STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
DF-46 (REV 08/15)

Fiscal Year	Business Unit	Department	Priority No.
2016-17	3900	Air Resources Board	13

Budget Request Name	Program	Subprogram
3900-013-BCP-BR-2016-GB	**3510- CLIMATE CHANGE**	**N/A**

Budget Request Description
Cap and Trade Expenditure Plan – Refrigerants

Budget Request Summary
The Air Resources Board is requesting one-time spending authority for $20 million from the Greenhouse Gas Reduction Fund to create a "Low-Greenhouse Gas Refrigeration Pilot Projects in Disadvantaged Communities Incentive Program." This funding would provide$19.7 million in local assistance, 1.0 limited-term Air Pollution Specialist Position (1.0 position for four years, $145,000), and 1.0 permanent full-time Air Resources Engineer (1.0 position, $145,000). New refrigeration technologies with much lower greenhouse gas emissions are available and are necessary for achieving mandated statewide greenhouse gas emissions reduction targets; however, they face initial barriers to adoption due to high cost and lack of technical expertise, necessitating an incentive program. Funds can be completely dedicated within disadvantaged communities, through retiring and replacing old and high-greenhouse gas refrigerant systems with low-greenhouse gas refrigerant systems, supporting the demonstration of advanced refrigeration technologies in California, and providing an array of additional co-benefits such as job creation.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed
☐ Yes ☒ No	

Does this BCP contain information technology (IT) components? ☐ Yes ☒ No *If yes, departmental Chief Information Officer must sign.*	Department CIO	Date

For IT requests, specify the date a Special Project Report (SPR) or Feasibility Study Report (FSR) was approved by the Department of Technology, or previously by the Department of Finance.
☐ FSR ☐ SPR Project No. Date:

If proposal affects another department, does other department concur with proposal? ☐ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Bart Croes	1/6/16	Alice Stebbins	1-6-16
Department Director	**Date**	**Agency Secretary**	**Date**
Richard W. Corey	1/6/2016	Matthew Rodriquez	1/6/16

Department of Finance Use Only

Additional Review: ☐ Capital Outlay ☐ ITCU ☐ FSCU ☐ OSAE ☐ CALSTARS ☐ Dept. of Technology

BCP Type: ☐ Policy ☐ Workload Budget per Government Code 13308.05

PPBA	Date submitted to the Legislature
Original Signed By: Ellen Moratti	

A. Budget Request Summary

The Air Resources Board (ARB) is requesting one-time spending authority for $20 million from the Greenhouse Gas Reduction Fund (GGRF) for fiscal year (FY) 16-17 to create a "Low-Greenhouse Gas (GHG) Refrigeration Pilot Projects in Disadvantaged Communities Incentive Program." This funding would provide $19.7 million in local assistance, 1.0 limited-term Air Pollution Specialist Position (1.0 position for four years, $145,000) focused on program coordination, and 1.0 permanent full-time Air Resources Engineer (1.0 position, $145,000) focused on the technical and engineering aspects of program implementation.

New refrigeration technologies with much lower greenhouse gas (GHG) emissions are available and are needed for achieving mandated statewide GHG emissions reduction targets; however, they face initial barriers to adoption due to higher cost and lack of technical expertise, necessitating an incentive program. Funds can be completely dedicated within disadvantaged communities, through retiring and replacing old and high-GHG refrigerant systems with low-GHG refrigerant systems, supporting the demonstration of advanced refrigeration technologies in California and providing an array of additional co-benefits such as job creation.

With current resources and economic conditions in the grocery sector generally, and in disadvantaged communities in particular, assistance is needed to support achieving the goals of AB 32, , the Governor's Executive Orders relating to refrigerants that contribute to global climate change, and to fulfill the intent of SB 605 to achieve aggressive emission reductions of Short-Lived Climate Pollutants (SLCP).

This request for administrative funding and positions is necessary for designing and implementing a successful new program that targets lower-income businesses and bring investments to disadvantaged communities. ARB will partner with the California Pollution Control Finance Authority (CPCFA) in the State Treasurer's Office to administer the program. . CPCFA has existing expertise administering ARB financing to California businesses.

B. Background/History

California's Climate Goals

Implementation of the California Global Warming Solutions Act of 2006 (AB 32) includes measures that achieve real, quantifiable, cost-effective reductions of GHG emissions and return California to 1990 emission levels by 2020. Since 2006, the State has continued to steadily implement a set of actions that are driving down GHG emissions, cleaning the air, diversifying the energy and fuels that power our society, spurring innovation in a range of advanced technologies and improving natural resource health statewide.

These efforts have put California on course to achieve the 2020 emissions limit, and have created a framework for ongoing climate action that can be built upon to maintain and continue reductions beyond 2020. In addition to the near-term GHG emission reduction goals established in AB 32, mid-term and longer-term GHG emission reduction targets have been established in Executive Orders B-30-15 and S-3-05 to reduce greenhouse gas emissions by 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050, respectively.

The Greenhouse Gas Reduction Fund (GGRF -funded by the Cap-and-Trade Program generated Auction Proceeds, authorized by AB 32) has been established for the purpose of funding measures that allow California to achieve its GHG reduction goals, furthering the purposes of AB 32. In addition, SB 535 (Chapter 830, Statutes of 2012) requires that twenty-five percent of GGRF funds are spent to benefit designated disadvantaged communities, and ten percent must be spent within disadvantaged communities.

