

AB 118: Air Quality Improvement Program (AQIP)

FY 2010-11 Funding Plan Discussion Document

Public Workshops

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Section I: Background

AQIP is an incentive program created under Assembly Bill (AB) 118 (Núñez, 2007) that provides the Air Resources Board (ARB) with funding through 2015 for technology advancing projects. The AQIP focuses primarily on reducing criteria pollutant emissions, with concurrent reductions in greenhouse gas emissions as a co-benefit. The Governor's proposed Fiscal Year (FY) 2010-11 budget provides approximately \$40 million for Air Quality Improvement Program (AQIP) projects. Funding for the program is ultimately dependent on the final FY 2010-11 State Budget and revenues generated from motor vehicle fees.

ARB staff is developing a proposed Funding Plan for FY 2010-11 to guide the expenditure of AQIP funds. The Funding Plan is each year's roadmap for expending AQIP funds appropriated to the ARB in the State budget. The plan establishes: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) modifications to program implementation based on public input and evaluation of subsequent years' projects; and (4) contingencies in the event revenues fall short of the State budget appropriation or to address other circumstances. At the December 8, 2009 public workshop, ARB staff provided concepts for the FY 2010-11 Funding Plan and asked for early public input. A copy of staff's presentation can be found at the following link:

www.arb.ca.gov/msprog/aqip/meetings/aqip_workshop_presentation_120809.pdf .

This Funding Plan Discussion Document builds on the concepts presented at the first workshop last December. It describes staff's draft project category allocations and gives a summary of each project. This document will form the basis for the proposed Funding Plan for FY 2010-11 which will be released for public comment on May 24, 2010, and presented to the Board for its consideration at the June 24-25, 2010 Board meeting.

Guiding Principles for AQIP

In 2009, the Board established overarching implementation priorities and guiding principles for AQIP funds. As was presented at the December 8, 2009 workshop, staff believes these guiding principles continue to be appropriate and used them to identify projects for this funding year. Broad principles include:

- Supporting development and deployment of advanced technologies needed to meet California's longer-term, post 2020 State Implementation Plan (SIP) goals, and
- Focusing program funds on areas underserved through other incentive programs.

Subsets of guiding principles were developed specific to deployment and demonstration projects. Deployment project guiding principles include:

- Accelerating advanced technologies to ensure significant penetration by the 2024 extreme ozone nonattainment area attainment date
- Funding new, commercialized technologies that are proven and cost-effective
- Modifying consumer choice to buy cleaner vehicles, which may not have occurred without a monetary incentive

Demonstration project guiding principles focus on projects that:

- Demonstrate the potential to provide cost-effective emission reductions
- Can be economically viable without subsidy
- Will be ready for commercialization within 3 years following demonstration
- Apply to the California marketplace

Section II: Summary of Draft FY 2010-11 Funding Targets

This year's Funding Plan builds upon the successes of projects implemented in FY 2009-10, and provides funding continuity for existing AQIP project categories, as was envisioned when these categories were approved by the Board last year. The Hybrid Truck and Bus Voucher Incentive Project (HVIP) remains the largest and most visible AQIP project. Based on strong early consumer demand since the project's launch, staff believes a continued investment will help hybrid technology penetrate the California marketplace. ARB staff also proposes to add a new project category in order to pilot accelerated deployment of hybrid off-road equipment and evaluate the emission benefits of hybrid technology in off-road applications. Table II-1 presents the staff's draft FY 2010-11 project category allocations based on the \$40 million appropriation for AQIP projects in the Governor's proposed budget. A description of each project category is included in Section IV.

Table II-1. Draft AQIP Project Funding Targets for FY 2010-11		
Project Category	Allocation¹ (\$ millions)	% of Total AQIP Budget
Hybrid Truck and Bus Voucher Incentive Project	25	63
Clean Vehicle Rebate Project	5	12.5
Lawn and Garden Equipment Replacement Project	1	2.5
Zero-Emission Agricultural Utility Terrain Vehicle Rebate Project	0.5	1.2
Off-Road Hybrid Technology Pilot <<NEW>>	3	7.5
Advanced Demonstration Projects	5.5	13.7
TOTAL	\$40M	

Section III: Status of FY 2009-10 AQIP Projects

\$42.3 million was appropriated for AQIP projects in the FY 2009-10 State budget; however, available funding is contingent upon actual revenues in the Air Quality Improvement Fund which is funded by motor vehicle fees. Projected revenues for FY 2009-10 are about \$29 million, so ARB staff revised AQIP project funding levels as discussed below. To date, ARB has encumbered over 90 percent of its available funds.

