natural-working-lands/.

[28] CARB. 2018. *California Greenhouse Gas Emissions for 2000 to 2016: Trends of Emissions and Other Indicators.* Available at: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf.

Figure 1. Carbon Intensity of California's Economy



The State must also focus on reductions needed to meet the goals of 100 percent clean energy by 2045, carbon neutrality by 2045, and the 2050 GHG target. California Climate Investments have an important role in supporting these efforts and the many other complementary policies, regulations, and programs needed for future GHG emissions reductions. Agencies should consider other relevant regulations, policies, and programs when designing and implementing California Climate Investment programs.

C. California's Cap-and-Trade Program: Source of Auction Proceeds

California's Cap-and-Trade Program is a key component of the State's GHG emission reduction strategy and is the source of funding for California Climate Investments. Cap-and-Trade creates a statewide limit for California's major sources of GHG emissions, sets the price signal needed to drive long-term investment in cleaner fuels and more efficient energy use, and provides the flexibility to implement the lowest-cost options to reduce GHG emissions.

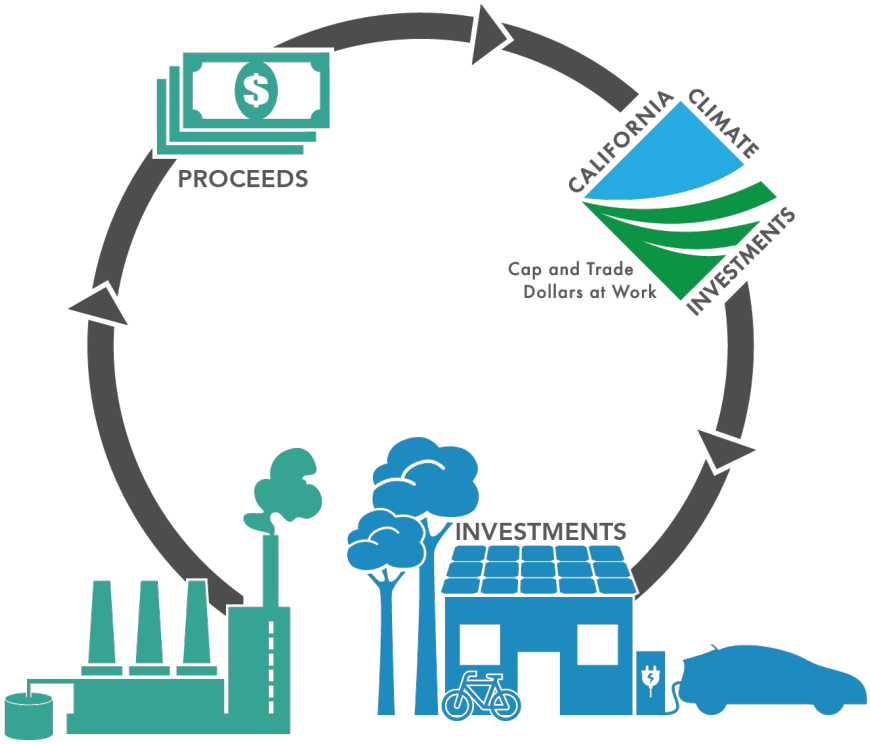
Large emitters responsible for approximately 80 percent of GHG emissions in the State are termed "covered entities" and need an allowance or offset credit for every metric ton of carbon dioxide equivalent emissions they produce each year. Some allowances are distributed to covered entities at no cost, while other (State-owned) allowances can be purchased at the State's quarterly auctions.

Electric and natural gas utilities also receive allowance allocations per the Cap-and-Trade regulation; however, these utilities must use their allowances for the benefit of ratepayers, consistent with the goals of AB 32. Utility allowances sold via quarterly auctions generate a portion of auction proceeds, the use of which is described in Appendix A. Auction Proceeds Allocated to Utilities

D. Greenhouse Gas Reduction Fund

Auction proceeds from the sale of State-owned allowances at quarterly auctions are deposited into the GGRF and are available for the Governor and Legislature to appropriate to State agencies for California Climate Investments. The proceeds are generated from industries and other entities that emit GHGs, as shown in Figure 2.

Figure 2. Overview of California Climate Investments Using Cap and Trade Auction Proceeds

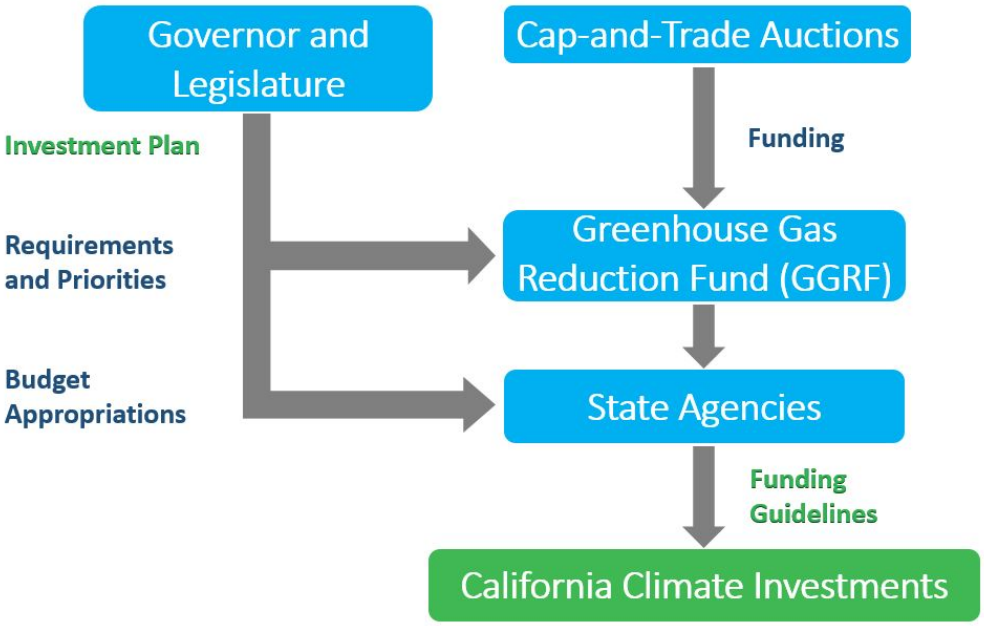


Sixty percent of each auction's proceeds are automatically given to four California Climate Investments programs, identified by the Legislature in 2014.[29] With each auction, 25 percent of the State's proceeds are appropriated to the California High-Speed Rail Authority's (CHSRA) High-Speed Rail Project, 20 percent to the Strategic Growth Council's (SGC) Affordable Housing and Sustainable Communities Program (AHSC), 10 percent to the California State Transportation Agency's (CalSTA) Transit and Intercity Rail Capital Program (TIRCP), and 5 percent to the California Department of Transportation's (Caltrans) Low Carbon Transit Operations Program

[29] SB 862 (Committee on Budget and Fiscal Review, Chapter 36, Statutes of 2014).

(LCTOP). Another portion of the funds are set aside for the tax credit for manufacturers and certain fire prevention activities, and the Governor and Legislature appropriate the remaining funds through the annual State budget process. Figure 3 shows how the Legislature directs the expenditure of monies in the GGRF.

Figure 3. Funding Process and Legislative Direction for California Climate Investments



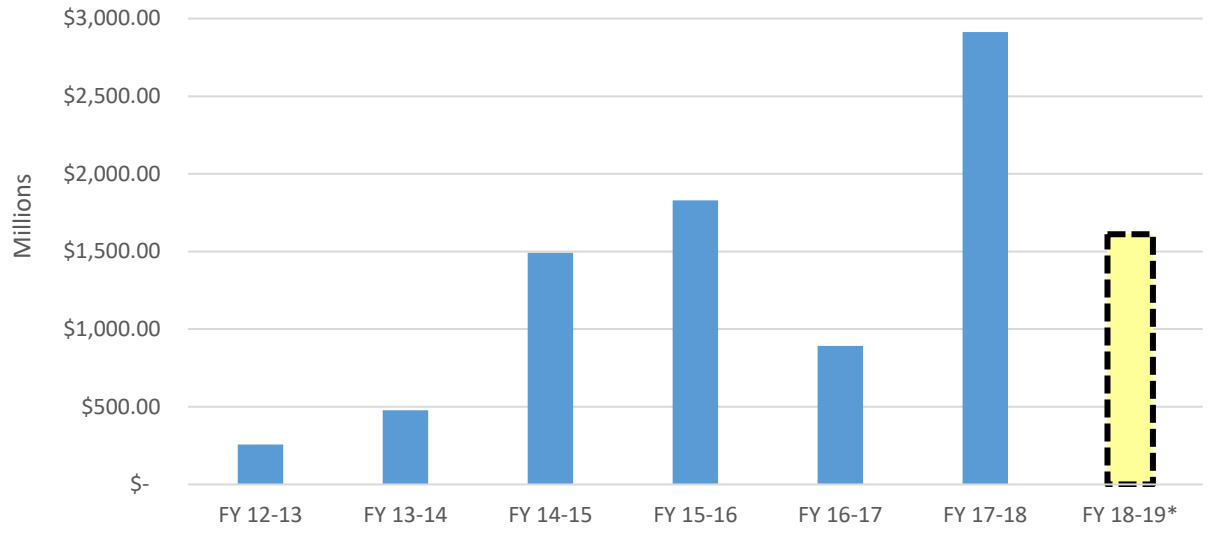
When the Legislature established the GGRF, it set several requirements for California Climate Investments, including that the funds facilitate GHG emission reductions through investments that may include transportation, energy, natural resources, and waste diversion sectors. Legislation also requires a minimum percentage of the investments to benefit disadvantaged communities and low-income communities and households.[7, 10] The 2018 Funding Guidelines[30] refer to the collective grouping of disadvantaged communities, and low-income communities and households, as "priority populations."

Implementing legislation also requires California Climate Investments to maximize other economic, environmental, and public health benefits where applicable and to the extent feasible. Some of these benefits include: fostering job creation; complementing air quality efforts; providing opportunities for community institutions to participate in and benefit from GHG emission reduction efforts; and lessening the impacts of climate change across all communities in the State. The Legislature has expanded the number and types of programs funded through the GGRF, but the foundational objectives of the fund remain and continue to influence how funds are spent.

[30] Available at: www.arb.ca.gov/cci-fundingguidelines.

As of December 2018, auctions have generated over $9.4 billion, which has been deposited in the GGRF. Figure 4 shows auction proceeds for fiscal years 2012-13 through 2017-18, as well as the first two auctions from fiscal year 2018-19. As of June 2018, over $8.4 billion has been appropriated from the GGRF to support California Climate Investments.

Figure 4. Proceeds from the Sale of State-Owned Allowances Deposited in the GGRF



*FY 18-19 totals reflect the first two of four auctions scheduled for FY 18-19

III. Recommendations to Improve Environmental Justice and Support Transformational Change for 2030 and Beyond

California Climate Investments have matured into a popular and effective suite of programs. The first several years of implementing California Climate Investments focused on maximizing GHG emission reductions, rapid fund deployment, and benefitting disadvantaged communities. Through ongoing program implementation, agencies and the public continue to increase their understanding of the influence California Climate Investments programs have on communities statewide and the capacity for projects to achieve multiple benefits. The Legislature and public are now emphasizing additional areas of focus, from greater community assistance and near-term public health benefits to strategic incentives to accelerate the economy-wide transformational changes needed to meet the State's 2030 and 2050 GHG emission reduction targets. These aspects of the California Climate Investments program need attention and are the focus of the recommendations in this Investment Plan (Box 2). California's low carbon future will be spurred and supported by providing Californians, including priority populations, with financial incentives that help them invest in the low carbon economy, develop grassroots transformational projects, thrive as the workforce evolves, and adapt to a changing climate.