Analysis of Problem

To be able to meet these targets, a special effort has been mounted to address SLCPs. These are powerful climate forcers that remain in the atmosphere for a much shorter period of time than longer-lived climate pollutants, such as Carbon Dioxide (CO_2.) SLCPs, which include methane, fluorinated gases (F-gases), black carbon, and tropospheric ozone, are among the most harmful GHGs to both human health and global climate. Their relative potency, when measured in terms of how they heat the atmosphere, can be tens, hundreds, or even thousands of times greater than that of CO_2. In the case of F-gases, these are the most potent group of SLCPs, up to 22,800 times as potent as CO_2. More than 99 percent of retail food establishments still use high-GHG refrigerants.

In May 2015, in accordance with SB 605 (Chapter 523, Statutes of 2014), ARB released Short-Lived Climate Pollutant Reduction Strategy Concept Paper[1] (Concept Paper) proposing additional measures to reduce methane emissions by 40 percent, and HFCs by 40 percent, by 2030, significantly beyond existing 2020 goals. In September 2015, ARB released the subsequent Draft Short-Lived Climate Pollutant Reduction Strategy (SLCP Strategy) which further detailed the method of obtaining these reductions. An incentive program of this type was among the measures identified.[2]

Fluorinated Gases (F-gases)

As mentioned above, F-gases are SLCPs, of which HFCs are by far the largest group. HFCs are used for a variety of purposes including refrigerants that provide cooling (refrigeration and air conditioning), foam insulation, and aerosol propellants. HFCs range from approximately 1,400 to 14,800 times more potent than CO_2, pound for pound, at warming the climate over the course of a century.

California has taken significant steps in reducing F-gas emissions: California has a Cap-and-Trade offset protocol incentivizing the capture and destruction of ozone depleting substances (ODS), and regulations in place that will cut emissions of HFCs to 25 percent below projected levels in 2020.

Still, more remains to be done. HFCs are the fastest-growing source of GHG emissions in California (see figure 1, below) and globally. Currently HFC emissions comprise four percent of all GHG emissions in California, although as they continue to replace ozone-depleting substances, their emissions will double in the next few decades if additional reduction programs are not put into place. In particular emissions from refrigeration and air conditioning systems are large sources of HFC emissions where ARB needs to implement regulations and develop long-term strategies.

[1] The May 2015 *Short Lived Climate Pollutants Concept Paper* may be found at: http://www.arb.ca.gov/cc/shortlived/concept_paper.pdf

[2] The September 2015 *Draft Short-Lived Climate Pollutant Reduction Strategy* may be found at: http://www.arb.ca.gov/cc/shortlived/2015draft.pdf

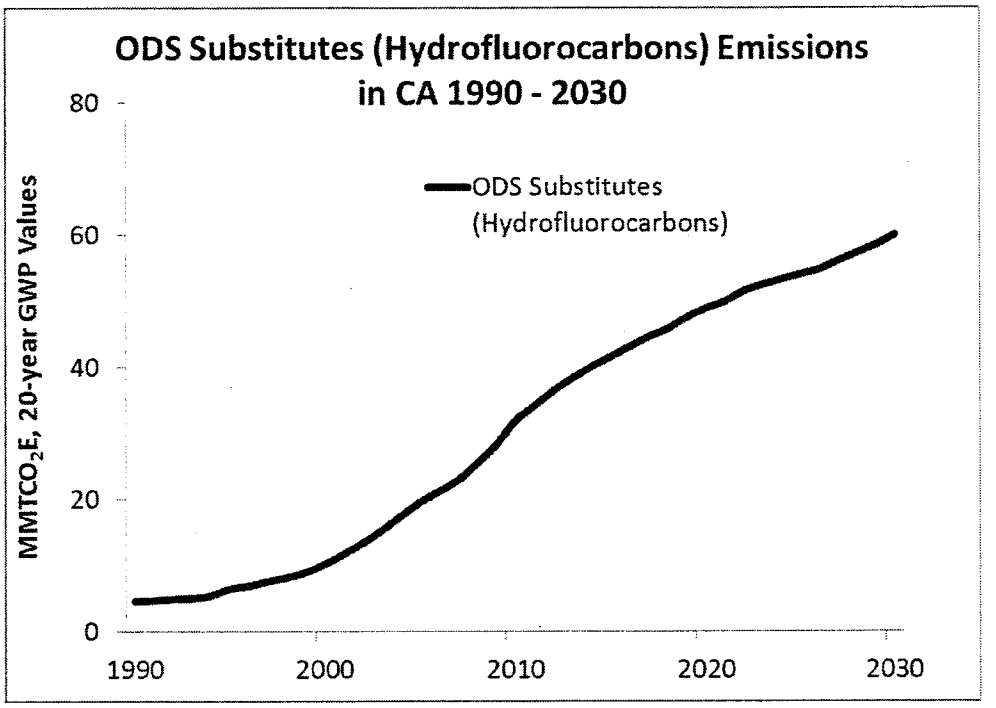


Figure 1: 1990-2030 California Emission Trend of Hydrofluorocarbons (HFC) as they replace ozone depleting substances (ODS substitutes).