Table III-1 presents a list of the current project categories, grantees selected to implement each project, funding levels, and dates the funding became available to consumers. The HVIP, the largest and most visible of the AQIP project categories, has shown early success. Since the project's public launch in February 2010, nearly half of the \$20 million in project funds has been reserved in vouchers by California fleets to purchase over 300 hybrid trucks.

Table III-1. Status of FY 2009-10 AQIP Projects				
Project	Grantee	Consumer Launch	FY09-10 Funding Plan Allocation	FY09-10 Awards ¹
Deployment Projects				
Hybrid Truck & Bus Voucher Incentive	CALSTART	2/3/2010	\$25M	\$20.4M
Clean Vehicle Rebate	CA Center for Sustainable Energy	3/15/2010	\$5M	\$4.1M
Agricultural UTV Rebate	SJVAPCD	April/May 2010	\$1.3M	\$1.1M
Lawn & Garden Equipment Replacement	8 air districts	March/April 2010	\$2M	\$1.6M
Demonstration Projects				
Locomotive After-treatment Technology Demonstration	Spring 2010 Solicitation		\$2M	\$0.8M
Hybrid Marine Vessel Demonstration	Spring 2010 Solicitation		\$1M	Up to \$1M
Other Demonstration Projects ¹	Deferred until FY 2010-11 due to lower than expected revenues		\$6M	N/A
Total Funding			\$42.3M	\$29M

¹ FY 2009-10 allocations were reduced from \$42.3 million to \$29 million based on available revenues. Demonstration projects not funded because of lower revenues will be deferred until FY 2010-11.

AQIP revenues were lower than expected due to the downturn in the economy. In August 2009, staff adjusted AQIP funding targets from \$42.3 million to \$34.6 million based on an early revenue forecast. Allocations for each project category were reduced in equal proportion in accordance with the contingency provisions in the FY 2009-10 Funding Plan. At that point, solicitations for all of the AQIP deployment projects were issued, and then grants awarded. AQIP revenue projections were later further revised to \$29 million based on a mid-year assessment. Because the deployment project grants had already been awarded, funding for demonstration projects was reduced to about \$2 million. Staff plans to release two demonstration project solicitations in the spring of 2010 and defer the remaining demonstration projects until next fiscal year.

Section IV: Project Category Descriptions

Hybrid Truck and Bus Voucher Incentive Project (HVIP)

Draft FY 2010-11 Funding Target: Up to \$25 million

Overview

Hybrid medium- and heavy-duty vehicle technology can significantly reduce criteria pollutant, air toxic, and greenhouse gas emissions – particularly in delivery vehicles, refuse trucks, work trucks, urban buses, and other vehicles with high stop-and-go or idling duty cycles. Hybrid vehicles can also provide significant fuel economy benefits and fuel cost savings relative to their non-hybrid counterparts. Significant market penetration of hybrid vehicles by 2020 is critical to helping the state meet its long-term State Implementation Plan goals as well as the greenhouse gas emission reductions called for in California's Climate Change Scoping Plan.

The HVIP is the cornerstone of the AQIP for FY 2009-10, playing a critical role in accelerating early market penetration of hybrid technology. Hybrid trucks and buses are now on the market in multiple vehicle configurations and classes. Production capacity for these vehicles has reached a stage of significant growth potential, but low initial production volumes mean today's typical vehicle costs \$20,000 to \$70,000 more than its non-hybrid counterpart. This incremental cost is generally too high to justify the vehicle's purchase based on fuel economy benefits alone. The HVIP is the nation's first program to directly reduce the up-front cost of a hybrid truck or bus, with fleets able to secure a voucher for about half the vehicle's incremental cost at the time of vehicle order. ARB staff envisions the HVIP as a multi-year project to bridge the gap until the incremental costs decline to a point where incentives are no longer needed. As such, continued funding of up to \$25 million is proposed for FY 2010-11.