Box 2. Investment Plan Recommendations for the Legislature

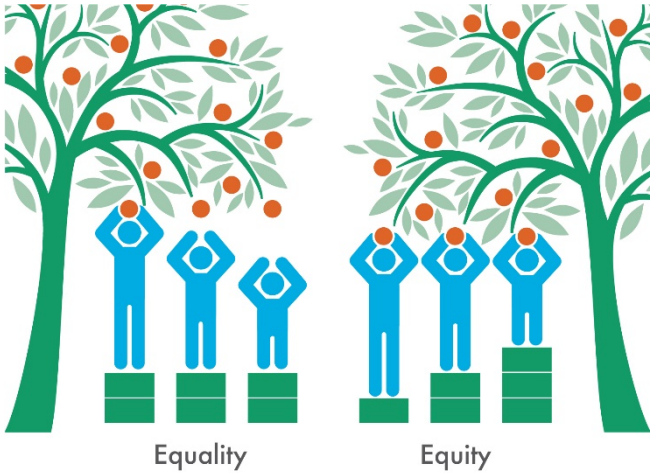
Investment Plan Recommendations for the Legislature

1. Continue to invest in existing programs and prioritize programs that:
   - Emphasize meaningful community input in program modifications and project solicitation and design, and fund community-led projects, both community-wide and small-scale.
   - Achieve near-term climate and health benefits and contribute to long-term transformation to low carbon communities and ecosystems that are adaptable and resilient.
2. Provide funding certainty over multiple years for more of the existing California Climate Investments programs to better support Legislative priorities.
3. Support job training and apprenticeship opportunities, with a focus on disadvantaged communities, to provide the state's workforce with the job skills necessary to transition to a low carbon economy.

A. Enduring Community Benefits

Improving equity and achieving environmental justice are essential components of the State's climate goals and California Climate Investments in particular. The previous Administration, the Legislature, and stakeholders have consistently prioritized access to funding and ensuring that meaningful benefits reach communities most affected by pollution, but there is still room for improvement in this effort. Initially, State agencies implemented programs impartially and did not specifically consider differences in applicants' capacity to pursue California Climate Investments grants. Agencies rapidly realized the inequity of this approach. Communities with greater capacity and resources secured more grants because they had fewer barriers in the application process and were better-equipped to successfully implement projects. Figure 5 illustrates the concept that some individuals need more assistance than others to ensure that everyone can access these funds.

Figure 5. Equality versus Equity



In recent years, agencies, stakeholders, and the Legislature engaged in productive dialogue that resulted in a growing focus on equitable outcomes that meet community-derived needs. The ability to meet the State's long-term climate and air quality goals relies on all Californians; these funds can help those most in need access new technologies, lower energy and transportation costs, and acquire the skills needed for lasting careers in an evolving economy.

Box 3. Requirements to Invest in Priority Populations

Priority Population Requirements

SB 535

In 2012, SB 535 (De León, Chapter 830, Statutes of 2012) required a portion of investments to benefit disadvantaged communities in California. Most of the projects implemented to date have used this framework for targeting investments.

AB 1550

In 2016, AB 1550 (Gomez, Chapter 369, Statutes of 2016) set more rigorous investment minimums for California Climate Investments: at least 25 percent of funding to projects located in disadvantaged communities, and 10 percent of funding to projects located in low-income communities and/or benefiting low-income households. The 2018 Funding Guidelines refer to the communities and households identified in AB 1550 collectively as "priority populations." Investments in the future must target these priority populations.

Agencies administering California Climate Investments have designed programs and selected projects that provide direct, meaningful, and assured benefits to priority populations, consistent with current legislative requirements (Box 3). Although establishing a program is resource intensive, agencies learn from the experience and can make their programs more effective over time. Agencies that have managed their programs for several years have increased capacity to provide better technical assistance and address community needs to provide greater equity and improved

outcomes. Mechanisms exist to share these lessons learned among agencies, and the Legislature may wish to encourage agencies to share with other entities as well. While California Climate Investments alone cannot solve equity or climate issues, it can serve as a model and catalyst for others.

1. Jobs

As the State moves to a low carbon economy, the jobs available and skills needed will change, such as the growing need for skilled workers to perform building audits for energy efficiency installations. In public workshops designed to solicit feedback on California Climate Investments, stakeholders have consistently asked for jobs and job training opportunities, particularly for priority populations. The goal of California Climate Investments with respect to employment is to support jobs with adequate benefits. California Climate Investments also represent an opportunity to continue building the low carbon workforce. In addition, California Climate Investments support indirect jobs associated with the supply chain and induced jobs, which are the result of incomes being spent in the broader economy. A recent report published by the Luskin Center at UC Los Angeles estimated that California Climate Investments funding appropriated through 2016 ($2.2 billion) supported 19,700 jobs in the State.[31]

The Legislature, through the enactment of AB 398[1], also recognized the need for job training opportunities. Specifically, AB 398 requires the Workforce Development Board to report to the Legislature on the need for increased education, career technical education, job training, and workforce development resources to help industry, workers, and communities transition to economic and labor-market changes related to statewide GHG emissions reduction goals. In recognition of these workforce development needs identified by both the Legislature and the public, it is appropriate for California Climate Investments to support job training and apprenticeship opportunities.

Agencies should be evaluating their programs to identify potential employment opportunities and avenues to build California's workforce for transition to a low carbon economy. The Transformative Climate Communities program uses a Workforce and Economic Development Plan to prioritize jobs and job training, and other programs may wish to consider incorporating mechanisms to deliberately prioritize workforce benefits. Opportunities should focus on individuals living in the project area or facing employment barriers. The 2018 Funding Guidelines provide guidance on how agencies can address employment through their programs and CARB's methodology on jobs will provide a mechanism to predict job creation as a result of California Climate Investments and report on job benefits.

2. Outreach, Technical Assistance and Capacity Building

California Climate Investments programs have made significant strides in outreach since the second Investment Plan. Several programs have outreach coordinators to

[31] UCLA Luskin Center for Innovation Report on Employment Benefits from California Climate Investments and Co-investments available at http://innovation.luskin.ucla.edu/CCIJobsStudy.

increase awareness about California Climate Investments opportunities. In partnership with CARB, the Foundation for California Community Colleges is conducting outreach to governmental, community, and consumer groups to raise awareness of California Climate Investments and accelerate California's clean energy economy. As existing California Climate Investments programs mature, agencies will continue to learn how best to reach the communities they serve by using the most effective communication techniques for applicants who may have historically lacked access to these programs. Stakeholders identified a need for more targeted outreach to small businesses, local governments, and community leaders to inform them about California Climate Investments opportunities and how to access grant programs.

Initially, California Climate Investments focused on physically locating projects in disadvantaged communities or providing benefits for these communities. Project location is often important, for example when planting an urban forest that provides shade and recreation, in addition to air quality improvement and carbon sequestration. However, agencies can do more than locate projects strategically. Technical assistance and capacity building help priority populations overcome challenges with accessing funds and become active participants in the transition to a low carbon economy. Administering agencies, community-based organizations, and applicants have communicated a critical need for technical assistance and capacity building, particularly among members of under-resourced communities, rural communities, and priority populations. From farmers to nonprofits to local governments, stakeholders have reiterated that technical assistance is essential to navigate the application process and improve access to California Climate Investments. Helping people and organizations with applications for grants and other incentives has several benefits. First, applicants who receive technical assistance are more likely to submit competitive, successful applications. Second, the project design is more likely to include desirable, community-derived benefits if technical assistance facilitates robust applicant participation in the application development process. Third, applicants who learn how to apply for State grants through technical assistance will build greater capacity in their community for securing these and other sources of funding.

Effective technical assistance takes many forms. Between 2015 and 2016, the Legislature appropriated $2.5 million for technical assistance to SGC, and five administering agencies are implementing the funding using a variety of approaches. A University of California (UC) Davis evaluation of the initial $500,000 received by SGC found that technical assistance played "a unique and important role" in applicants' success.[32] Applicants who used technical assistance were much more likely to win awards. In the subsequent funding cycle, 24 of the 25 award winners received assistance from one or more of the major technical assistance providers. Administering agencies may also fund and implement technical assistance within their programs and are encouraged to develop partnerships with organizations that build local capacity.

[32] UC Davis Report to the Strategic Growth Council available at: http://www.sgc.ca.gov/programs/tech/docs/20170702-AHSC_TA_Eval_Final_Report.pdf.

SB 1072[33] authorizes SGC to develop Climate Collaboratives to improve access to technical assistance and provide guidance on how agencies can implement effective technical assistance. The California Climate Collaboratives also present an opportunity to provide more coordinated technical assistance for all the programs to help ensure that applicants are aware of all the funding options and apply for the program best matched to their project. However, each agency does have expertise in providing assistance with challenges unique to their program. For this reason, the 2018 Funding Guidelines encourage agencies to direct a portion of their appropriations to technical assistance, although additional Legislative appropriations may also be warranted.

3. Community-focused Investments

Recent appropriations reflect stakeholder interest in programs designed to be community-focused, such as the Transformative Climate Communities and Community Air Protection programs. These community-focused programs support coordinated, comprehensive solutions that address multiple local needs. The Transformative Climate Communities Program and Community Air Protection Program require local participation and encourage the communities to take on more leadership in community environmental solutions. These programs provide flexibility in the type of projects funded to allow for community decision-making in project design and implementation. For example, one Transformative Climate Communities project formed a steering committee of more than 160 residents and business owners to select from a suite of proposed California Climate Investment projects. Based on community input, the funded project included affordable housing, residential solar installation and energy efficiency measures, tree planting, park and community garden development, transit service improvement, and bicycle- and car-sharing programs. Local government entities leading Climate Investments projects, such as transit agencies, can also be key partners in community-focused projects. Effective community-led efforts take additional time, which may necessitate legislatively-extended expenditure times for certain programs.

Although not all programs and project types are conducive to multi-faceted, community-scale projects, all programs can develop a more collaborative approach to better understand community needs and how to maximize community-focused benefits. Administering agencies can support Legislative priorities by collaborating with other administering agencies to implement separate but complementary projects. Agencies can also modify existing programs to facilitate community-scale projects, exemplified by the Community Solar Pilot Program, recently created under the Low-Income Weatherization Program. In another example, the Transit and Intercity Rail Capital Program convened a panel of community outreach and technical experts to review major infrastructure projects selected for funding, to ensure the projects maximize benefits to communities with priority populations.

California Climate Investments programs can also support neighborhood, city or even regional projects through small grants. While large-scale projects can help transform

[33] SB 1072 (Leyva, Chapter 377, Statutes of 2018.

entire communities, smaller, less expensive projects expand the reach of California Climate Investments and provide important neighborhood-level benefits, such as a community garden, food rescue and distribution, neighborhood compost, a van pool, a shady sidewalk, home energy audits, community electric bikes and other clean micro-mobility options, education programs to reduce carbon footprint at schools, and traffic calming measures. Although some of these projects are already eligible for funding under various California Climate Investments programs, stakeholders voiced concerns that funding available for small, community-led projects in these areas is inadequate. Efforts are being made in this area; for example, CAL FIRE is supporting small projects through a large grant awarded to California ReLEAF, who administers a small grants program (from $10,000 to $75,000) to fund tree-planting projects by local community organizations.

Several small grants will require more administrative support and time than one large grant, and a historical focus on maximizing dollars for rapid project implementation may have created a bias toward large conventional projects. Additionally, the quantitative benefits of individual small projects may be overshadowed by the possibility of high-profile benefits from massive, statewide projects. Nonetheless, the Legislature and administering agencies should consider using a percentage of funds to support small grants for community-focused projects that showcase the agencies' programs. Small projects can function as an outreach mechanism to garner community interest in California Climate Investments and they build leadership capacity in the community. Small grants can also be used to demonstrate innovative solutions that, if proven, could be scaled up to the program level.

B. Planning and Implementation toward Long-term Climate Objectives

AB 398 clarified the role of the Cap-and-Trade Program from January 1, 2021, through December 31, 2030, and with it the status of the GGRF, in addition to setting funding priorities. Currently, the State continuously appropriates 60 percent of GGRF monies, providing steady, predictable funding for large-scale infrastructure and housing projects. AHSC makes annual investments in affordable housing development located near jobs and other amenities. CHSRA and TIRCP use multi-year funding plans for large infrastructure projects based on these continuous appropriations. LCTOP also receives a continuous appropriation and transit agencies may accrue their annual funding for four years to support a future project. Other programs may benefit from multi-year appropriations to achieve transformative change, improve administrative efficiency, foster capacity-building relationships with stakeholders, and offer more effective outreach. The Legislature could encourage agencies to plan for 2030 and beyond by signaling longer-term funding commitments.

1. Multi-year Funding Commitments

Multi-year funding commitments allow agencies to build meaningful relationships with stakeholders and plan outreach strategies that result in better project applications and more transformative projects. In addition, increased funding certainty would allow agencies to fund projects that might not result in immediate benefits or have predictable

results. One challenge with annual appropriation decisions is that agencies feel pressure to maximize immediate, guaranteed, quantifiable benefits in order to demonstrate that programs are worthy of additional funding the following year. The current appropriation practice discourages agencies from projects that may have excellent returns over time or test innovative technologies or approaches. Also, programs that receive continuous funding can utilize an iterative process, aimed at refining and improving the projects and program each year. If agencies can maximize overall program benefits by thinking long-term about their flagship project types, they may also have the capacity to focus a portion of dollars on small-scale community demonstration projects that can provide meaningful local benefits.