The Refrigerant Management Program (RMP), an existing state regulation, identifies and regulates a group of F-gas refrigerants known as high-global warming potential (high-GWP) refrigerants, due to their strong effect on climate change if released into the atmosphere.

High-GWP refrigerants are defined as refrigerants that are at least 150 times as potent as CO_2 at warming the climate over a 100-year period, and ozone depleting substances (ODS). Refrigerants that have a global warming potential of less than 150 times as potent as CO_2 are known as low-GWP refrigerants. Low-GWP refrigeration technology promises to reduce emissions of HFCs by directly replacing the HFC systems. An incentive program is needed because although this technology is available, the price is still too high for adoption.

Refrigeration technology can be as small as the air conditioner in an automobile, or as large as a giant cold storage warehouse the size of many football fields. Large scale refrigeration is also used for many industrial processes including power plants and refineries. This incentive program is intended to directly address the grocery industry.

Grocery stores are the largest single group using large scale refrigeration, with close to 6,500 stores of varying sizes in California, almost 4,000 of which are large enough to be registered with ARB. This provides an excellent dataset for understanding and assessing the industry.

Analysis of Problem

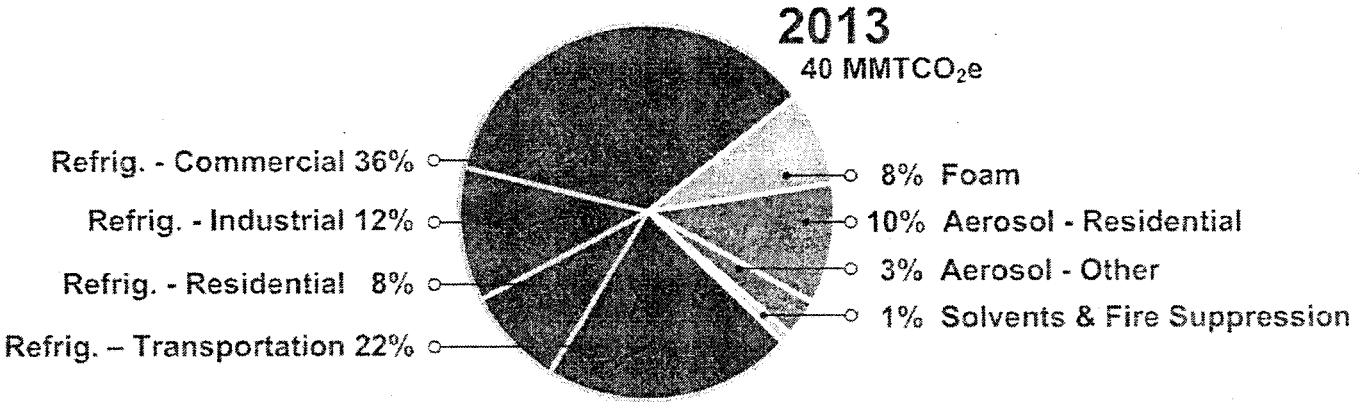


Figure 2: California 2013 F-gas (Hydrofluorocarbon) Emission Sources (over 20-years)

The grocery industry accounts for the majority of the commercial refrigeration sector, which comprises 36 percent of California's emissions of HFCs (see figure 2, above). This is because their systems are inherently large and prone to leaks. Replacing these systems with new low-GWP technology can have a very large effect on reducing GHG emissions, both from refrigerant and from energy efficiency. In addition, economically, the grocery industry operates on small margins of one to two percent, and on average a new store will take at least ten years to break even on the investment. Because the new low-GWP technology is more expensive, and has not been well established in this country, adoption has been unable to proceed. Within disadvantaged communities, the barriers to making the investment in new technologies are even greater. Only an incentive program can steadily bring the price down and generate acceptance and support for the new low-GWP technologies.

Just one pound of any of the most common three refrigerants in use today, which dominate the grocery industry (R-22, R-404A and R-507A), if released into the atmosphere, are nearly as powerful climate forcing agents as would result from driving two average cars in California for a year, in terms of damage to the climate over the next 20 years.

A typical large supermarket in California contains roughly 3,500 pounds of high-GWP refrigerants. These refrigeration systems leak refrigerant into the atmosphere due to high pressures in piping that may stretch over 12 miles in length in any given store, in order to provide cooling to all the refrigerated display cases on the sales floor. In order to work its way through all the display areas, this piping has many junctures and weak points where leaks are particularly likely to occur. A typical supermarket in California, according to data reported to the RMP by over 4,000 facilities annually, leaks 20 to 25 percent per year.[3] Thus in the example given here, a typical large supermarket emits approximately 800 pounds of high-GWP refrigerant per year on average, more than the emissions of driving 500 cars each year. By contrast, a supermarket using low-GWP CO_2 as refrigerant with a similar equipment size and leak rate would emit the equivalent emissions of just one-tenth of one car per year.

There are two primary strategies for reducing emissions:

a. Assist in the purchase of an entirely new system. This can be done for both new stores and existing stores that are ready to replace their refrigeration system.

b. For existing stores that are not ready to replace their refrigeration systems, the refrigerant can be exchanged for a less harmful refrigerant.