FY 2009-10 Project Status

In FY 2009-10, the HVIP had \$19.4 million for vouchers to accelerate introduction of up to 800 new hybrid trucks and buses into California fleets. Since the program's public launch in February 2010, California fleets have requested nearly \$10 million in vouchers to purchase over 300 hybrid trucks. This is equivalent to over ten percent of the approximately 2,000 hybrid trucks on the road nationwide. HVIP vouchers are available for over forty hybrid truck and bus vehicle makes and models from multiple truck and bus manufacturers. The high demand for vouchers thus far is likely due to willingness of California fleets to invest in this more fuel-efficient technology as the up-front cost declines, as well as the relative simplicity of the voucher funding model. The majority of vouchers committed thus far have been for purchase of urban package delivery and beverage delivery vehicles, with an average voucher amount of about \$29,000.

ARB has partnered with CALSTART – selected via a competitive solicitation – to implement the FY 2009-10 HVIP. CALSTART leads day-to-day project implementation, while ARB has overarching responsibility for project development and oversight. CALSTART's duties include training of vehicle dealers and fleets, development of the HVIP website, processing of vouchers, and coordinating with and reporting to ARB.

Over 95 percent of HVIP funds are for direct vehicle vouchers; CALSTART is using less than five percent of HVIP funding to help implement the project. Additional information regarding HVIP implementation can be found at www.californiahvip.org.

Staff Proposal for FY 2010-11

Staff recommends continued funding for the HVIP in next year’s Funding Plan of up to \$25 million (subject to revenues). Demand for first-year funds suggests California fleets will invest in up to 1,000 new hybrid trucks and buses, which is the approximate number of vehicles this funding amount will support. Hybrid vehicle and component manufacturers have the capacity to fulfill this demand. This funding will ultimately accelerate manufacturer investment in hybrid technology and contribute to the production economies of scale that will bring down vehicle costs.

The HVIP is working as envisioned, so staff proposes only small refinements to the basic structure of the project described in last year’s Funding Plan and the HVIP Implementation Manual¹. Key proposed updates are described below.

Vehicle Voucher Amounts: Demand for HVIP funding thus far suggests the vouchers provide a reasonable incentive for interested fleets to invest in hybrid trucks and buses. Staff recommends two modifications to the base voucher amounts offered in the existing HVIP. Thus far, manufactures have offered no vehicles in the lowest weight category (10,000 to 14,000 lbs) as part of the HVIP. Staff is considering increasing the voucher amount for these vehicles from \$10,000 to \$15,000, which may stimulate demand. Hybrid vehicles in this weight range are required to be certified, (a requirement that does not apply to heavier classes). This extra incentive may help offset the additional vehicle costs associated with bringing these hybrid vehicles to market. Staff also recommends splitting the over 33,000 lbs vehicle weight category, currently eligible for a \$35,000 voucher, into two categories. A 33,001 to 38,000 lbs category would be eligible for a \$30,000 voucher, and a 38,001 lbs and above category would be eligible for a \$35,000 voucher. This split will better reflect hybrid vehicles’ actual incremental cost, particularly as larger refuse collection vehicles hit the market. Staff’s recommended updated vehicle voucher amounts are shown in Table IV-1.

Gross Vehicle Weight	Base Vehicle Incentive¹
10,001 – 14,000 lbs.	\$15,000
14,001 – 26,000 lbs.	\$20,000
26,001 – 33,000 lbs.	\$25,000
33,001 – 38,000 lbs.	\$30,000
> 38,000 lbs	\$35,000

¹The first HVIP-eligible hybrid truck/bus purchased by a fleet is eligible for an additional \$5,000 voucher.

¹ Air Resources Board and CALSTART. 2010. Hybrid Truck and Bus Voucher Incentive Project Implementation Manual; www.arb.ca.gov/msprog/aqip/hvip.htm.

Zero-Emission Commercial Vehicles: This year's Funding Plan included consumer rebates for zero-emission commercial vehicles as part of the Clean Vehicle Rebate Project. Staff proposes moving this vehicle category from the Clean Vehicle Rebate Project to the HVIP because the process for purchasing for these vehicles more closely reflects that of hybrid trucks. This modification would make it easier for vehicle purchasers to access incentives. Voucher amounts for zero-emission commercial vehicles would mirror those of hybrid trucks and buses.

Hybrid Vehicle Testing: With the increasing diversity of vehicle vocations and configurations for which hybrid trucks are available, staff recommends allowing up to five percent of total HVIP funds be used for emissions testing and data collection. This voluntary testing would enable ARB to better understand the emission characteristics of hybrid trucks and buses as they operate over diverse duty cycles.