Multi-year funding would also support greater collaboration and coordination among agencies. As the California Climate Investments programs mature, agencies are developing expertise that they can share with sister agencies that may be considering a similar project type or sub-program structure. If existing programs understand how their programs complement each other, they can minimize duplication and focus on projects that capitalize on their area of expertise.

2. Mitigation and Adaptation

The State's longer-term GHG emission targets for 2030 and 2050 will also necessitate more focus on scaling-up proven low- and zero-emission technologies, promoting innovative pilot and demonstration projects, advancing research on approaches to sequester carbon and reduce GHG emissions, and incorporating climate adaptation approaches into project design. The 2017 Scoping Plan identifies GHG-reducing measures the State should take to meet the 2030 climate target, and those measures were summarized in Table 1. Executive Order B-30-15 provides that agencies' planning and investment decisions across the board must take climate change into account and give priority to actions that both build climate preparedness and reduce greenhouse gas emissions. Individual California Climate Investments programs have an important role to play in long-term planning for both climate mitigation and adaptation. The Legislature should support agencies in selecting major infrastructure projects with the 2050 targets in mind, incorporating measures and supporting practices that will help all Californians reduce GHG emissions and adapt to the unavoidable effects of climate change whenever possible.

AB 1482[34] provides guidance to agencies working to address climate vulnerabilities identified in Safeguarding California, and directs State agencies to maximize, where applicable and feasible, several objectives, including: promote actions to address the impacts of climate change on disadvantaged communities; build resilient communities by developing urban greening projects that reduce air pollution and heat reflection in urban areas and create livable, sustainable communities in urban cores to promote infill development and reduce greenhouse gas emissions; promote actions to ensure healthy soils and sustainable agriculture; inform reliable transportation planning; improve emergency management response across sectors; ensure sufficient, reliable, and safe

[34] AB 1482 (Gordon, Chapter 603, Statutes of 2015).

energy; improve capacity to reduce and respond to public health threats, and protect cultural resources from the impacts of climate change. One example of how California Climate Investments programs could contribute to this effort is to assess flood plains and fire patterns when considering infrastructure and housing developments. Incorporating adaptation planning may be a new approach for some agencies that will require resources and creativity. Nonetheless, all agencies administering California Climate Investments programs can contribute to the effort. Deliberate focus by the Legislature during appropriation decisions on the long-term effects of these investments will expand the reach and impact of California Climate Investments for decades to come.

3. Minimize Administrative Costs

Finally, the Administration and the Legislature should consider the growing influence that California Climate Investments and leveraged funds have on the State's economy. To date, Cap-and-Trade has generated more than $9 billion to invest through California Climate Investments programs and, if the trend continues, program dollars can have substantial influence in the upcoming decade. To maintain momentum, this Investment Plan recommends focusing future funding on existing programs, which will control administrative costs. This will keep dollars flowing to project implementation, including those projects that spur innovation in emerging technologies and profitable business endeavors. California Climate Investments should support businesses that contribute to the State's climate goals and implement discrete projects under California Climate Investments programs. However, investments should not subsidize business models that do not support the transition to a low carbon economy.

IV. GGRF Funding Priorities

Agencies have the capacity to work on addressing gaps in implementation while maintaining focus on the funding priorities for California Climate Investments. Two statutory requirements underpin the fundamental objectives for California Climate Investments: (1) facilitate GHG emission reductions and (2) invest in priority populations. As existing programs continue to meet these objectives, agencies should prioritize the additional benefits identified in AB 1532 and AB 398, as directed by the Legislature. Administering agencies should use the complementary legislative priorities in AB 1532 and AB 398 as they identify appropriate projects that will facilitate GHG reductions and benefit priority populations. For example, zero-emission freight technology is needed in port communities and major transportation corridors to improve air quality, while residential renewable energy generation may help offset homeowner costs and help communities in the Central Valley adapt to longer and intensifying extreme heat. Sustainable forests projects in rural communities reduce exposure to wildfire emissions, protect ecosystems, and provide benefits like clean water for the entire State. Legislation, the administering agency, and stakeholder input determine the additional priorities and benefits emphasized by a particular California Climate Investments program.

A. Foundational GGRF Requirements and Priorities

When establishing the GGRF, the Legislature identified requirements for California Climate Investments in AB 1532. The legislation requires that investments, where applicable and to the extent feasible:

- Facilitate GHG emission reductions.
- Maximize other economic, environmental, and public health benefits.
- Foster job creation.
- Complement air quality efforts.
- Direct investments toward disadvantaged communities.
- Provide opportunities for community institutions to participate in and benefit from GHG emission reduction efforts.
- Lessen the impacts of climate change.

Programs are achieving many of these goals and must continue and expand their efforts. Just as important, agencies must track and report on outcomes consistent with these requirements (described more in Chapter VI).

In AB 1532, the Legislature also suggested seven investment priority areas, described below, that are being funded through current California Climate Investments.

1. Energy Efficiency and Renewable Energy

California Climate Investments fund multiple project types that support the goal of reducing GHG emissions and the air quality impacts of energy generation in California. Projects reduce dependence on fossil fuels by increasing clean and renewable energy generation and increasing energy efficiency. Project types that support California's efforts in this sector include, but are not limited to: providing vouchers and funding for residential energy efficiency and photovoltaics installations, making improvements to State water-energy generation systems, incentivizing energy efficiency upgrades for food production, funding energy efficient equipment and on-site solar energy generation in agricultural operations, and generating energy from agricultural, forest, and municipal waste streams. These investments provide a variety of benefits for communities, households, and individuals statewide, including providing opportunities for job training, reducing residential utility bills, and conserving water. Investments also support projects that improve indoor and outdoor air quality and deliver public health benefits. Investments funded by auction proceeds from allowances sold by utilities will complement these efforts. In 2017, per the requirements of AB 693,[35] the utilities began to set aside auction proceeds for the Solar on Multifamily Affordable Housing Program.

2. Low Carbon Transportation, Freight, and Advanced Technology Vehicles and Fuels

The transportation sector is a major source of GHG emissions and air contaminants within the State of California. California Climate Investments projects are addressing this by providing funding to project types that replace older, more emission-intensive

[35] AB 693 (Eggman, Chapter 582, Statutes of 2015).

vehicles with clean, modern systems such as hybrid, electric, and alternative fuel powered vehicles in classes ranging from passenger cars to heavy-duty trucks and off-road equipment. Other project types provide capital assistance and operations support to increase public transportation and provide funding for many transportation projects such as car-share programs, safe bicycle and pedestrian corridors, and electric-vehicle and alternative fuel infrastructure. Many of these projects are also addressing barriers to awareness and access to clean transportation and mobility options for disadvantaged communities and low-income residents. California Climate Investments are also accelerating commercialization of advanced freight technologies and freight infrastructure, and supporting the planning, development, construction, and operation of California's High-Speed Rail system.

3. Natural Resources: Water Use and Supply, Land Conservation, Forestry, and Sustainable Agriculture

California Climate Investments are helping preserve and restore our natural resources while reducing GHG emissions. Projects help prevent and limit damaging wildfire, advance management practices that make healthier ecosystems that are more resilient to climate change, and implement climate adaptation projects. California's forests, wetlands, grasslands, and other natural lands also provide an opportunity to sequester carbon in the soil and in biomass through projects in reforestation and wetland and coastal restoration. Restoration projects are improving habitat to support biodiversity and climate resilience, while protecting source water supplies. Planting trees in urban areas reduces urban heat island effects, resulting in cost-savings for households. Coastal programs focus climate adaptation projects on planning and preparing for sea level rise due to climate change.

Funds also support sustainable practices in the agricultural sector by providing financial incentives for farmers to implement sustainable management practices that increase carbon sequestration, and by funding projects that prevent the conversion of agricultural lands to more GHG-intensive uses. Funding also allows farmers to purchase cleaner agricultural equipment like harvesters, pumps, trucks, and tractors, and decrease methane emissions from dairies.

California Climate Investments are addressing GHG emissions and energy associated with the use of water for agricultural, residential, and industrial purposes. Incentives and grants allow farmers to enhance or replace pumps and irrigation systems with more energy-efficient technologies and fund commercial and residential water-energy efficiency through appliance and fixture upgrades, including projects that benefit disadvantaged communities within the State.

4. Strategic Planning for Sustainable Infrastructure, Transportation, and Housing

California Climate Investments funds strategic planning efforts to support the State's climate goals. Many of these project types take a multi-faceted approach to addressing GHG emissions, including project types that encourage infill, make improvements to public transit systems and housing, reduce VMT, and connect California's cities by rail, buses, and ferries. These projects also reduce dependence on automobiles and

decrease traffic. Other project types foster community-driven, collaborative efforts that implement multiple strategies to create transformative changes and build resiliency at the neighborhood scale.

5. Waste Diversion, Reduction, and Reuse

California Climate Investments funds are helping reduce air and climate impacts from the waste sector. Projects are reducing waste volume, thereby prolonging the useful life of existing landfills, rescuing edible food and providing it to food-insecure residents around the State, and using agricultural, forest, and municipal waste to generate compost, energy, and other products. California Climate Investments funds are increasing in-State diversion of solid waste, which reduces methane emissions from waste by rescuing organic waste. Projects also incentivize edible food rescue, recycling, composting, and bioenergy generation. Waste diversion projects are supporting more efficient use of materials—including the use of recycled instead of virgin materials—to conserve natural resources, potentially reducing supply chain costs, and resulting in consumer cost savings.

6. Research, Development, and Deployment of Innovative Technologies and Practices

Many of the current California Climate Investments programs are incentivizing the deployment of advanced technologies. Advanced Technology Freight Demonstration Projects fund pre-commercial advanced vehicles, engines, equipment, and transportation systems that use less petroleum and emit less GHG and air pollutant emissions than conventional diesel equipment. Similarly, the Healthy Soils Program incentivizes demonstration projects on innovative farming practices. By offsetting the costs of advanced technology and encouraging more sustainable management of resources through incentives, California Climate Investments are signaling the need for further research and development of low carbon alternatives. Funding also has provided direct research for biofuels and the design of new digester systems. This research aims to reduce SLCPs, generate clean energy, and promote climate adaptation and resilience.

7. Partnerships for Local and Regional Program Implementation

California Climate Investments fund many programs that are implemented by local and regional agencies, local and regional collaboratives, and nonprofit organizations coordinating with local governments. Agencies continue to conduct outreach to communities to increase understanding of local needs, and some programs have engaged communities directly in the project development process. Projects undertaken or supported by local partnerships support the establishment, enhancement, and expansion of community spaces and parks, tree planting, green infrastructure in streets and alleys, and the construction of active transportation infrastructure. Agencies and the Legislature recently have focused more on the need for partnerships at all levels, through funding of technical assistance and supporting local agencies, community-based organizations, and other local entities to participate in program development. The Community Air Protection Program provides direct grants to community-based organizations and other local entities to build capacity and become

active partners with government to identify, evaluate, and reduce air pollution and exposure to harmful emissions in their communities. Transformative Climate Communities emphasizes the development of long-term, cross-sector partnerships between and among multiple stakeholders, including award recipients, local government, community members, and the State.

B. AB 398 Priorities

AB 398 augments the foundational priorities with seven complementary funding priorities that provide additional direction for future investments, as well as recognized the need for job training opportunities. Existing programs are largely supporting these priorities, and the Legislature should expect agencies to expand or modify their programs to respond more fully to these important issues.

1. Air Toxics and Criteria Pollutants

California Climate Investments contribute to improving air quality by providing incentives to encourage consumers to buy cleaner, more energy-efficient vehicles and equipment that reduce GHG emissions and produce less air pollution than conventional, less expensive models. California Climate Investments also fund the creation and implementation of community air protection plans to reduce stationary source pollution that affects local air quality in priority populations. Programs that reduce electricity consumption through energy efficiency measures contribute to air quality improvements because a portion of the energy used to power California's electric grid is generated from nonrenewable sources that emit GHG emissions and cause air pollution. However, California residents continue to face some of the worst air pollution in the country, and upgrading technology will be critical to further improve local air quality to meet State and federal air quality standards.