Emerging Refrigeration Technology

[3] The online RMP reporting tool (R3) is located at https://ssl.arb.ca.gov/rmp-r3/
The data gathered by R3 represents the largest and most detailed data repository in the world. ARB has provided this data repeatedly to the U.S. EPA for developing national measures, as the best available source of its kind.

The emerging low-GWP technologies offer the opportunity to replace existing high-GWP technologies, but they cost more because they are new. For a grocery store this could mean up to an additional $200,000 to purchase a low-GWP system on top of the base price of $1,000,000 or more.

Low-GWP options for new systems that can be incentivized include the natural refrigerants:

- CO_2 requires higher pressures, but depending on climate zone, can save on energy and even provide co-generation of useful heat. In Europe, over 5,200 grocery stores use CO_2 as a refrigerant. In the United States, there are fewer than ten. Their adoption in the U.S.A. would provide a tremendous reduction in GHG emissions from the grocery sector. They can also be used in cold storage warehouses and other large scale cooling operations. This technology is commercially available and approved to be used in CA.
- Ammonia works very efficiently, and has zero effect on the ozone layer and zero impact on climate change. Although ammonia refrigerant has been used for more than 100 years in commercial and industrial applications, its properties as a toxic lung irritant has discouraged its use in retail settings. However, new low-GWP technologies have developed ammonia refrigeration using much smaller charge sizes and rooftop placement of equipment that eliminate safety concerns. Ammonia has been approved for use in retail food facilities, and is being used currently in at least two supermarkets in California.
- Hydrocarbons such as propane and butane are also very energy efficient refrigerants, however they can be flammable, so their uses are limited to small scale applications such as home refrigerators. In Europe where larger charge sizes of hydrocarbons are allowed, larger units are used in grocery stores. Currently, refrigeration professionals are working with safety and standards organizations to allow larger hydrocarbon refrigeration systems in the United States.

Reduced GHG options for existing systems:

- Hydrofluoro-olefins (HFO) are a new class of synthetic refrigerant that have low-GWP because they break down quickly if released to the atmosphere. Due to mild flammability, these are not approved for use in commercial refrigeration except in HFO blends. HFO blends combine the low-GWP HFOs with high-GWP refrigerants, to create a mixture that can be substituted, with some adjustments, into existing systems. The blending of high-GWP refrigerants reduces the flammability such that the blends were recently approved for use in commercial refrigeration. These can reduce the climate impact by close to a factor of three when the worst refrigerants are substituted for. Because there are many existing systems that are not ready to be replaced, the incentive program may consider funding retrofits with HFO blends, particularly for systems identified as chronic leakers with high leak rates of the most harmful refrigerants.

Funding Source

The GGRF funds measures that support achieving the goals of AB 32.

Disadvantaged Communities

SB 535 requires that at least 25 percent of GGRF funds be allocated to projects that provide benefits to communities and that at least 10 percent of the available moneys in the fund be provided to projects located within communities Many of the benefits of reducing HFC emissions in California will accrue in the most disadvantaged parts of the State, where further economic development is most needed. This GGRF program component is designed to allocate funding to disadvantaged communities.

- Switching to low-GWP refrigeration is expected to improve energy efficiency, thus cutting GHG emissions from power generation along with cutting electricity bills throughout the state.

- Job creation in disadvantaged communities is likely to result in the service industry, as the expertise for servicing low-GWP refrigeration will grow from the technologies being established in those communities.
- Incentive options can include custom incentives and demonstration projects both to maximize the variety of experiences and co-benefits attained. For example, by offering financing, new low-GWP supermarkets may be possible where they otherwise would not have been built, thus increasing access to healthier foods (addressing "food deserts") along with further job creation.
- Making upgrades to systems can benefit stores that presently use run-down, inefficient, fallible and leaky systems. This will reduce maintenance costs, save energy bills, protect against product losses and reduce maintenance costs, and can substantially improve the attractiveness of the store, thus improving public perception of the area and potentially increasing the customer base. Custom incentives can potentially coordinate storewide energy efficiency upgrades with refrigeration upgrades.

C. State Level Considerations

This proposal will help ARB to meet the emission reduction goals set in the SLCP strategy required by SB 605 and is calculated to be the methodology for meeting the F-gas GHG emission reductions for 2020 mandated by AB 32. The program implemented through the resources allocated in this proposal will, in turn, support California's efforts to achieve the State's near-term (under AB 32), as well as the mid-term and long-term GHG reduction goals; completion of one of the Governor's "five pillars" objectives (e.g., 50 percent reduction in petroleum fuel use, 50 percent renewables in electricity, reduction of SLCPs, cleaner home heating fuels, and management of soils and agricultural lands to improve carbon storage); and the 40 percent GHG midterm reduction goal by 2030 in Executive Order B-30-15. ARB will continue its coordination with stakeholders to develop the most comprehensive approach and align with other state goals such as energy efficiency and providing benefits to and within disadvantaged communities.

D. Justification

As discussed above, ARB has conducted an analysis of the options for reducing emissions of high-GWP refrigerants and has found that GHG reductions required by legislative mandates and the Governor's Executive Orders cannot be met without an incentive program of this kind. In assessing the needs for such a program, two positions will be needed through the expected life of the incentive program (four years), with one of the two required for ongoing work related to the incentive program .