Hybrid Vehicle Certification: All medium- and heavy-duty engines sold in California must be ARB-certified; however, certification of vehicles above 14,000 lbs GVWR is optional. The existing HVIP does not require vehicles above 14,000 lbs be certified as long as they are on the Internal Revenue Service list of approved hybrid vehicles and manufacturers provide ARB with supplemental information documenting integrity of the vehicle's emission control systems. ARB encourages manufacturers to certify their hybrid vehicles to validate the performance of the engine, aftertreatment, and hybrid system working in conjunction and provides an additional \$5,000 incentive for ARB-certified hybrid truck and bus models. This flexible approach was taken to ensure availability of eligible vehicles that achieve real emission reductions in the project's first year while encouraging voluntary vehicle certification.

Staff is evaluating whether flexibility provisions should be included in the HVIP's second year or whether to require hybrid vehicles be certified to be eligible for the HVIP. Staff recommends this decision be made in consultation with the HVIP Work Group when it updates the HVIP Implementation Manual in late 2010. This will enable staff to use the most up-to-date information regarding available certified vehicle models to determine whether HVIP eligibility requirements should be modified.

Future Trends in Funding Needs

Staff anticipates the incremental cost between hybrid and non-hybrid trucks and buses to decrease as production volumes increase. According to manufacturers, hybrid trucks and buses should become cost-competitive with non-hybrids once production volumes reach 2,500 to 5,000 units per hybrid system supplier. This threshold should be reached in the hybrid truck and bus market between 2013 and 2016, allowing project funds to target other promising project categories.

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Clean Vehicle Rebate Project (CVRP)
Draft FY 2010-11 Funding Target: Up to \$5 million

Overview

Zero emission vehicles (ZEVs) and near-zero emission vehicles are a key element of California's plan for attaining health based air quality standards and meeting our greenhouse gas emission reduction goals. The Clean Vehicle Rebate Project (CVRP) facilitates the development and widespread commercialization of ZEV technology by offsetting a portion of the higher cost of advanced automotive technologies.

FY 2009-10 Project Status

In late 2009, ARB awarded the California Center for Sustainable Energy (CCSE) \$4.1 million through a competitive solicitation to implement the statewide CVRP. This project will provide consumer rebates for about 700-1500 vehicles on a first come first serve basis. The CVRP was launched on March 15, 2010 with the online application available at www.cvrp.energycenter.org. Fifteen vehicle models were eligible at project launch including commercial ZEVs, light-duty ZEVs, zero emission motorcycles (ZEMs), and neighborhood electric vehicles (NEVs). Additional models will be added as they come to market. Additional project details are available in the CVRP Implementation Manual².

Staff Proposal for FY 2010-11

Staff recommends FY 2010-11 funding up to \$5 million (subject to revenues) to continue the CVRP. Because of the recent launch of the project and the currently limited choice of eligible vehicle models, most of the funds remain from last year's allocation. Next year's funds would augment these existing funds, bringing the two year project funding total to \$9.1 million. This funding level would provide \$5,000 rebates for over 1,600 full functioning ZEVs. Staff developed this funding target after discussions with vehicle manufacturers and other stakeholders. We expect about 1,000 to 2,000 battery electric vehicles will be available in California through 2011 as well as additional neighborhood electric vehicles (NEVs) and zero-emission motorcycles (ZEMs), so this funding level should carry the CVRP through the next year. However, staff acknowledges the uncertainty inherent in predicting the future roll out of new technology and is proposing provisions to address excess or insufficient demand as discussed below.

Staff proposes only small refinements to the basic structure of the project described in last year's Funding Plan and the CVRP Implementation Manual. Key proposed updates are described below.

Waiting List: In the event the project becomes oversubscribed, staff proposes that consumers be put on a waiting list in the order in which the rebate application was received. When additional funds become available, rebates would be disbursed according to the waiting list order.

² Air Resources Board and CCSE. 2010. Implementation Manual for the Zero Emission and Plug-In Hybrid Light-Duty Vehicle (Clean Vehicle) Rebate Project ; <http://www.arb.ca.gov/msprog/aqip/cvrp.htm> .

Contingency Provisions: In order to monitor progress, staff proposes to issue next year's CVRP solicitation in December 2010/January 2011. If at this time, rebates have been requested for at least half of the FY 2009-10 funds, a solicitation for the full \$5 million will be issued. If less than half of the funds have been requested in rebates, staff will reassess the availability of eligible vehicles. Staff proposes that the Board delegate to the Executive Officer the authority to redirect all or a portion of next year's CVRP allocation to other project categories with greater need or to defer solicitation of all or a portion of the CVRP funds until March/April 2010 based on this assessment.