2. Low and Zero-Carbon Transportation

California Climate Investments are supporting all aspects of low-and zero-carbon transportation, from personal vehicles to transit to public and private fleets. Vehicle incentives, especially for priority populations, are helping move California toward a zero-emission light-duty fleet and reducing costs for engine conversions in heavy-duty trucks. The public sector is electrifying transit vehicles, from diesel buses to freight yard equipment. Investments in low- and zero-carbon transportation-related infrastructure and equipment support fleet turnover and service improvements in bus and rail lines, and incentivize people to use public transit, thereby reducing California's dependency on fossil fuels. Future low carbon transportation efforts will need to increase focus on reducing or eliminating GHG and air pollutant emissions from vehicles, particularly heavy-duty vehicles used in freight.

Additionally, zero-carbon transportation includes nonmotorized transportation options, which also help improve public health and reduce VMT. Investments in nonmotorized forms of transportation, such as biking and walking, provide safe alternatives for travel between residences, workplaces, commercial centers, and schools, while also providing

an essential mobility option to close gaps in clean transportation access across the State.

3. Sustainable Agricultural Practices

AB 398 calls for a focus on sustainable agriculture practices that can promote transitions to clean technology, water and energy efficiency, and better air quality.

Many California Climate Investments in agricultural practices focus on soil carbon sequestration. According to the California Department of Food and Agriculture (CDFA), soils contain 75 percent of the carbon pool on land—three times more than the amount stored in living plants and animals. Experts estimate that United States cropland soils have the potential to sequester up to several hundred $MMTCO_2e$ per year.[36,37] However, California cropland is also a primary emission source of nitrous oxide (N_2O), a potent GHG. N_2O is produced from the soil through microbial processes that convert nitrogen from nitrogen fertilizers, manure, and crop residues into N_2O and other nitrogen gases. Scientists are researching ways to make this aspect of farming more sustainable. California Climate Investments incentivize practices that build soil organic matter and reduce GHG emissions, including compost application, cover crops, improved fertilizer management, and reduced/no-till farming methods.

4. Healthy Forests and Urban Greening

California Climate Investments have supported programs in forest health and urban greening for several years. California's tree canopy serves an important purpose of removing pollutants from the air and sequestering carbon in woody material while providing multiple significant benefits that increase the State's resilience to the effects of climate change.

Forest health restoration projects focus on increasing and stabilizing the large reservoir of carbon stored in forest trees and soils, protecting upper watersheds where the State's water supply originates, and contributing to overall forest health. Healthy forests are more resilient to drought, wildfire, and other stressors. Specific activities include reforestation, prescribed fire, pest management, fuels reduction, forest conservation easements, and biomass utilization. Urban greening and urban forestry projects achieve GHG benefits by planting trees to sequester carbon and shade buildings, thereby reducing building energy use and making communities more livable.

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[36] Lal, R. et al. 2003. *Achieving Soil Carbon Sequestration In The United States: A Challenge To The Policy Makers*. Available at: https://journals.lww.com/soilsci/pages/articleviewer.aspx?year=2003&issue=12000&article=00001&type=abstract.

[37] Karlyn, Kat. 2016. *A Climate Change Solution Beneath Our Feet*. Available at: https://climatechange.ucdavis.edu/news/climate-change-solution-beneath-feet/.

5. Short-lived Climate Pollutants

Climate science unequivocally underscores the need to reduce SLCP emissions immediately, including black carbon (or soot), methane, and fluorinated gases (F-gases, including HFCs). SLCPs are powerful climate forcers, and black carbon is a harmful air pollutant. SLCPs have an outsized impact on climate change in the near term compared to longer-lived GHGs, such as carbon dioxide. SLCPs are responsible for about 40 percent of current net climate forcing, or the trapping of warming radiation in the atmosphere.[38] Action to reduce these powerful "super pollutants" today will provide immediate benefits and complement policies to reduce longer-lived GHGs.

Nearly all California Climate Investments programs facilitate SLCP reductions. For instance, investments in the transportation or energy sectors reduce VMT, increase mode shift to public or active transportation, and/or reduce demand on the energy grid. These outcomes help reduce black carbon emissions from gas engines, diesel engines, and other fossil fuel combustion. Certain California Climate Investments programs focused on methane are designed and implemented specifically to achieve SLCP reductions.

In 2014, the Legislature directed CARB to develop a plan to reduce SLCP emissions[25] and begin implementing the plan by January 1, 2018. In 2016, the Legislature established targets for statewide SLCP emission reductions.[17] California Climate Investments support the State's SLCP Reduction Strategy and complement the suite of regulations, incentives, and other market-based activities that contribute to SLCP reductions. In September 2018, the Legislature signaled the need for further SLCP reductions by establishing a new SLCP reduction program, which authorizes the creation of the Fluorinated Gases Emission Reduction Incentive Program at CARB to reduce HFCs, through SB 1013.

6. Climate Adaptation and Resiliency

California is a national leader in efforts to avoid the worst effects of climate change by reducing GHG emissions. Still, the impacts of climate change are already felt in California and disproportionately affect the State's most vulnerable populations. The accelerating rate of climate change in this century will likely exceed that experienced by California over past millennia. California Climate Investments are an important part of the State's strategy to address current and future climate impacts.

In January 2018, the California Natural Resources Agency (CNRA) released an update to the Safeguarding California Plan: California's Climate Adaptation Strategy (Safeguarding California).[39] Safeguarding California included the following definitions:

- Adaptation: adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or

[38] Available at: https://www.arb.ca.gov/cc/shortlived/meetings/11282016/revisedproposedslcp.pdf.
[39] Available at: http://resources.ca.gov/climate/safeguarding/.

human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

- Resilience: the capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience.

From incentivizing improved water and energy efficiency of residential homes to restoring forests and wetlands to protect against sea level rise, precipitation loss, and increased fire threat, California Climate Investments support measures to build both adaptation and resilience in a variety of ways to advance this priority investment area. SB 901,[8] enacted in 2018, establishes long-term GGRF funding to create more fire resilient forests and communities and help stabilize carbon stores in California's natural and working lands.

7. Climate and Clean Energy Research

California is committed to supporting research on climate change mitigation, adaptation, and resiliency. Research efforts to understand human and natural systems and their interactions will support additional opportunities to set targets and establish actionable policies. The State's support of research efforts is a vital step toward minimizing the impact of GHG emissions and part of a three-pronged approach to reduce emissions, prepare for impacts, and conduct innovative research to serve as a model for action.

While the 2017 Scoping Plan identifies the path to achieve the 2030 GHG emission reduction target, the State needs additional momentum to meet the 2050 GHG emission reduction target, including clean energy research. Measures that are not feasible today will be necessary to achieve the 2050 target. Additional research will help investigate, develop, and deploy advanced technologies while facilitating the comprehensive transition to a low carbon economy.

V. California Climate Investments

California Climate Investments programs are achieving GHG emission reductions, investing in and benefiting priority populations, and providing other important benefits throughout the State. Agencies have already laid the groundwork to meet the requirements of the GGRF and are building partnerships with stakeholders, communities, potential applicants, and other State agencies for more effective program implementation. California Climate Investments programs have evolved and matured over the years, now allowing agencies to accelerate project implementation in established programs. California Climate Investments programs are also more flexible now and have more capacity to align with the priorities identified in AB 398.

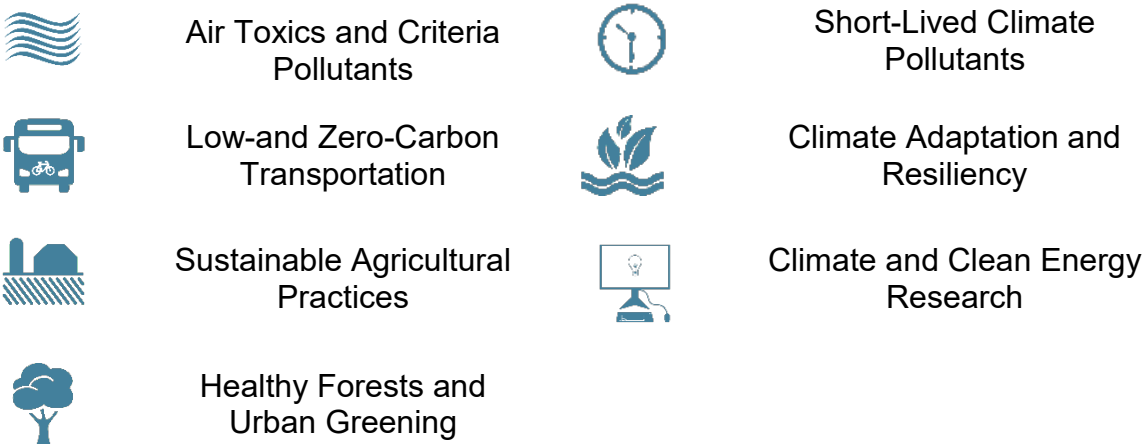
Most California Climate Investments programs fund several types of projects to support the broader program or agency purpose. To maximize administrative efficiency, the Legislature should continue to fund existing, well-established programs and incorporate the priorities of AB 398, such as job training and apprenticeship programs that support the transition to a low carbon economy. This will help maintain the momentum and

stability of programs without creating significant new administrative burdens or changing expectations for potential funding recipients.

A. Icons for Funding Priorities

The seven priorities established in AB 398 are matched with icons shown in Figure 6, which are used in this chapter to show how the current suite of California Climate Investments is meeting these newest priorities and where additional opportunities exist.

Figure 6. California Climate Investments Funding Priorities



The following sections and tables 2-5 illustrate how the existing California Climate Investments programs align with the new funding priorities established in AB 398.

Box 4. How to Read the Funding Priority Tables

How to Read the Tables

Each icon represents one of the new funding priorities established by the Legislature in AB 398 in 2017. The Annual Report[9] describes in detail how California Climate Investments programs are meeting GHG emission reduction goals in the transportation, energy, and natural resource sectors, as well as targeting funds in priority populations.

The tables illustrate that, overall, the current suite of California Climate Investments programs is already addressing the Legislature's new priorities set forth in AB 398.

The individual programs vary in terms of their primary focus and additional benefits. The existing California Climate Investments programs are on the right track. Moving forward, the Legislature should expect administering agencies to use AB 398 direction to expand their programming and identify future opportunities to address legislative priorities.

The programs are grouped by the sectors used in the Annual Report[9]: programs with continuous appropriations, followed by programs grouped under the transportation sector, energy sector, and natural resources and waste sector.

The "Program Priority" column shows the AB 398 priority that best fits the main purpose of the program. The "Additional Benefits" column shows other AB 398 priorities that the program supports.

Programs are listed with the appropriations received as of July 2018 in the "Total Funding" column, unless otherwise noted. Funding Details over the life of the program are provided in Appendix B. Greenhouse Gas Reduction Fund Appropriations

Detailed descriptions of each program are available at: caclimateinvestments.ca.gov.

B. Continuous Appropriations

SB 862 establishes requirements for agencies receiving GGRF monies and provides continuous appropriations of 60 percent of future GGRF monies for transportation, transit, and affordable housing and sustainable communities programs.[29] Additional funds are set aside for the tax credit for manufacturers and certain fire prevention activities. Continuous appropriations to programs provide the stability for program administrators to plan future activities. The programs in this section are those that receive continuous appropriations.

Table 2. Programs with Continuous Appropriations

Agency	Program	Program Priority	Additional Benefits	Total Funding through FY 2017-18 ($M)[40]
Caltrans	Low Carbon Transit Operations Program		 	**$302**
CHSRA	High-Speed Rail		 	**$1,738**
CalSTA	Transit and Intercity Rail Capital Program		 	**$715**
SGC	Affordable Housing and Sustainable Communities + Sustainable Agricultural Lands Program		  	**$1,240**

[40] Estimated totals are contingent on auction proceeds in FY 18-19 and are subject to change. All FY 18-19 auctions have not occurred and so total appropriations for the 18-19 fiscal year are unknown at this time. CHRSA total includes a $100M loan repayment from the General Fund.

C. Annual Appropriations: Transportation and Sustainable Communities Sector

California's transportation sector represents 37 percent of GHG emissions statewide. Investments in transportation and sustainable communities provide a variety of benefits for communities, households, and individuals statewide. Continued focused investments in this sector are a critical component of reaching California's 2050 climate target.