The ARB analysis included extensive stakeholder interviews, literature reviews and site visits throughout 2015, including interviews with equipment manufacturers, advocacy groups/NPOs, international governing bodies, chemical producers, and representatives of California's grocery industry. An incentive program was specifically called for in numerous official comments submitted during the SLCP Strategy public process as well as the public process for the Investment Plan. Proponents include the California Retailer's Association, representing over 160,000 California businesses. In addition ARB has met with and explored the potential for partnering with the California Energy Commission, California Public Utilities Commission, and local utilities.

The only existing incentive programs that could help fund low-GWP refrigeration systems are energy efficiency measures. Unfortunately, even at high levels of energy efficiency, these do not provide a level of cost reduction high enough to move the market. The precedent for an incentive program comes internationally. Europe has numerous incentive programs which helped reach the high levels of adoption that are seen today (over 5,200 low-GWP systems). Germany, for example, provided up to 150,000 euros (roughly $200,000) for new low-GWP systems installed in grocery stores.

If the requested resources are not provided, ARB will be limited in its ability to reduce SLCPs generated by refrigerants. The September 2015 Draft SLCP Strategy identifies the need to investigate and

develop measures that would achieve a 40 percent reduction in HFCs by 2030. Additionally, ARB currently has only very limited capacity to dedicate to the development of this and related measures, and the demands on those resources are increasing concurrently with the advent of this program. Diverting existing staff resources to work on the tasks identified in this proposal would result in the State backsliding from meeting the legislatively mandated 2020 climate goals and by extension, the subsequent targets as well.

Based on program design and past experience, ARB anticipates that two technical positions are needed, to be filled by professional staff comprised of one Air Resources Engineer, and one limited-term Air Pollution Specialist. These new positions will be situated within the existing F-gas group within ARB. More details on the resource needs are described below:

Resource Need/Task	Requested Resources		
	FY 2016/17	FY 2017/18	FY 2018/19 & ongoing
Develop the engineering criteria and guidelines for the assessment and implementation of low-GWP cooling technology, including the framework for monitoring and evaluating those implementations over time. Specific ARB tasks include: • Review applications (hundreds) for compliance with engineering criteria and program guidelines • Conduct and compile research, and write reports • Conduct technical modeling • Coordinate with stakeholders and technical experts including workshops; • Monitor and evaluate energy use, emissions, operational considerations including maintenance and downtime, and costs of new low-GWP technologies Identify and make policy recommendations on best practices in use of emerging low-GWP refrigeration/cooling technologies (engineering-level)	1.0 PY	1.0 PY	1.0 PY
Coordinate program implementation. Participate in data collection and evaluation of low-GWP emission reduction projects. Specific ARB tasks include: • Coordinate and oversee the activities of administering agencies • Develop interagency agreements and any working groups • Manage contracts • Stakeholder outreach, including potentially thousands of small business, local air districts and state and federal agencies including workshops • Data gathering and assessment; surveys; • Conduct and compile research and write reports • Identify and make policy recommendations (program-level)	1.0 PY	1.0 PY	1.0 PY

In summary, the incentive program is necessary not only to reach short-term targets but to establish and test the technologies that are necessary for the future. The incentive program can reach hundreds of facilities given the proposed level of funding.

This process is a critical piece of developing and realizing the regulatory requirements planned for 2020. The two positions sought are necessary and complementary: one focused on engineering evaluation and the other focused on program operation and success. The engineering approach includes the evaluation, and review of many technical proposals seeking incentive funding for approval, improvement or denial. The second position is responsible for continuous coordination with administering agencies, evaluations and written assignments and supports the program structure and the resulting relationships necessary with a large number of stakeholders. Both contribute to assess the effectiveness of the program overall and reporting on economic and technical characteristics of the program, the effects in disadvantaged communities, emissions reductions, and the anticipated emissions reductions over time.

Staff will develop and conduct technical modeling, manage contracts, and develop interagency agreements or working groups on an as-needed basis. In addition, the staff will use information gathered through those avenues to write internal reports, academic, peer-reviewed papers. Based on all the information, staff will identify and make policy recommendations, and assist in the development of strategy documents .

E. Outcomes and Accountability

Monitoring and evaluation of program effectiveness will utilize the existing RMP database which currently monitors over 4,000 facilities in California through annual reporting of refrigerant use. Recipients of incentives will be required to report their experience in the R3 online reporting tool along with additional reporting requirements specified in the terms of receiving the incentive (program guidelines and criteria).