Zero-Emission Commercial Vehicles: Staff is proposing to shift funding of commercial ZEVs to the HVIP. The process for purchasing these vehicles is more in line with the procedures developed for reserving and redeeming vouchers in the HVIP. Moving these vehicles would free up CVRP funds to focus on light-duty vehicles.

Future Trends in Funding Needs

Staff expects that funding for advanced technology vehicle rebates will continue to be appropriate as this new market develops. Eventually, as volumes increase over the next several years, incentives will be reduced and ultimately eliminated.

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Lawn and Garden Equipment Replacement Project (LGER)
Draft FY 2010-11 Funding Target: Up to \$1 million

Overview

The purpose of the LGER project is to replace internal combustion lawn and garden equipment with cordless zero-emission lawn and garden equipment and to encourage further development and deployment of this technology. AQIP funds are used to augment local air districts' lawn and garden equipment replacement programs. These local programs have been successful in reducing criteria pollutant emissions cost-effectively, but have been limited in scope due in part to lack of funding. Staff is particularly interested in encouraging development of zero-emission commercial lawn and garden equipment, since most equipment usage and emissions occur from this sector. This project category was established in the AQIP FY 2009-10 Funding Plan, and based on the demand for rebates in FY 2009-10, staff proposes to continued funding for this category.

FY 2009-10 Project Status

This year, a total of \$1.6 million LGER Project funds were awarded via competitive solicitation to eight local air districts designated as non-attainment for the federal 8-hour ozone standard to augment their existing LGER programs. Air district lawn mower exchange events began in March and will continue through August. Staff expects most of the funds granted to the air districts in FY 2009-10 will be spent by this summer. However, some districts are planning to spend these funds over several years. Additional information on the LGER Project and district lawn mower exchange programs is available at: <http://www.arb.ca.gov/msprog/aqip/lger.htm> .

Staff Proposal for FY 2010-11

Staff proposes FY 2010-11 funding up to \$1 million (subject to revenues) to continue the LGER Project. The proposed funding allocation is slightly smaller than last year's amount because some air districts indicated plans to spend FY 2009-10 LGER Project funds over several years. The LGER Project is working as envisioned, so staff proposes only small refinements to the basic structure of the project described in last year's Funding Plan and the air district's LGER Project Implementation Manuals. Key proposed updates are described below.

Remaining FY 2009-10 LGER Project Funds: Staff expects most of last year's LGER Project funds to be expended within the first year; however, ARB recognizes that air districts have until June 30, 2012 to expend the funds. In the 2010-11 solicitation, staff intends to add scoring criteria that awards additional points to air districts that have spent the majority of their FY 2009-10 funds.

Match Funding: In the LGER Project, air districts are required to match AQIP funds with an equal amount of local funding. This provision ensures that AQIP funds are used to expand districts' programs not merely replace the funding source. For FY 2009-10 only, ARB allowed air districts to use match from past lawn mower exchange events as noted

in the FY 2009-10 Funding Plan. This year, staff proposes to require that district matching funds be new funds allocated for future exchange events.

Additional Zero-Emission Equipment: Staff is proposing an option for districts to use AQIP funds to replace other cordless zero-emission equipment in addition to lawn mowers. This would expand the program to fund new zero-emission equipment, such as cordless electric hedge trimmers, that are now available. Equipment may be for residential or commercial use.

Gas Can Trade-In: Staff is considering an option for districts to offer an extra incentive for participants who trade in a gas can with their old lawn mower. Due to their large numbers in California, gas cans have the potential to create substantial hydrocarbon emissions resulting in ozone-forming smog and health related problems. Staff believes that this option will help achieve additional emission reductions in districts with the worst air quality.

Future Trends in Funding Needs

While both commercial and residential cordless zero-emission lawn and garden equipment are eligible for the LGER project, staff expects only residential equipment to be available for purchase during the program's first few years. Staff anticipates that the availability of incentive funding combined with advances in battery technology will help bring zero-emission commercial equipment to the market and that commercial equipment will be a part of the AQIP in future years. Zero-emission technologies are just beginning to gain a market foothold in the lawn and garden equipment industry. As consumers realize the cost benefits of zero-emission technology through reduced fuel consumption and maintenance and experience equivalent performance to gas-powered lawn and garden equipment, staff expects product demand to increase.