Table 3. Transportation and Sustainable Communities Programs

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July, 2018 ($M)[40]
CARB	Community Air Protection Program		 	**$557**
CARB	Low Carbon Transportation		 	**$1,725**
CARB	Funding Agricultural Replacement Measures for Emission Reductions		  	**$197**
Caltrans	Active Transportation			**$10**
SGC	Transformative Climate Communities		  	**$190**

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July, 2018 ($M)[40]
SGC	Climate Change Research		  	**$29**
SGC	Technical Assistance	SGC's Technical Assistance Program supports all CCI programs and priorities.		**$4**

D. Annual Appropriations: Clean Energy and Energy Efficiency Sector

California's energy sector—including the use of electricity and natural gas—accounts for about half of the State's near-term GHG emissions. Chapter 547, Statutes of 2015 (SB 350), requires the State to double building energy efficiency and increase renewable energy to 50 percent by 2030, and Chapter 312, Statutes of 2018 (SB 100), sets a goal of 100 percent clean energy by 2045.[3] California Climate Investments provide funding for energy efficiency and clean energy generation, reduced energy and water use through installation of more efficient appliances, and efficient agricultural equipment. Residential investments allow low-income homeowners in disadvantaged communities to save money and improve their homes through weatherization and solar installation projects.

Table 4. Clean Energy and Energy Efficiency Programs

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July 2018 ($M)[40]
CARB	Woodsmoke Reduction	Clean Air	SLCPs	**$8**
CSD	Low-Income Weatherization	Adaptation	SLCPs; Clean Air	**$202**
CDFA	State Water Efficiency and Enhancement Program	Agriculture	Clean Air; Adaptation; SLCPs	**$66**
CDFA	Alternative Renewable Fuels	Research		**$3**

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July 2018 ($M)[40]
CEC	Renewable Energy in Agriculture Program		 	**$10**
CEC	Food Production Investment Program			**$124**
CEC	Transportation Technology and Fuels		 	**$13**
DWR	State Water Project: Turbines			**$20**
DWR	Water-Energy Grant			**$50**

E. Annual Appropriations: Natural Resources and Waste Diversion Sector

California's natural and working lands comprise three-quarters of the land base statewide. These lands provide food, fiber, and a variety of ecosystem services, including important opportunities for climate mitigation that reduce GHG emissions from wildfire and avoided land conversion, and store carbon in biomass and soils. In addition, investments in organic waste management and waste diversion decrease GHG emissions as well as criteria and toxic air pollutants by reducing the amount of municipal solid waste that is disposed of in landfills. Investments in natural resources and waste diversion can also help protect against the impacts of future climate change.

Table 5. Natural Resources and Waste Diversion Programs

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July 2018 ($M)[40]
CDFW	Wetlands and Watershed Restoration		  	**$47**
CDFA	Dairy Methane		 	**$260**
CDFA	Healthy Soils		  	**$13**
CAL FIRE	Fire Prevention in the State Responsibility Area (SRA)		  	**$105**

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July 2018 ($M)[40]
CAL FIRE	Prescribed Fire and Fuel Reduction		  	**$30**
CAL FIRE	Forest Health, Fire Prevention, and Urban Forestry		  	**$467**
CalRECYCLE	Waste Diversion		  	**$137**
CNRA	Urban Greening		 	**$126**
CNRA	Regional Forest Health Projects			**$20**
WCB	Climate Adaptation and Conservation Easements		 	**$20**

Cap-and-Trade Auction Proceeds Third Investment Plan:
Fiscal Years 2019-20 through 2021-22

Agency	Program	Program Priority	Additional Benefits	Total Funding as of July 2018 ($M)[40]
CalOES	Wildfire Response and Readiness			**$50**
San Francisco Bay Conservation and Development Commission	Bay Conservation and Development			**$1**
SCC	Climate Ready and Coastal Resilience Planning		 	**$7**
Conservation Corps	Training and Workforce Development			**$14**
Coastal Commission	Coastal Management Program			**$3**

VI. Project Metrics and Outcomes

Estimating and reporting GHG emission reductions and other benefits is important for several reasons. Reporting gives the Legislature and the public tools to compare programs and understand the impact of investments. Reporting also enhances accountability, ensuring that agencies carefully consider project selection and other aspects of program administration. However, tracking benefits for each project is time-consuming and resource intensive. Thus, the Legislature and agencies are continuously striving to maintain the appropriate balance between transparency and maximizing dollars that go to implementing projects, rather than administering programs.

Agencies are required to report on project outcomes for California Climate Investments (AB 1532), including estimated GHG emission reductions and priority population benefits (SB 535 and AB 1550). Outcomes are estimated using guidance from CARB, which develops methods for quantifying GHG emission reductions and evaluating whether projects are benefiting priority populations. The Department of Finance publishes these and other outcomes in the Annual Report.[9]

In addition to supporting GHG and priority population objectives, California Climate Investments provide many economic, environmental, and public health benefits. The Legislature, through the enactment of AB 1532, directed administering agencies to maximize benefits derived from investments. CARB focused on developing quantification methods for project-level GHG emission reductions in the initial years of California Climate Investments and more recently has developed methods for estimating many other benefits from these investments.

A. GHG Reduction Cost-Effectiveness

AB 1532 requires that funds facilitate the achievement of feasible and cost-effective GHG emission reductions, and the Legislature and the public need to know whether investments are a good value. The Annual Report[9] includes "cost per GHG reduced ($/MTCO$_2$e)" by program, which uses GGRF dollars and GHG emission reductions estimated with CARB's quantification methodologies. GHG reduction cost-effectiveness is an important metric, but comparing projects based solely on cost-effectiveness of GHG emission reductions does not give a complete picture of project value. The metric may obscure important considerations and should not be used as a comparative metric across all programs to determine which programs or projects provide the best value.

Rapid and direct GHG emission reductions may be one of potentially many priorities within a program. Although implementing projects to achieve multiple priorities may increase costs—without necessarily facilitating a corresponding decrease of GHGs per dollar spent—such projects may be important to achieving other meaningful benefits, particularly those identified by the Legislature. For example, programs focused on investing in priority populations may have higher costs per GHG emission reduction due to barriers to access funding or lack of existing supporting infrastructure such as

sidewalks, bus stops, electric vehicle charging stations, and/or other amenities that may be more prevalent in more affluent communities. In addition, while highly leveraged programs may have a lower cost per GHG emission reduction, certain programs fund pilot or demonstration projects, which may have no leveraged funds and therefore have a higher cost per GHG reduction. Investing in pre-commercial or early commercial transformative technologies is inherently less cost-effective in the near term than investing in fully commercialized technologies. Such projects may not otherwise be implemented and are critical to pilot new technologies, demonstrate proof-of-concept, or catalyze market transformations that can lead to widespread adoption in the future.

Additionally, some project types have GHG emission reductions that are more challenging to quantify. CARB's quantification methodologies use the best available science, but many sectors, such as natural and working lands, may use conservative estimates because sequestration and emission estimates vary widely across research studies.

Other cost-effectiveness metrics are available, such as the avoided cost of emissions and energy-efficiency. All cost-effectiveness metrics include a series of assumptions and do not reflect a comprehensive assessment of value; therefore, while useful, they should be used as one of many important funding considerations.

B. GHGs and Other Benefit Metrics

SB 1464 requires the Investment Plan to recommend metrics that would measure progress and benefits from investments because while many programs are achieving benefits beyond GHG emission reductions, there have not been standardized methods to report them. CARB is required to develop quantification methodologies for these investments, including the estimation of GHG emission reductions and other benefits. To develop standardized approaches to evaluating and reporting on benefits, CARB contracted with UC Berkeley in 2016 to research potential quantification methods for several public health, economic, and environmental benefits. Administering agencies and CARB prioritized several benefits for initial evaluation based on applicability across California Climate Investments programs and interest from the Legislature and stakeholders. CARB and UC Berkeley collaborated on developing assessment methodologies to evaluate benefits. These metrics allow administering agencies to compare projects objectively during the selection process and give administering agencies a way to report expected project benefits to the Legislature. Benefits assessment methodologies currently available include:

- Air Pollutant Emissions.
- Travel Cost Savings.
- Vehicle Miles Traveled.
- Energy and Fuel Cost Savings.
- Water Savings.
- Soil Health and Conservation.
- Climate Adaptation.
- Community Engagement.

- Heart and Lung Health.

A methodology for Jobs is currently under development, which CARB expects to finalize in early 2019. CARB and UC Berkeley also evaluated two additional benefits: Anti-displacement and Accelerated Implementation of Technology. However, while developing these metrics continue to be important goals for California Climate Investments, CARB and UC Berkeley determined that available research was not sufficient to support and establish rigorous project-level methodologies at this time. For more information, please see the UC Berkeley literature reviews on Accelerated Implementation of Technology[41] and Anti-Displacement.[42] CARB will continue to develop assessment methodologies to measure additional benefits.

Communities want to understand how California Climate Investments are creating change, and they want the tools to compare and assess project benefits. In particular, communities continue to have concerns about the health impacts of poor air quality. The Air Pollutant Emissions and Heart and Lung Health Incidence methodologies, which are now available for use, enable agencies to select projects that maximize local pollutant emission reductions. It is important to note that these methodologies will report both negative and positive project impacts. As available, data will be publicly accessible.

The Legislature continues to stress the importance of benefits beyond GHG emission reductions[1,6] for the California Climate Investments program. However, agencies will need time and resources to incorporate these methods into their programs. Longer-term funding certainty will allow agencies to justify including these methods in their project evaluations, which in turn will lead to more information on the range of benefits resulting from California Climate Investments. Longer-term funding certainty also will give agencies time to adjust their programs based on actual project data. As agencies apply the methodologies and report on the results, the Legislature will have a more accurate way to compare the scope of benefits among programs, and CARB will have more data to support further improvements to existing assessment methodologies.

C. Assessing Progress

Currently, California Climate Investments programs report semi-annually on the estimated GHG project benefits, including benefits to disadvantaged communities. CARB has developed more than 100 GHG methods that allow agencies to quantify the GHG benefits they expect from each funded project. These benefits are included each year in the Annual Report[9] released by the Department of Finance. CARB also developed tools and procedures to assess benefits to priority populations. In addition, the California Climate Investments Project Map,[43] which is updated every six months,

[41] Available at: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ucb_lit_rev_on_accelerated_implementation_technology.pdf.
[42] Available at: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ucb_lit_review_anti_displacement.pdf.
[43] Available at: https://webmaps.arb.ca.gov/ccimap/.

displays GHG, priority population, and other project-level benefits. Providing information on project outcomes in multiple formats provides accountability, allowing the Legislature, the public, and any interested stakeholder groups to see how and where GGRF monies are invested.

In addition, agencies must report on outcomes after full project implementation for a subset of projects. California Climate Investments projects range in scale from providing a voucher for the purchase of one electric vehicle to modifying an ecosystem or supporting large-scale infrastructure such as a high-speed rail system. It would be impractical and very costly to apply monitoring requirements uniformly across programs. Implementing a voucher has immediate results, and GHG emission reductions and other co-benefits can be estimated and presented in the Annual Report.[9] Projects that involve altering ecosystems, building infrastructure, or implementing complicated projects with many phases are more difficult to evaluate. Completing the project may take years, and it may take several years beyond project completion before impacts can be fully assessed. Ideally, agencies should be prepared to demonstrate effective project implementation with enduring benefits. Although outcome reporting at specific intervals is not required for all projects, several programs already have incorporated monitoring requirements.

The Community Air Protection Program, for example, includes a mechanism to ensure that projects yield concrete benefits over the life of the program. Implementing legislation for the Community Air Protection Program requires air districts that encompass a community selected for a local air quality program pursuant to AB 617 prepare an annual report on program progress.[44] The annual report must describe actions taken to further reduce emissions pursuant to the Community Emissions Reduction Program and summarize the results. This model of reporting annually after project implementation will produce valuable data to help refine the program and show which measures were effective. Healthy Soils demonstration projects are also required to monitor GHG emissions for three years, report results to CDFA, and host an annual field day for farmer education. Wetland projects are likewise required to monitor GHG emissions for three years and report to the Department of Fish and Wildlife (DFW).

Other mechanisms that encompass some California Climate Investments, but are not GGRF requirements, are also measuring progress and outcomes. For example, SB 350[16] directed CARB to conduct a study to better understand the barriers low-income residents must overcome to increase access to zero-emission and near-zero emission transportation and mobility options, and to develop recommendations to increase access. The recommendations in the SB 350 report, which also covers programs outside the scope of California Climate Investments, broadly align with this Investment Plan's focus on doing more to reach priority populations.

[44] AB 617 (C. Garcia, Chapter 136, Statutes of 2017).

VII. Priority Population Investments

In addition to ensuring all GGRF-derived investments facilitate GHG reductions, SB 535 and AB 1550 require the Investment Plan to allocate minimum investments for priority populations.