Outcomes:

This proposal will lead to programmatic and policy benefits to reduce HFCs that are multi-fold:

1) Implement pilot projects establishing low-GWP technology in California
2) Gather data on cost, operational characteristics, energy efficiency, maintenance requirements, co-benefits, and emissions for these new low-GWP technologies;
3) Focus on benefits within designated disadvantaged communities
4) Provide the opportunity for the growth of a new service industry skilled in designing, installing, operating and servicing the new low-GWP refrigeration technologies
5) Achieve state-mandated GHG reductions that are not possible without the program
6) Lead the nation in adopting low-GWP technology, and assist the United States Environmental Protection Agency (U.S. EPA) in adopting national measures
7) Utilize lessons learned from analyzing the data to inform already planned regulatory actions;

Workload Metrics[4]

This proposal would implement new programs; however, experience with developing, implementing, and enforcing ARB's RMP, an early action measure, and developing the F-gas strategy pursuant to SB 605, provides a basis for determining potential work metrics for this proposal. For development and implementation of this incentive program, ARB requests one engineering staff and one limited-term program staff. The new staff will support one existing program lead to develop, implement, monitor,

[4] This is a new program so there is no resource history or past program budget to report.

and carry forward the incentive program as well as the results of monitoring the program which will inform future policy.

Projected Outcomes

Workload Measure	FY 2015-16	FY 2016-17	FY 2017-18
Incentivize new low-GWP systems	• Establish program (develop guidelines, criteria, finalize interagency agreements, initial outreach) • Solicit first applications • Review applications (hundreds) – Evaluate, Prioritize • Fund first pilot projects • Increased stakeholder/potential grantee communications • Increased site visits and program reviews • Track	• Continue implementation • Monitoring, evaluation, and informing program development	• Continue implementation • Monitoring, evaluation, and informing program development
Incentivize retrofits to reduced GHG refrigerants	• Establish program(develop guidelines, criteria, finalize interagency agreements, initial outreach) • Solicit first applications • Review applications (hundreds) – Evaluate, Prioritize • Fund first pilot projects • Increased stakeholder/potential grantee communications • Increased site visits and program reviews	• Continue implementation and evaluation • Increase focus on projects with new systems	• Continue implementation and evaluation • Monitoring, evaluation, and informing program development

F. Analysis of All Feasible Alternatives

1. Approve proposal. ARB requests one-time spending authority for $20 million to fund $19.7 million in local assistance to implement the described incentive program, one limited-term Air Pollution Specialist Position (1.0 PY for four years, $145,000), and one full-time permanent Air Resources Engineer (1.0 PY, $145,000).

The incentive program is necessary component for achieving state mandates dictated in both state legislation and Executive Orders, and further specified in the SLCP Strategy as described herein. A lesser level of investment would jeopardize reaching California's climate goals.

2. Redirect existing ARB resources. This alternative would redirect existing staff resources to work on the tasks identified in this proposal. However, current staff resources are working full time on implementing and enforcing existing regulations, conducting outreach and compliance assistance, developing/updating emissions inventory, evaluating effectiveness of existing rules, and identifying gaps to ensure California meets the 2020 emission reduction goals legislatively required by AB 32.

The F-gas engineering skills and other expertise needed are specific and specialized in nature and different than many if not all ARB staff in other areas of the agency. Current resources are at full capacity and cannot be diverted from the important task of implementing existing regulations that enable ARB to meet the legislatively mandated 2020 goals. Diverting existing staff resources to work on the tasks identified in this proposal would result in the State backsliding from meeting these goals.

3. Fewer staff resources than requested. Under this alternative, as specified above, ARB would not be able to achieve the Administration's objectives. The inclusion of appropriate levels of program staff is critical to develop the necessary guidelines and criteria of the proposed program, perform ongoing technical evaluations and monitoring of hundreds of potential projects. Lowering staff resources would result in the inability to develop a robust program, thus not achieving the intended emission reductions.

4. No action. Do not provide ARB with additional staff or contract funds. Under this alternative, ARB would not have the adequate resources to achieve the state mandates for GHG emissions reductions. . ARB would not be able to investigate and develop measures that would achieve a 40 percent reduction in HFCs by 2030.

G. Implementation Plan

ARB will partner with CPCFA in the State Treasurer's Office to administer the program. ARB will provide the program design to provide for the best use of funds and maximization of SLCP reductions. CPCFA has existing expertise administering ARB financing to California businesses, such as for the Heavy Duty On-Road Truck loan program through CPCFA's California Capital Access Program (CalCAP). CPCFA has expressed interest in this program. In addition, after investigating the potential for other agencies to administer this incentive program, the legislative authority of CPCFA matches the needs identified.

ARB will develop criteria and guidelines in coordination with the CPCFA. CPCFA will develop the incentive options based on ARB's criteria and guidelines. A competitive application process will be developed wherein applicants are ranked by 1) cost effectiveness of GHG emissions reductions; 2) ability to achieve benefits within disadvantaged communities; and 3) type of technology, so that all viable technologies are tested. CPCFA will seek outside assistance for the task of interfacing with thousands of potential applicants. As the understanding of the most effective types of incentive projects develops, CPCFA will develop those types of incentives (e.g., grants, financing, and/or hybrid approaches as well as outreach to generate applications). Applications will then be solicited, ARB will review CPCFA evaluation of applications and perform analysis leading to prioritization of applicants by criteria. ARB will monitor recipients using ARB's existing reporting database used by thousands of facilities to register and report their refrigerant systems and use and additional recipient actions required by the guidelines. As data comes in from the projects, the information gathered will be used to both improve the incentive program in order to maximize effectiveness of incentive awards going forward, and also to better define the technological specificity of ongoing program development requiring these new GHG-reducing technologies at the state level.