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Agricultural Utility Terrain Vehicle Rebate Project Draft FY 2010-11 Funding Target: Up to \$0.5 million

Overview

The term utility terrain vehicle (UTV) is used to collectively include all-terrain vehicles and utility vehicles. These vehicles are used extensively in the agricultural industry. The UTV population in the California agricultural industry is second only to that of agricultural tractors. Immediate emission reductions of criteria pollutants as well as greenhouse gases can be achieved from these sources by switching to zero-emission technology. Additionally, much of the state's agricultural activities are centered in non-attainment areas that need additional emission reductions to meet air quality standards.

While electric UTVs are commercially available, the cost of these vehicles relative to that of a gasoline-powered counterpart can be a deterrent to purchase. The Agricultural UTV Rebate Project is intended to encourage and accelerate the purchase of zero-emission work vehicles for use in California agricultural operations by providing rebates of 15 percent of the manufacturer's suggested retail price (MSRP), up to a maximum of \$2,500. Recreational vehicles are not eligible. This project category was established in the AQIP FY 2009-10 Funding Plan and is proposed for continued funding in FY 2010-11.

FY 2009-10 Project Status

Early in 2010, ARB awarded the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) \$1.1 million through a competitive selection process to implement the statewide UTV rebate project. This funding will provide rebates for about 600 vehicles on a first-come-first-served basis. The project will launch for consumers in April 2010. Rebate applications and project information will be available online or by contacting the SJVUAPCD. Additional project details are available in project's Implementation Manual³.

Staff Proposal for FY 2010-11

Staff proposes FY 2010-11 funding of up to \$500,000 to continue the agricultural UTV rebate project. Because the project has not yet launched, all of the funds remain from last year's allocation. The FY 2010-11 funds will serve to augment existing funds, bringing the two year project funding total to \$1.6 million. Staff believes this funding level will sustain the project through the next year, but is proposing provisions to address excess or insufficient demand.

Some agricultural stakeholder provided feedback during development of last year's project that the rebate amount of 15 percent was not sufficient to incentivize purchase of an all-electric UTV. Staff researched the incremental costs between all-electric UTVs and their equivalent gas-powered counterparts and found the incremental cost to be between 4 and 15 percent in most cases. Staff believes the rebate amount is sufficient on this basis, but acknowledges that there may be additional considerations such as

³ ARB and SJVUAPCD. 2010. Agricultural Utility Terrain Vehicle Rebate Project Implementation Manual; http://www.arb.ca.gov/msprog/aqip/ag_utv.htm .

infrastructure requirements, battery range and recharge time that may be deterrents to purchase. Staff will continue to meet with stakeholders, monitor rebate demand, and assess cost-effectiveness under the current project. If staff has sufficient justification, the rebate amount may be revised. Rebates will continue to be disbursed on a first-come-first-served basis. A summary of proposed modifications is described below.

Waiting List: In the event the project becomes oversubscribed, staff proposes that consumers be put on a waiting list in the order in which the rebate application was received. When additional funds become available, rebates would be disbursed according to the waiting list order.

Contingency Provisions: Staff proposes to issue next year's UTV rebate solicitation in December 2010/January 2011 in order to monitor project progress. If by this time, rebates have been request for at least half of the FY 2009-10 funds, the full \$500,000 solicitation will be issued. However, if it appears that the project will be undersubscribed, staff proposes that the Board delegate authority to the Executive Officer to redirect all or a portion of next year's UTV rebate allocation to other project categories with greater need.

Future Trends in Funding Needs

The incremental cost between electric and gas-powered UTVs is expected to decrease in the next few years with advances in battery technology, improvements in battery supply and distribution networks, and reduced vehicle production and sales costs as production volumes increase. As battery performance and pricing evolves, some manufacturers of electric UTVs may change to more advanced battery types (e.g., lead-acid to lithium-ion). Zero-emission technologies are just beginning to gain a market foothold in agriculture. As consumers realize the cost benefits of zero-emission technology through reduced fuel consumption and less maintenance, and experience equivalent or superior vehicle performance to gas-powered UTVs, incentives for deployment of these vehicles in the agricultural sector is expected to decrease to the point rebates are unnecessary. Future funding for this category will be evaluated as part of developing the FY 2011-12 Funding Plan.