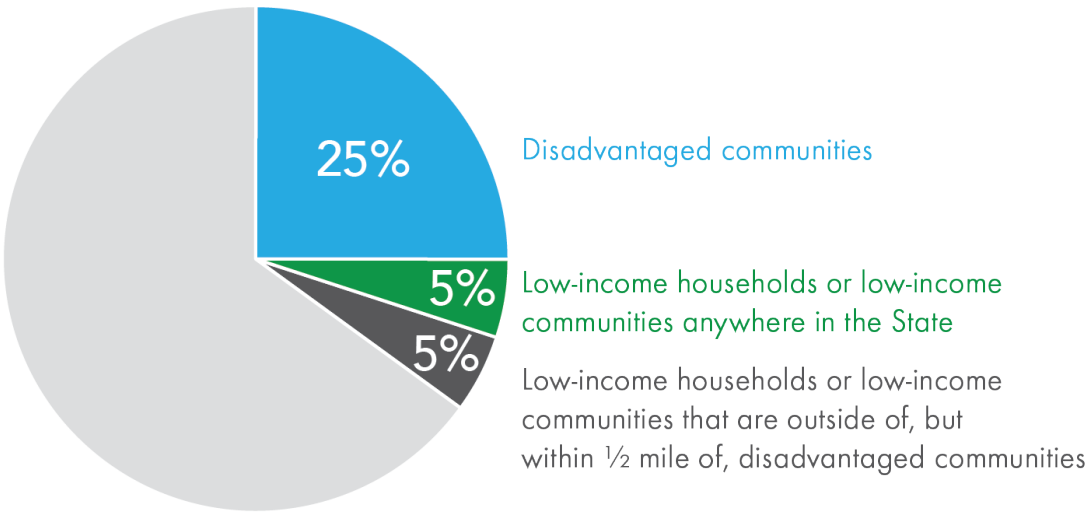
SB 535 specifically directs the Secretary for Environmental Protection at the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities for California Climate Investments prioritization. The identification of these communities must be based on geographic, socioeconomic, public health, and environmental hazard criteria. The criteria may include, but are not limited to, the following:

- Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation.
- Areas with concentrations of people that are of low-income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.[7]

To meet the statutory mandate, CalEPA uses a tool called CalEnviroScreen to help identify disadvantaged communities. The Office of Environmental Health Hazard Assessment developed this screening tool under CalEPA's guidance to assess areas that are disproportionately affected by multiple types of pollution and areas with vulnerable populations.

AB 1550 modifies the SB 535 disadvantaged community investment minimums. AB 1550 requires that a minimum of 35 percent of California Climate Investments be invested in three categories of priority populations, as shown in Figure 7.

Figure 7. Investment Minimums for Priority Populations



Investment minimums apply to the overall appropriations from the GGRF rather than to each agency appropriation. To help ensure statutory requirements are met, the Administration considers investment targets for each program (program targets) and sets percentages of funding that should be spent on priority population projects for programs that are most able to deliver benefits to priority populations. For example, a housing program could more easily be designed to benefit certain populations than a program focused on forestry. The program targets help guide programs toward investments that achieve direct, meaningful, and assured benefits to priority populations. CARB posts program targets as needed for each fiscal year.[45]

Searchable, interactive maps are available as resources to aid in determining geographic eligibility for disadvantaged and low-income communities. The interactive maps show the disadvantaged community census tracts, low-income community census tracts located anywhere in the State, and portions of low-income census tracts within a half mile around a disadvantaged community tract boundary.[46]

All California Climate Investments programs may fund projects that provide benefits to priority populations. As administering agencies fund projects that benefit priority populations, they will evaluate projects and document benefits of projects as part of reporting on project outcomes.

In addition to program targets established to meet AB 1550 investment minimums, some individual programs have specific statutory requirements for investing in projects that benefit, but are not necessarily within, disadvantaged communities. These requirements were established in SB 862 and SB 859.[47] Administering agencies are responsible for determining compliance with any program specific investment requirements. Investments that are eligible to be counted toward AB 1550 investment minimums for being within and benefiting disadvantaged communities would also count toward meeting the SB 862 and SB 859 program-specific investment requirements outlined below. Programs with statutory minimum percentage allocations benefiting disadvantaged communities include the following:

- **Affordable Housing and Sustainable Communities Program.** Must allocate at least 50 percent of program expenditures to benefit disadvantaged communities.
- **Low Carbon Transit Operations Program.** This program uses an established formula for distribution of funds to transit operators and regional entities. For those operators with disadvantaged communities in their service areas, the operators must direct at least 50 percent of funding to benefit disadvantaged communities. This requirement is waived if agencies spend funds on certain project types.[48] The requirement does not apply to transit operators that do not have disadvantaged communities in their service areas.

[45] Program targets are available at: http://www.arb.ca.gov/cci-fundingguidelines.
[46] These maps are available at: www.calepa.ca.gov/EnvJustice/GHGInvest and http://www.arb.ca.gov/cci-communityinvestments.
[47] SB 859 (Committee on Budget and Fiscal Review, Chapter 368, Statutes of 2016).
[48] SB 1119 (Beall, Chapter 606, Statutes of 2018).

- **Transformative Climate Communities.** Supports coordinated project investment in disadvantaged communities. Current investments focus on the top 5 percent of disadvantaged communities.
- **Transit and Intercity Rail Capital Program.** Must allocate at least 25 percent of available funding to benefit disadvantaged communities.
- **Urban Greening Grant Program.** Must allocate at least 75 percent of the monies available to projects that are located in, and provide benefits to, disadvantaged and low-income communities.[49]

Agencies administering California Climate Investment programs demonstrate intent to comply with AB 1550 priority population targets by completing a statutorily-required document called an expenditure record prior to awarding funds, which is posted on CARB's website.[29] The expenditure record documents the percentage of total funding that will be expended for projects that are located in disadvantaged or low-income communities and/or benefit low-income households per CARB guidance; specific benefits to disadvantaged or low-income communities and low-income households per CARB guidance; and strategies the administering agency will use to maximize benefits to disadvantaged communities. Program-level investments to priority populations are included in the Annual Report.[9] Project-level data are available on CARB's online Project Map.

[49] SB 859 provides two definitions of disadvantaged communities for this program, one of which is *communities identified pursuant to Health and Safety Code Section 39711.* Only projects that meet the criteria and provide benefits to disadvantaged communities as identified by Health and Safety Code Section 39711 will count toward the AB 1550 investment minimums.

Appendix A. Auction Proceeds Allocated to Utilities

This appendix is included because AB 1532[6] requires the Investment Plan to contain a description of the use of any moneys generated by the sale of allowances received at no cost by the investor-owned utilities in the Cap-and-Trade program.

1. Electrical and Natural Gas Utility Allowance Allocations

The Cap-and-Trade Regulation (Regulation) applies to major emitters of greenhouse gases (GHGs), including large industrial facilities, in-State electricity generators, importers of electricity, and suppliers of natural gas and transportation fuels. Allowances are freely allocated to both electrical distribution utilities (investor-owned utilities, publicly owned utilities, and cooperatives) and natural gas suppliers (investor-owned utilities and publicly owned utilities) to ensure ratepayers do not experience sudden increases in their electricity and natural gas bills associated with the Regulation. Utilities receiving these free allowances must use them for ratepayer benefit consistent with the goals of AB 32 and must report annually to CARB on how they used these allowances.

The reporting requirements for these utilities are separate and distinct from the reporting requirements for California Climate Investments. CARB periodically posts reports summarizing the use of allocated allowance value for all reporting utilities.[50]

2. Investor-Owned Electric Utilities

The investor-owned electric utilities (IOUs) in California are Pacific Gas and Electric, Southern California Edison, San Diego Gas & Electric, Liberty Utilities (CalPeco Electric) LLC, and PacifiCorp. Under the Regulation, these utilities must offer all of their freely allocated allowances for sale at CARB's Cap-and-Trade Program allowance auctions. This requirement does not apply to publicly-owned electric utilities and electric cooperatives, which are not discussed further in this document. SB 1018[51] and the California Public Utilities Commission (CPUC) require investor-owned electric utilities to return nearly all the proceeds from the sale of allocated allowances to their industrial, small business, and residential customers. A portion of proceeds may be set aside for renewable energy and energy efficiency projects, and a small fraction of proceeds may be used for limited administrative and outreach costs needed to return the proceeds to these customers.

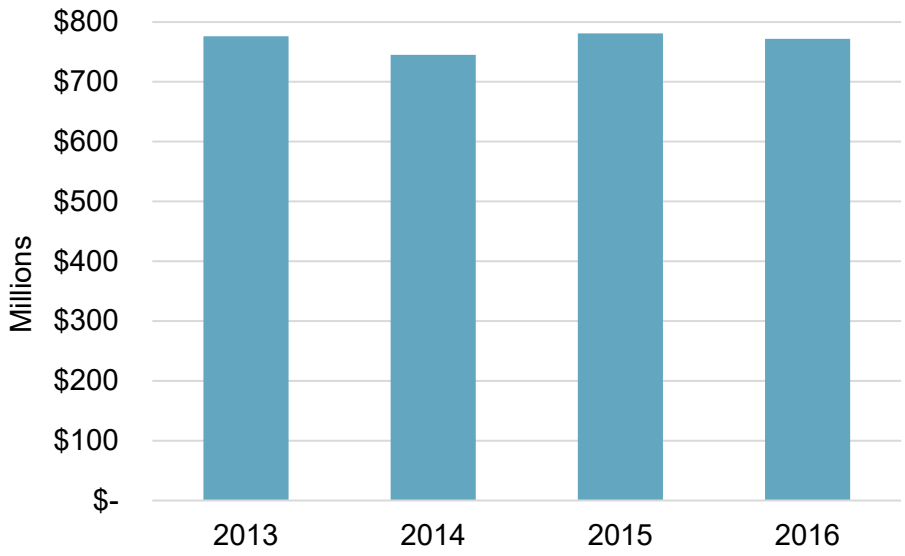
This section summarizes how the IOUs used the dollar value of the allocated allowances from 2013 to 2016.[52] Utilities have submitted to CARB initial information on

[50] Use of allocated allowance value summary reports are available at: https://www.arb.ca.gov/cc/capandtrade/allowanceallocation/edu-ng-allowance-value.htm.
[51] SB 1018 (Committee on Budget and Fiscal Review, Chapter 39, Statutes of 2012).
[52] Fifty percent of the allowance value from 2013 allocations was distributed in 2014 and 50 percent was distributed in 2015, along with the 2014 and 2015 allowance values, respectively.

their use of 2017 allocated allowance value, and CARB is in the process of reviewing and compiling this information.[53]

From 2013 through 2016, the value of allowances allocated to electricity distribution IOUs totaled more than $3 billion (Figure A-1).

Figure A-1. Investor-Owned Electric Utilities Allocated Allowance Proceeds



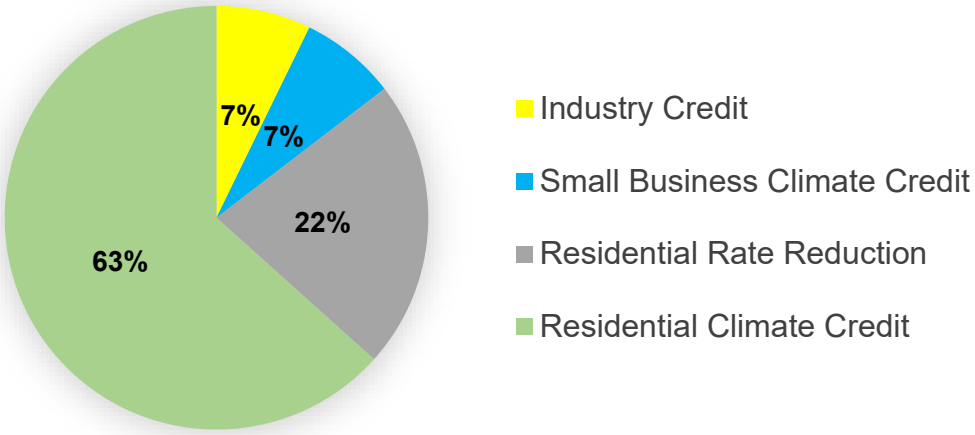
All the value, except for less than 0.5 percent of the funds used for outreach and administrative costs, was distributed to ratepayers. The utilities distributed these funds back to customers through four mechanisms:

- **Residential Climate Credit.** Twice-annual on-bill credit given to all residential customers.
- **Residential Rate Reduction.** Volumetric reduction of residential electricity rates (the IOUs began phasing out volumetric rate reduction in 2016).
- **Small Business Climate Credit.** On-bill credit, which declines over time, to each nonresidential business with typical energy demand of less than 20 kilowatts per month.
- **Industry Credit.** Annual bill credit to industrial customers deemed emissions-intensive and trade-exposed under the Regulation.