IMPLEMENTATION PLAN

FY 2016/17	FY 2017/18
• Recruit, hire, and train new technical staff • Review of all available refrigeration technology options • Stakeholder interviews for both review of technological options and program development • Development of market characteristics and specific technology needs including spatial (GIS) analysis of needs within disadvantaged communities • Develop interagency agreements or workgroups	• Support and train entities retained by administrative agency (CPCFA) such as air districts, nonprofits, utilities and financiers • Validate, analyze, compare and report ongoing data collection • Initiate data analysis (results from F-gases monitoring) • Conduct public workshops, where necessary • Identify research needs and implement contracts • Grow F-gases related stakeholder outreach • Ongoing F-gas and low-GWP stakeholder

• Develop program structure, criteria, guidelines, outreach plan and outreach materials, incentive application process • Develop relationships and responsibilities framework across implementing organizations • Develop and document necessary monitoring methods designed to best inform policy timeline • Conduct literature review • Identify research needs and implement contracts • Ongoing F-gas and low-GWP stakeholder outreach • Support the creation of a service sector capable of designing, installing, and maintaining new reduced GHG technologies • Support data requests from external entities such as U.S. EPA, European Commission, etc.	outreach • Support data requests from external entities such as U.S. EPA, European Commission, etc. • Annual review of all aspects of incentive program in comparison with non-recipients • Publication of findings • Economic assessments of first pilot projects

H. Supplemental Information

No special resources are identified at this time.

I. Recommendation

ARB recommends approving Alternative 1, requesting one-time spending authority for $20 million that would fund $19.7 million in local assistance to create the incentive program, for which one limited-term Air Pollution Specialist Position (1.0 PY for four years, $145,000) and one full-time permanent Air Resources Engineer (1.0 PY, $145,000) are needed.

The incentive program is necessary for helping achieve state mandates in both state legislation and Executive Orders, and further specified in the SLCP Strategy as described herein. A lesser level of investment would jeopardize reaching California's climate goals.

J. Addition of Budget Bill Language to Item 3900-101-3228 as follows:

1. Notwithstanding Section 16304.1 of the Government Code, the funds appropriated in this item shall be available for encumbrance until June 30 2019, and be available for liquidation of encumbrances until June 30, 2022.

Air Resources Board					Attachment A Workload Justification	
Fund:	**Greenhouse Gas Reduction Fund**					
Position Title:	**Air Pollution Specialist**					
Workload Measure	**FY 2016-17**			**FY 2017-18**		
Description of task	**Number of Times the task was performed**	**Number of hours needed to complete task**	**Total number of annual hours**	**Number of times the task was performed**	**Number of hours needed to complete task**	**Total number of annual hours**
Coordinate and oversee the activities of administering agencies	1	300	300	1	400	400
Develop interagency agreements and any working groups	3	80	240	2	100	200
Manage contracts	1	200	200	1	200	200
Stakeholder outreach, including potentially thousands of small business, local air districts and state and federal agencies including workshops, liaison to disadvantaged communities as appropriate	50	8	400	40	8	320
Data gathering and assessment; surveys;	1	300	300	1	360	360
Conduct and compile research and write reports	1	360	360	1	320	320
Total Hours			**1800**			**1800**

Identify and make policy recommendations (program-level)