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Off-Road Hybrid Equipment Pilot Project
Draft FY 2010-11 Funding Target: Up to \$3 million

Overview

Hybrid off-road excavators and dozers are now commercially available for purchase by California fleets. This technology shows promise to provide criteria pollutant and greenhouse gas emission reductions, while also achieving significant fuel economy benefits and fuel cost savings. Two manufacturers – Caterpillar and Komatsu – offer hybrid equipment for sale in California, and other manufacturers are preparing to offer hybrid equipment over the next year. While this technology offers an opportunity for cleaner and more efficient operation, purchases have been slow due to the hybrid systems' 20 to 30 percent cost premium (i.e. \$40,000 to over \$100,000, depending upon equipment size and type).

Staff Proposal for FY 2010-11

Hybrid Off-Road Equipment. Staff is proposing up to \$3 million (subject to revenues) for a Hybrid Off-Road Equipment Pilot Project to encourage development and deployment of hybrid off-road equipment in California fleets. The project would fund approximately half of the incremental cost of hybrid off-road equipment, and include additional funding for in-use testing to quantify the emission benefits of the hybrid system over the equipment's typical duty cycle. Staff anticipates that the equipment funded and emissions data from this project could provide the foundation for a more comprehensive hybrid equipment voucher project in future AQIP funding years. Data from this project could also provide a mechanism for hybrid equipment purchasers to generate credit towards compliance with ARB's In-Use Off-Road Diesel Vehicle Regulation.

At the April 2009 Board meeting on the FY 2009-10 AQIP Funding Plan, staff presented the Board with its multi-year vision for the AQIP. That vision included future funding to encourage the use of hybrid technology in off-road equipment. This project would be a first step.

Hybrid Power Take-Off. The Off-Road Pilot Project could also include funding for hybrid or electric Power Take-Off (PTO) in on-road vehicles. Several trucks are on the market which utilize a hybrid or plug-in electric PTO that reduces or eliminates the need for vehicle idling to operate lifts, cranes, refrigeration units, or other functions. Vehicles which use a hybrid or electric system for PTO but not for vehicle propulsion are not eligible for HVIP funding. However, this is a project category which could be funded with AB 118 funds administered by the California Energy Commission. ARB staff will coordinate with Energy Commission staff and the Hybrid Off-Road Equipment Pilot Project Work Group over the next several months to determine whether hybrid or electric PTO should be eligible for funding as part of this project.

Project Solicitation. Staff proposes that funds for this project be granted via a request for proposals (RFP), with air districts and other public agencies, as well as vehicle manufacturers, fleets, non-profits and other private entities eligible to apply for funding. Multiple entities could potentially be awarded partial project funding (rather than all

funding necessarily going to one applicant). Staff will work with the Hybrid Off-Road Equipment Pilot Project Work Group to determine project requirements, including project evaluation criteria, eligible equipment and emission testing protocols.

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Advanced Technology Demonstration Projects
Draft FY 2010-11 Funding Target: Up to \$5.5 million

Overview

ARB's goal in funding demonstration projects under the AQIP is to help accelerate the next generation of advanced technologies to reduce emissions from mobile sources. AQIP funding would be used to demonstrate the viability of new technologies with a focus on the off-road sector and transit and school bus projects. Funded projects need to have the potential for commercialization within three years after demonstration and the ability to gain significant market penetration.

FY 2009-10 Project Status

Because revenues were lower than expected, ARB is funding about \$2 million of advanced technology demonstration projects this year, instead of the \$9 million envisioned in the FY 2009-10 Funding Plan. Two solicitations, one to demonstrate advanced after treatment on existing locomotives and another to demonstrate hybridization of an existing marine vessel, will be released in Spring 2010. The remaining demonstration projects from this year's Funding Plan will be prioritized for funding next year with the exceptions discussed below.

Staff Proposal for FY 2010-11

Staff proposes FY 2010-11 funding up to \$5.5 million (subject to revenues) for advanced technology demonstration. For the most part, these funds would be used for demonstration projects that were deferred from this year's Funding Plan, with the exceptions of the recommended changes discussed below. Table IV-2 presents a summary of the draft demonstration project categories and funding targets.

Table IV-2: FY 2010-11 Advanced Technology Demonstration Draft Funding Targets	
Project Category	Draft Funding Level¹
Locomotive - Demonstration of new cleaner locomotive engines that meet or exceed the Low- Emitting Locomotive emission level	Up to \$1 million
Marine - Demonstration of hybridization or other advanced marine engines - Demonstration of technology to reduce main engine usage while maintaining vessel operational requirements.	Up to \$1 million
Agricultural and Off-Road Equipment - Tier IV off-road engines or their equivalent - Retrofits for existing agriculture and off-road engines that reduce NOx emissions by at least 55% and PM emissions by at least 85% - Retrofits that reduce PM emissions from Tier 0 off-road engines by at least 85% - Cordless zero-emission commercial lawn and garden equipment	Up to \$2 million
Transit and School Bus - Zero-emission transit buses - Zero-emission and advanced plug-in hybrid school buses	Up to \$2 million
¹ Total available funding is up to \$5.5 million. Each category may not be funded at the full level listed in the table.	