Figure A-2 shows how total 2013-2016 investor-owned electric utility proceeds were spent.

[53] When final, CARB will post updated summary information on its Electrical Distribution Utility and Natural Gas Supplier Use of Allocated Allowance Value page, at: https://www.arb.ca.gov/cc/capandtrade/allowanceallocation/edu-ng-allowance-value.htm.

Figure A-2. Use of Investor-Owned Electric Utilities Allocated Allowance Proceeds[54]



In addition to directing the return of allocated allowance proceeds to residential, small business, and industrial electricity ratepayers, SB 1018 allows the CPUC to direct each investor-owned electric utility to allocate up to 15 percent of its annual auction proceeds for clean energy or energy efficiency projects. CPUC Decision 14-10-033 developed the process by which these utilities may seek approval to use auction proceeds for clean energy or energy efficiency projects that are not otherwise funded. In 2017, per the requirements of AB 693,[35] the utilities began to set aside auction proceeds for the Solar on Multifamily Affordable Housing Program.

3. Investor-Owned Natural Gas Suppliers

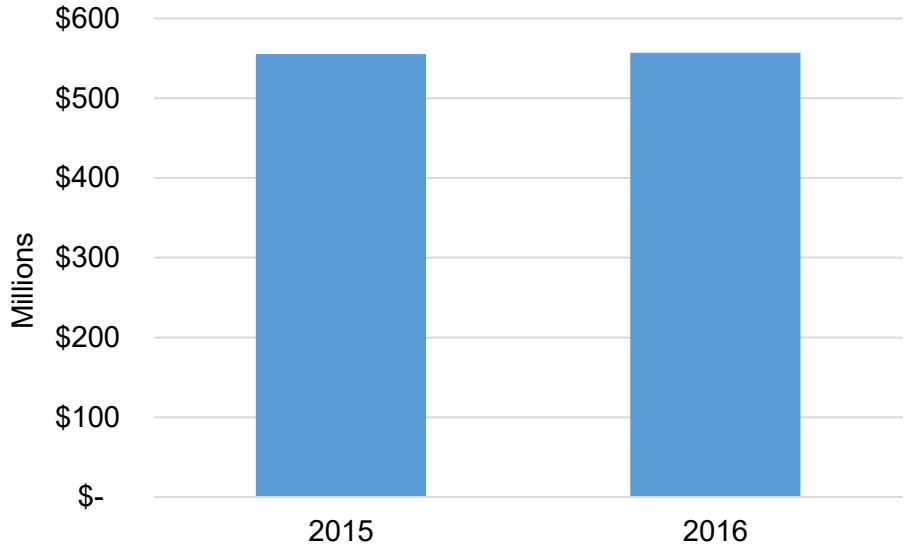
Natural gas suppliers have been subject to the Cap-and-Trade Regulation since 2015. Like electric utilities, they receive free allowance allocations from CARB pursuant to provisions of the Regulation.

Of the natural gas suppliers in California, investor-owned utilities account for almost all retail natural gas sales in California and receive 98 percent of allowances allocated to natural gas suppliers. The investor-owned natural gas suppliers in California are Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Gas Company, and Southwest Gas Corporation. California also has three cities—Long Beach, Palo Alto, and Vernon—that have municipally owned natural gas suppliers that receive the remaining 2 percent of allowances allocated to natural gas suppliers. These municipal suppliers are not discussed further here.

Since 2015, allowances allocated to investor-owned natural gas utilities have represented approximately 11 percent of the Cap-and-Trade Program's annual allowance budget. For 2015 and 2016, the value of allowances allocated to investor-owned natural gas utilities totaled more than $1.1 billion (Figure A-3).

[54] This Figure does not reflect administrative costs.

Figure A-3. Investor-Owned Natural Gas Utilities Allocated Allowance Proceeds



Investor-owned natural gas suppliers' allocated allowances are subject to requirements defined by the Regulation and CPUC proceedings. The Regulation allows all natural gas suppliers to use a percentage of their allocated allowances directly for compliance, reducing the suppliers' cost of Cap-and-Trade Program compliance. The remaining percentage of allocated allowances must be sold at auction, and the auction proceeds must be used to benefit ratepayers, consistent with the goals of AB 32 (section 95893 of the Regulation). To date, all investor-owned natural gas suppliers have auctioned the minimum percentage required each year. The minimum percentage of allocated allowances that must be auctioned began at 25 percent in 2015 and increases by 5 percent each year.

In March 2018, CPUC Decision 18-03-017 directed investor-owned natural gas suppliers to net all proceeds from auctioning vintage 2015-2017 allowances against 2015-2017 Cap-and-Trade Program GHG compliance costs. Thus for 2015 through 2017, natural gas customers neither paid for GHG compliance costs in rates nor received climate credits. Starting 2018, this Decision directs investor-owned natural gas suppliers to include GHG compliance costs in customer rates and requires the investor-owned natural gas suppliers to return all their auction proceeds to residential ratepayers, less a small amount for necessary administrative and outreach costs. Each residential ratepayer served by a given utility will receive an equal dollar amount, termed the natural gas "Climate Credit." The first annual natural gas supplier Climate Credits were distributed to residential ratepayers in October 2018, with later credits distributed annually in April.

Appendix B. Greenhouse Gas Reduction Fund Appropriations

Agency	Program	Cumulative Appropriations, Prior to FY 2018-19[55] ($M)	FY 2018-19 Appropriations[56] ($M)	Cumulative Total[57] ($M)
California Air Resources Board	Community Air Protection[58]	267	290	557
	Funding Agricultural Replacement Measures for Emissions Reductions Program[59]	85	112	197
	Low Carbon Transportation Program[60]	1,263	462	1,725
Caltrans	Active Transportation Program	10	-	10
	Low Carbon Transit Operations Program*	302	-	302
High-Speed Rail Authority	High-Speed Rail Project*[61]	1,738	-	1,738
State Transportation Agency	Transit and Intercity Rail Capital Program*	715	-	715
Strategic Growth Council	Affordable Housing and Sustainable Communities Program; Sustainable Agricultural Lands Conservation Program*	1,240	-	1,240
	California Climate Investments Technical Assistance Program	2	2	4
	Climate Change Research Program	11	18	29
	Transformative Climate Communities Program	150	40	190

[55] Prior year appropriations do not include prior year reversions to date.
[56] Appropriations listed are estimates based on published budgets, legislation, and quarterly Cap-and-Trade auction results.
[57] Totals may not sum due to rounding. Grand total includes additional administrative appropriations.
[58] FY 2018-19 Appropriations include $15M for program administration and $20M for District operations.
[59] FY 2018-19 Appropriations include approximately $1M for program administration.
[60] FY 2018-19 Appropriations include $7M for program administration.
[61] Total includes a $100M loan repayment from the General Fund.
* Programs denoted with an asterisk receive continuously appropriated funds. Not all FY 2018-19 auctions have occurred and therefore FY 2018-19 appropriations are unknown at this time.

Cap-and-Trade Auction Proceeds Revised Draft Third Investment Plan: Fiscal Years 2019-20 through 2021-22

Agency	Program	Cumulative Appropriations, Prior to FY 2018-19[55] ($M)	FY 2018-19 Appropriations[56] ($M)	Cumulative Total[57] ($M)
California Air Resources Board	Woodsmoke Reduction Program	5	3	8
Department of Community Services and Development	Low-Income Weatherization Program	192	10	202
Department of Food and Agriculture	Alternative Renewable Fuels Program	3	-	3
	State Water Efficiency and Enhancement Program	66	-	66
Department of Water Resources	State Water Project Turbines	20	-	20
	Water-Energy Grant Program	50	-	50
Energy Commission	Food Production Investment Program	60	64	124
	Transportation Technology and Fuels	-	13	13
	Renewable Energy for Agriculture Program	6	4	10
Conservation Corps	Training and Workforce Development Program	5	9	14
Department of Fish and Wildlife	Wetlands and Watershed Restoration Program	42	5	47
Department of Food and Agriculture	Alternative Manure Management Program; Dairy Digester Research and Development Program	161	99	260
	Healthy Soils Program	8	5	13
Department of Forestry and Fire Protection	Forest Health Program, Fire Prevention Program, Urban and Community and Forestry Program	302	165	467
	Prescribed Fire and Fuel Reduction	-	30	30

Cap-and-Trade Auction Proceeds Revised Draft Third Investment Plan: Fiscal Years 2019-20 through 2021-22

Agency	Program	Cumulative Appropriations, Prior to FY 2018-19[55] ($M)	FY 2018-19 Appropriations[56] ($M)	Cumulative Total[57] ($M)
Department of Forestry and Fire Protection	Fire Prevention in the State Responsibility Area (SRA)[62]	77	28	105
Department of Resources Recycling and Recovery	Waste Diversion Program	112	25	137
Natural Resources Agency	Regional Forest Health Projects	-	20	20
	Urban Greening Program	106	20	126
San Francisco Bay Conservation and Development Commission	Bay Conservation and Development	-	1	1
California Coastal Commission	Coastal Management Program	1	2	3
	Climate Ready and Coastal Resilience Planning	4	3	7
Wildlife Conservation Board	Climate Adaptation and Conservation Easements	20	-	20
California Governor's Office of Emergency Services	Wildfire Response and Readiness	25	25	50
		7,099	1,465	8,564

[62] FY 2018-19 Appropriations include $2.5M from California Conservation Corps line items. Also includes $5M for California Conservation Corps fire prevention in/near SRAs.

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Appendix C: Comment Summary

The Draft Cap-and-Trade Auction Proceeds Third Investment Plan: Fiscal Years 2019-20 through 2021-22 (Draft Investment Plan) was released in August 2018. In September 2018, CARB held two public workshops on the Draft Investment Plan: one in Fresno with a webcast and one in Los Angeles, both in English and Spanish. Written comments were also collected through an online comment log.

This appendix summarizes common themes in comments received at the workshops and through the online comment log on the Draft Investment Plan. The appendix also discusses how comments were addressed and, where appropriate, incorporated into the Revised Draft Investment Plan (Revised Draft). Many of the comments received suggested improvements to existing California Climate Investments programs. Guidance to agencies administering California Climate Investments is provided in CARB's Funding Guidelines[30], which were updated in 2018. Therefore, the Revised Draft does not include additional requirements for administering agencies.

Comment letters and community members voiced support for the Draft Investment Plan recommendations. The feedback specifically supported:

- Increased focus on community input, community-driven projects, technical assistance, and other ways to enhance benefits for communities, especially those with priority populations.
- Agency-coordinated projects to meet community needs.
- Continued funding for existing programs.
- Multi-year funding commitments for programs that do not receive continuous appropriations.
- The use of metrics to document and report positive and negative outcomes, most importantly air quality outcomes, in addition to GHG emissions.

Community-focused projects. Commenters reiterated the importance of obtaining community input to ensure that projects deliver benefits that are critical to the community. They specifically asked that all administering agencies be required to use the co-benefit assessment methodology for community engagement to gauge meaningful participation and award funding to applicants who meaningfully incorporate community needs and priorities into proposed projects.

> **Response:** The Revised Draft recommends funding community-focused programs that use community decision-making processes in project design and implementation (§III.A.2 [p.17]). The Revised Draft also signals to the Legislature that this important concept should be incorporated whenever feasible into future California Climate Investments legislation by clarifying the importance of meaningful community input in the key investment recommendations (§III [p.14]). Because community input can delay project implementation, the Legislature should weigh the benefits of agencies building more meaningful

relationships with communities and extended expenditure times for some projects (§III.A.2 [p.18]).

Outreach, technical assistance, and capacity building for applicants. Commenters supported the emphasis on technical assistance. They asked for direct assistance for small cities and noted that assistance with GHG calculations is particularly needed. Commenters suggested increased outreach to businesses, cities, and other small local jurisdictions about grant opportunities to fund tangible neighborhood improvements.

Response: The Revised Draft identifies technical assistance as a gap in current investments and the need for the Legislature or agencies to direct more funding toward improving the equity of outcomes across California Climate Investments programs (§III.A.1 [p.15-16]). The 2018 Funding Guidelines identify additional technical assistance and outreach strategies for administering agencies to encourage partnerships with community organizations and local government entities during project the application and project develop process.

Small community grants. Commenters raised a concern that there are not enough small grants available for neighborhood organizations and individuals, particularly those in disadvantaged communities.

Response: The Revised Draft endorses programs that focus on shaping projects to meet community needs (§III.A.2 [p.17]) and recommends that the Legislature and agencies consider funding more small grants (§III A.2 [p.18].