Numbers are based on previous workload experience

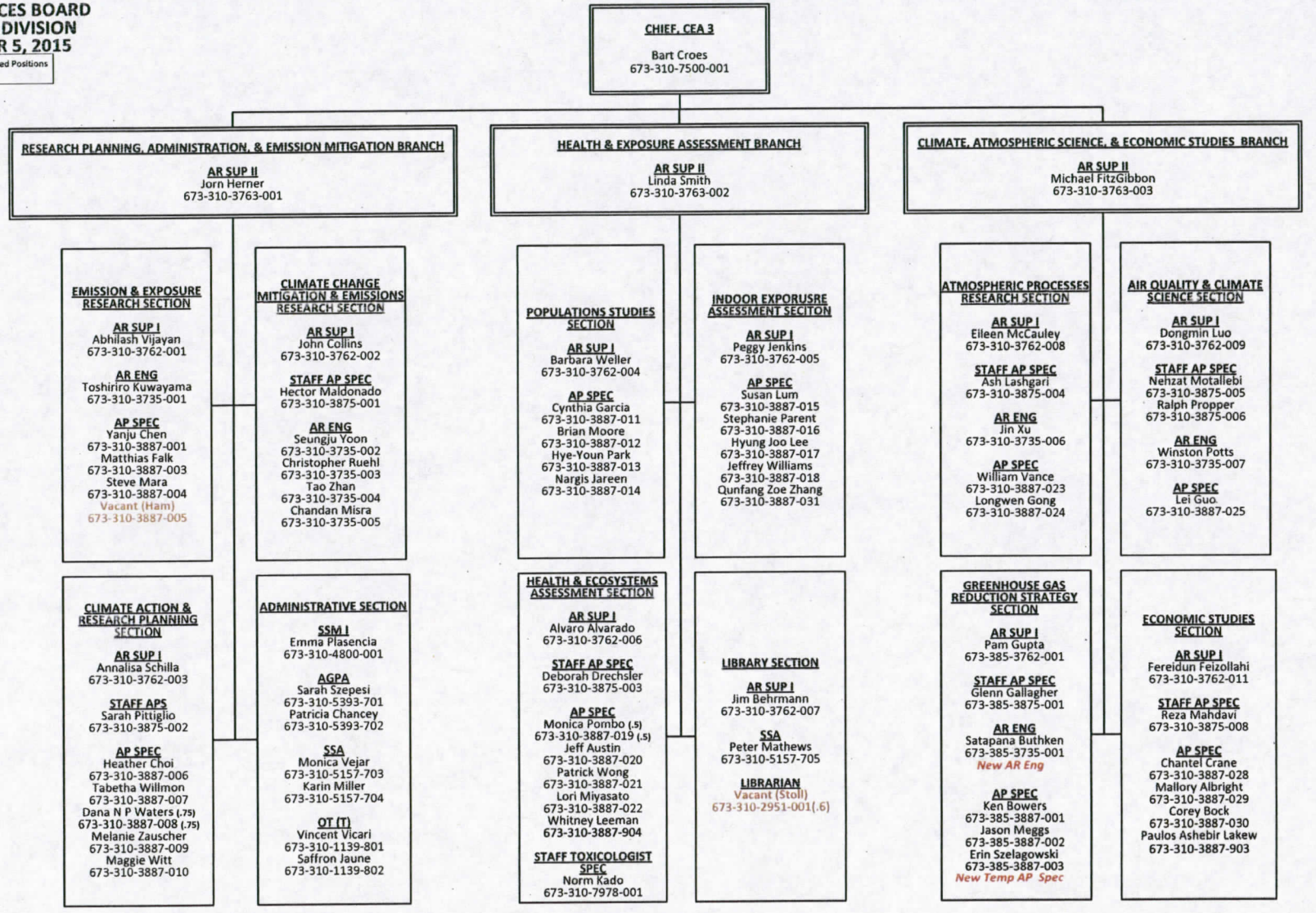
Air Resources Board						Attachment A Workload Justification
Fund:	**Greenhouse Gas Reduction Fund**					
Position Title:	**Air Resources Engineer**					
Workload Measure	**FY 2016-17**			**FY 2017-18**		
Description of task	**Number of Times the task was performed**	**Number of hours needed to complete task**	**Total number of annual hours**	**Number of times the task was performed**	**Number of hours needed to complete task**	**Total number of annual hours**
Review applications (hundreds) for compliance with engineering criteria and program guidelines	300	2	600	300	2	600
Conduct and compile research, and write reports	1	170	170	1	120	120
Conduct technical modeling	60	8	480	80	6	480
Coordinate with stakeholders and technical experts including workshops;	40	5	200	30	4	120
Monitor and evaluate energy use, emissions, operational considerations including maintenance and downtime, and costs of new low-GWP technologies	30	5	150	70	4	280
Identify and make policy recommendations on best practices in use of emerging low-GWP refrigeration/cooling technologies (engineering-level)	1	200	200	1	200	200
Total Hours			**1800**			**1800**

1.0 Position Equivalent = 1,800 hours

Numbers are based on previous workload experience

AIR RESOURCES BOARD
RESEARCH DIVISION
DECEMBER 5, 2015

70 85 Authorized Positions



BCP Fiscal Detail Sheet

BCP Title: Cap and Trade Expenditure Plan – Refrigerants **DP Name: 3900-015-BCP-DP-2016-GB**

Budget Request Summary

	FY16					
	CY	BY	BY+1	BY+2	BY+3	BY+4
Positions - Permanent	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	**0.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Salaries and Wages						
Earnings - Permanent	0	83	83	83	83	83
Earnings - Temporary Help	0	82	82	82	82	0
Total Salaries and Wages	**$0**	**$165**	**$165**	**$165**	**$165**	**$83**
Total Staff Benefits	0	77	77	77	77	38
Total Personal Services	**$0**	**$242**	**$242**	**$242**	**$242**	**$121**
Operating Expenses and Equipment						
5301 - General Expense	0	4	4	4	4	2
5302 - Printing	0	2	2	2	2	1
5304 - Communications	0	4	4	4	4	2
5320 - Travel: In-State	0	8	8	8	8	4
5322 - Training	0	2	2	2	2	1
5324 - Facilities Operation	0	20	20	20	20	10
5346 - Information Technology	0	8	6	6	6	3
54XX - Special Items of Expense	0	19,710	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$19,758**	**$46**	**$46**	**$46**	**$23**
Total Budget Request	**$0**	**$20,000**	**$288**	**$288**	**$288**	**$144**

Fund Summary

Fund Source - State Operations						
3228 - Greenhouse Gas Reduction Fund	0	290	288	288	288	144
Total State Operations Expenditures	**$0**	**$290**	**$288**	**$288**	**$288**	**$144**
Fund Source - Local Assistance						
3228 - Greenhouse Gas Reduction Fund	0	19,710	0	0	0	0
Total Local Assistance Expenditures	**$0**	**$19,710**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$20,000**	**$288**	**$288**	**$288**	**$144**

Program Summary

Program Funding						
3510 - Climate Change	0	20,000	288	288	288	144
Total All Programs	**$0**	**$20,000**	**$288**	**$288**	**$288**	**$144**