Staff believes it is important to retain some flexibility to fund promising technologies that were not identified in last year’s Funding Plan as the development of advanced emission control technologies is an evolving field. In addition to the projects listed in Table IV-2, staff may consider additional projects in its grant solicitations as long as they meet the Board-approved guiding principles for AQIP demonstration projects.

A summary of proposed modifications to the Advanced Technology Demonstration project categories is described below.

Off-Road Hybrid Equipment Pilot: Staff proposes to remove this project type from the Off-Road Equipment demonstration category and introduce it as a new AQIP project category.

School Bus Demonstration Projects: After a discussion with the California Highway Patrol and school bus stakeholders, staff proposes to remove two school bus project types that had been included in the FY 2009-10 Funding Plan. Staff proposes eliminating hybrid retrofits and school bus engine efficiency retrofits on existing school buses due to the high cost of safety certification which is a significant barrier to commercialization of these technologies in the current economic climate. If economic conditions improve where the safety certification costs can be rationalized by the market place, these school bus specific demonstration projects will be reevaluated to determine if they warrant inclusion in a future years Funding Plan. The other project types from last year’s Funding Plan (zero emission transit buses and zero-emission and advanced plug-in hybrid school buses) remain as potential demonstration projects.

Combination of Off-Road and Agricultural Equipment Project Categories: ARB staff proposes to combine the Off-Road and Agriculture Equipment demonstration categories. The combination will allow for projects to take advantage of the similarities in advanced emission control technologies between the categories. Off-road and agriculture equipment projects should contain many of the same performance aspects and therefore the combination of these two categories appears to provide good fit for demonstration.

Future Trends in Funding Needs

ARB is committed to supporting the advancement of new, cleaner technologies with the potential for commercialization in the California marketplace. The AQIP provides ARB with a rare opportunity to fund such projects. Staff believes demonstration projects should remain a focus for AQIP in future years.

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Section V: Funding Contingencies

Similar to last year's plan, this year's Funding Plan will incorporate contingency provisions in the event circumstances change between Board approval of the Funding Plan and the time solicitations are issued or funds awarded. These provisions are important, as we learned last year when revenues came in much lower than expected. Contingencies are further refined in this year's plan based on lessons learned from last year. Staff's proposed Funding Plan is based on the \$40 million appropriation, but will include the following contingencies:

- (1) Establish minimum allocations for each category based on \$30 million in projected revenues (reflective of actual FY 2009-10 revenues). Establishing minimum targets for each category based on a conservative funding scenario reduces the risk of over-obligating funds beyond available revenues, and avoids disproportionately affecting projects that start later in the fiscal year if revenue projections are lowered. These allocations are presented in Table V-1.
- (2) Ask the Board to delegate authority to the Executive Officer to increase or decrease project funds throughout the fiscal year as revenues and project needs dictate. This makes a commitment to the project category while reducing the risk of leaving project funds unused.
- (3) Establish decision points for making allocation decisions. Projects with uncertain demand, (such as the CVRP and Agricultural UTV Rebate Project), have project-specific contingencies to address excess or insufficient demand.

Table V-1 presents the proposed minimum and maximum allocations for each project category under a conservative funding scenario and the full allocation.

Project Category	Minimum Allocation¹ (\$millions)	Increase in Allocation Based on \$40M AQIP Budget²
Hybrid Truck and Bus Voucher Incentive Project	20	Add up to \$5M
Clean Vehicle Rebate Project	3	Add up to \$2M
Lawn and Garden Equipment Replacement Project	1	No additional funds
Zero-Emission Agricultural Utility Terrain Vehicle Rebate Project	0.5	No additional funds
Off-Road Hybrid Technology Pilot	2	Add up to \$1M
Advanced Demonstration Projects	4	Add up to \$1.5M

¹ Based on a \$30.5 million budget which approximates actual revenues available for AQIP projects in FY 2009-10.

² Project allocations will be refined after April 2010 public workshops. Allocations will be finalized when the FY 2010-11 State budget is final.