Workforce and economic development. Commenters suggested CARB work with the California Workforce Development Board to develop a comprehensive workforce and economic development strategy associated with the Investment Plan. Commenters suggested that the Transformative Climate Communities "Workforce and Economic Development Plan" may be useful for other programs. Commenters also requested a standardized tracking system for measuring the quantity and quality of employment benefits from California Climate Investments, with a number of specific requests for reporting requirements.

Response: The Revised Draft supports job training and apprenticeship opportunities, with a focus on disadvantaged communities, to provide the state's workforce with the job skills necessary to transition to a low carbon economy as a key priority for California Climate Investments. Pursuant to the requirements of AB 398, the California Workforce Development Board is in the process of developing a report, due to the Legislature in 2019, on labor market strategies to achieve the State's climate targets while ensuring that the benefits of a low carbon economy accrue to all Californians. This report may provide more direction on approaches to employment and training issues related to California Climate Investments. Administering agencies have historically underreported employment data due to complexities in collecting and consolidating this information from employers and a lack of standardized approach for tracking this information, among other reasons. Because tracking jobs and developing strategies require resources, the Legislature

should weigh the benefits of agencies diverting resources away from project implementation to do this administrative work. Updated reporting requirements in the 2018 Funding Guidelines include several metrics on the quantity and quality of jobs and job training, including number of individuals employed, description of job quality, and the number of disadvantaged community members in training programs funded through California Climate Investments. This job tracking data will be reported in the Annual Report[9] as it becomes available.

Air quality: Commenters stated that improved local air quality is urgently needed for health reasons and to meet State Implementation Plan requirements.

> **Response:** The Revised Draft highlights the importance of achieving other benefits in addition to GHG emissions throughout the document (§I [p.3], §IV.A. [p.21], §IV.B.I [p.24]). The Revised Draft also includes near-term health benefits as a key investment recommendation (§III [p.14]). The key investment recommendation to continue funding existing programs that reduce GHG emissions, sequester carbon, and improve air quality is also aimed at curbing air pollution. These existing air quality incentive programs will also help the State meet air quality standards. Agencies are required to report additional outcomes, including air pollutants, if CARB has developed methods for estimating those benefits or impacts. Air quality outcome data will be included in the Annual Report[9] as they become available.

Adaptation. Commenters requested that adaptation be addressed in the context of vulnerable communities, as well as natural habitats. Commenters requested that the Investment Plan identify applicable climate adaptation laws and policies affecting disadvantaged and low-income communities and describe how the laws and policies will influence appropriations. Commenters also requested that the Investment Plan outline specific strategies and project types that would reduce GHG emissions and help vulnerable communities with adaptation.

> **Response:** The Revised Draft discusses adaptation in a new section, “Mitigation and Adaptation” (§III.B.2 [p.19-20]) and in multiple other places as a priority investment identified in AB 398 (§IV.B.6 [p.27], §VI.B [p.39]). The Revised Draft also includes investing in adaptable communities and ecosystems as a key investment recommendation and reinforces that adaptation efforts must be coordinated with climate change mitigation (§III [p.14]). The Revised Draft also refers to AB 1482 and encourages the Legislature to consider the benefits of adaptation project components when appropriating funding.

California Climate Investments support for local climate strategies. Commenters recommended using the Investment Plan to promote coordinated action between California Climate Investments and regional and city strategies, especially on mobility, sustainability, and climate.

> **Response:** The Revised Draft notes that although California Climate Investments support and are coordinated with many other State regulations,

policies, and programs, there are additional opportunities to support regional and local climate initiatives (§II.B [p.9]). The Revised Draft also recommends that the Legislature consider directing funding towards small grants, which may be appropriate for regional or city climate implementation projects (§III.A.2 [p.18]).

Program coordination and an interdisciplinary approach. Commenters suggested that California Climate Investments could be more effective if agencies focused more on coordinating their programs and projects. Commenters also discussed the value of agencies working together to provide a uniform application to improve access.

Response: The Revised Draft discusses the opportunity that SB 1072 presents for greater agency coordination and suggests that the stability provided by multi-year funding will allow better interagency coordination (§III.A.1 [p.16], §III.B.1 [p.19]). The 2018 Funding Guidelines also recommend that agencies coordinate investments and leverage funds where possible to provide multiple benefits and to maximize benefits.

Transparency and accountability. Commenters noted the importance of accountability and transparency and want robust tracking reporting and quantification of benefits and outcomes besides GHG emissions. Commenters also requested that an analysis of outcomes, negative and positive, be included in the Investment Plan with an explanation of how programs have been modified in response to these data.

Response: The Revised Draft clarifies that it is important to use an array of metrics, regardless of whether they show negative or positive impacts of investment (§VI.B [p.39]). However, considerable effort is necessary to collect, compile, and report this information, and increased tracking and reporting means more funds are spent on administration with less available for implementation. The Revised Draft recommends that the Legislature continue to support the use of available metrics to document benefits and outcomes besides GHG emission reductions by providing agencies with greater funding certainty and/or additional time to include these metrics in their programs (§VI.B [p.42). The Investment Plan recommends broad priorities for the Legislature to consider when making funding decisions. The Funding Guidelines provide agencies with guidance on how to modify programs to better accomplish legislative priorities, comply with statutory requirements, and report outcomes, both positive and negative. The Annual Report[9] consolidates the reported information provided pursuant to the Funding Guidelines and includes up-to-date information on individual California Climate Investment programs. Agencies can use this information in the Annual Report[9] to modify their programs. Over time, the Annual Report[9] captures important program modifications, such as the addition of a new project type, and provides explanations on GHG benefits and other outcomes.

Negative impacts. Commenters voiced concern about potential unintended consequences of project implementation and the importance of avoiding additional burdens in vulnerable communities. Community advocates identified potential projects harms, which were often region-specific, and included:

- Wood-burning stove replacements incentivizing wood burning and increasing toxics.
- Dairy digester projects increasing herd size and thereby increasing local impacts.
- Housing and transit displacing low-income residents and businesses.
- Dust impacts from land use change associated with renewable energy infrastructure.
- Centralized waste processing increasing localized truck traffic.

Commenters recommended requiring all agencies to analyze and report on the potential adverse impacts of a project prior to funding the project.

> **Response:** The Revised Draft notes that the co-benefit methodologies will also track negative impacts of projects (§VI.B [p.39]) and the 2018 Funding Guidelines require administering agencies to use available benefit assessment methodologies. Adding specific requirements for established California Climate Investment programs is not within the scope of the Investment Plan; however, CARB has recognized and is working to address community concerns about adverse impact from projects. For example, the 2018 Funding Guidelines require administering agencies to design programs and select projects that avoid substantial burdens to priority populations. When appropriating funding, the Legislature may wish to consider additional funding or longer fiscal timelines so that agencies can implement strategies or requirements to avoid harms, such as convening an independent panel of advisors to evaluate projects.

Rural set-asides. Commenters requested the establishment of rural set-asides, specifically mentioning urban greening, energy efficiency, Transformative Climate Communities, and transportation programs. Commenters recommended the development of a separate methodology to calculate rural VMT.

> **Response:** Statute requires programs to prioritize benefits to disadvantaged communities and low-income communities and households[7,10] and GHG emission reductions. CARB develops methodologies to estimate benefits that reflect Legislative priorities and are based on best available science.

Metric for near-term cost-effective emission reductions versus long term technology investments. Commenters requested that CARB develop a metric to measure near-term benefits that are cost effective against long-term transformational technologies.

> **Response:** UC Berkeley investigated the option of a “market transformation” co-benefit but advised CARB not to pursue the methodology because of uncertainty in analysis and resource considerations.

Continued funding for existing programs. Commenters asked for more funding and consistency of funding for the Healthy Soils Program, State Water Energy Efficiency Program (SWEEP), Alternative Manure Management Program (AMMP), and

Low-Income Weatherization Program (LIWP). Healthy Soils advocates assert that soils have tremendous carbon sequestration capacity and that funds have not been proportionate to transportation and healthy forest appropriations. SWEEP was not funded in 2018. LIWP advocates argue that it is one of the few programs that give low-income families actual tangible benefits, both in adapting to climate change and mitigating greenhouse gas emissions. Commenters were especially supportive of Transformative Climate Communities and Community Air Grants programs because of their focus on community input and meeting community needs. Advocates for Climate Adaptation and Conservation Easements noted the need for more conservation funding. Advocates for the Food Production Incentives Program noted that the program is critical to industry. Almost all the California Climate Investments programs were explicitly supported by at least one commenter through either workshops or the online comment log.

> **Response:** The Revised Draft suggests continued funding for established California Climate Investments programs that incorporate and support legislative priorities and suggests to the Legislature that steady funding will allow agencies to refine programs and increase long term benefits (§III.B.1 [p.19]). The Revised Draft also clarifies the primary recommendation to extend multi-year funding to more of the established California Climate Investments programs. However, the Investment Plan does not recommend specific dollar amounts for programs.

Digital Inclusion. Commenters suggested California Climate Investments should fund digital inclusion projects in rural areas and in low-income urban areas through existing programs. Commenters stated that lack of access to broadband may prohibit rural residents from learning about and possibly participating in low carbon transit programs and energy efficiency programs. Commenters also said that activities like tele-commuting and medical appointments can be completed over the Internet, reducing vehicle-miles-travelled. Commenters requested that CARB work with agencies to ensure digital inclusion is embedded in programs where appropriate.

> **Response:** California Climate Investments projects must facilitate the reduction of GHG emissions. Scientific evidence to support and quantify GHG reductions for digital inclusion projects may not currently be available, and therefore a new appropriation to fund stand-alone digital projects may not be appropriate. While commenters provided specific suggestions to better support digital inclusion efforts within existing appropriations, adding detailed approaches specific to each program is not within the scope of the Investment Plan.
>
> The Revised Draft identifies community benefits and access to funds as a priority for California Climate Investments (§III.A, [pg 14]). Access can be improved through many strategies, including outreach, technical assistance, and other fundable elements of projects that support the facilitation of greenhouse gas reductions. The Revised Draft also notes that GHG cost-effectiveness continues to be an important priority, and the Legislature has to balance a number of

competing priorities as they consider new expenditures and focus on maximizing priority benefits from existing programs (§VI.A, [pg.38]).

Digital inclusion is a broader State effort and is being addressed through other agency efforts. The California Broadband Council, led by the Department of Technology, collaboratively develops and recommends broadband deployment and adoption strategies, and AB 1665 (E. Garcia, Chapter 851, Statutes of 2017) provides additional funding ($645M) for the California Public Utilities Commission to further the objective of providing broadband access to a vast majority of Californians by 2022.

Comments on specific programs or project types. Commenters requested that specific project types or programs be recommended for funding or defunding in the Investment Plan.

- **LIWP.** LIWP should fund roof improvements so that low-income people can participate in rooftop solar programs.
- **Woodsmoke.** The Woodsmoke program should not be replacing wood stoves with more efficient wood stoves because of air quality impacts, especially if gas is available. Districts should be consistent with eligibility.
- **Freight.** Low Carbon Transportation programs are essential to improve air quality and should be emphasized in the Investment Plan.
- **Conservation.** The Wildlife Conservation Board's Climate Adaptation and Easement Program should fund the purchase of land, in addition to easements.
- **Water and energy efficiency**. Funding should support investments in public water systems and mutual water companies.
- **Organic farming**. A program should be created to fund organic farming.
- **Innovative technologies**. Micro mobility (electronic bikes and scooters) and syngas waste incinerators should be funded.
- **Natural gas**. Some commenters suggested that investments that increase infrastructure to support natural gas for onsite energy should not be funded, due to increases in local criteria pollutant emissions and concerns that investment in natural gas does not support long-term climate and clean air goals. Other commenters suggested the opposite, that natural gas is a key component of achieving near-term energy efficiency on the path towards long-term climate goals.
- **Air masks.** CARB or Air Districts should provide masks for the public during air pollution events.

Response: The evolving structure of California Climate Investments and the emphasis on GHG emission reductions and other benefits give agencies the flexibility to expand their suite of project types, as long as programs achieve GHG emission reductions. The Revised Draft recommends avoiding establishing new programs because they increase the administrative costs to California Climate Investments as a whole (§III.B.3 [p.20], §V [p.27]).

Auction Proceeds: Instead of funding California Climate Investments, CARB should return most or all of the Cap-and-Trade proceeds to the public through dividends.

Response: The Legislature established the GGRF in 2012 via SB 1018[51] to fund California Climate Investments and directed the Department of Finance to create an Investment plan via AB 1532[6] in the same year.