



South Coast Air Quality Management District



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*Office of the Executive Officer
Barry R. Wallerstein, D.Env.
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November 29, 2007

Ms. Cynthia Marvin
Assistant Division Chief, Planning & Technical Support
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA. 95812

Re: Early Grant Proposal for Goods Movement Emission Reduction Program

Dear Ms. Marvin,

Enclosed is the South Coast Air Quality Management District's (SCAQMD) proposal for CARB's early grant solicitation for funding available under the air quality portion of Proposition 1B, Goods Movement Emission Reduction Program.

Our proposal includes goods movement projects in five different categories totaling \$125.2 million request in funding. We would like to request that any of our projects not being funded under the early solicitation, be considered and funded with the remaining balance of the first year's funds when they become available.

Please let your staff feel free to contact Fred Minassian, Technology Implementation Manager, at (909)396-2641, or Dipankar Sarkar, Program Supervisor, at (909)396-2273, for any questions regarding this matter.

Sincerely,

Barry R. Wallerstein, D.Env.
Executive Office

CSL:FM

Cleaning the air that we breathe...™

November 30, 2007

Goods Movement Emission Reduction Program SCAQMD's Proposed Projects

Air Quality Background

More than 43% of the nation's seaborne container trade moves through the twin ports of Los Angeles and Long Beach, which together are the single largest fixed source of air pollution in South Coast. Collectively, sources at the port complex are responsible for more than 100 tons per day of smog and particulate-forming nitrogen oxides, which is more than the daily emissions from all 6 million cars in the region. In addition, the California Air Resources Board (CARB) estimates that port air pollution poses cancer risks exceeding 500 in 1 million for tens of thousands of residents.

East of the ports, the Inland Empire becomes the recipient of much of the emissions burden arising from port freight-moving activities, since locomotives and trucks move the goods from the ports to inland distribution centers and also pass them through to other parts of the country. Furthermore, the general onshore flow of air sends most of the pollution in the South Coast region eastward, where it is trapped by the San Gabriel and San Bernardino mountains. As a result, the Inland Empire experiences the worst air quality in the region and the nation. CARB estimates that more than 5,000 premature deaths occur in South Coast due to fine particulate pollution in the air. Relative to the state as a whole, the population-weighted health risk exposures in the SCAB as compared to all of California for ozone and PM2.5 are 73% and 82%, respectively.

To have any reasonable expectation of meeting the federal PM2.5 demonstration deadline of 2014, the pace of improvement must intensify for mobile sources involved in goods movement. Prop. 1B funds are critical to expedite the retirement of older, higher-polluting engines and vehicles. The 2007 Air Quality Management Plan (AQMP) acknowledges that we must dramatically accelerate heavy-duty fleet turnover in order to achieve the benefits of cleaner engines.

The South Coast Air Basin (SCAB) is disproportionately exposed to air pollution as compared to the rest of the nation. Based on population-weighted annual average monitoring measurements, the South Coast receives more than half of the national exposure to PM2.5 above federal health standards. Currently, about 60% of all diesel-related NOx and PM emissions in the South Coast are from goods movement related source categories. Thus this category needs significant cleanup to significantly reduce unhealthful emissions.

Projects Summary

A source category summary of proposed projects in the SCAB and associated estimated Proposition 1B funding requests are listed in order of priority in the table below. All projects meet the 1:1 non-

state funds cost sharing requirement. In the non-drayage truck source category, we have separated the trucks into post-1998 and pre-1998 categories for the following reason: based on CARB's on-road truck regulation which is tentatively planned for CARB Board adoption in late 2008, the period to generate three-year excess emissions for the pre-1998 category is shorter than for the post-1998 category; we propose to expedite the implementation for pre-1998 trucks. A detailed summary of the projects listed in Table 1 is provided in Attachments 1 through 5.

Table 1
Prioritized Project Categories

Project	Source Category	No. Of Units	Request for Proposition 1B Funding	Match Funding
1	Non-Drayage Fleet Trucks (Coke, Pepsi, Ralph's, Ecology Auto Parts, Dependable Hwy, Apex, KKW); Diesel Trucks	709	\$35.5 million	\$35.5 million (private funding)
2	Marine Vessels	20	\$2.6 million	\$2.6 million (private funding)
3	Cargo Handling Equipment; Vycon Flywheel	150	\$11.3 million	\$11.3 million (private funding)
4	Drayage Fleet Trucks (Truck Lease Program); Cascade Sierra Solutions - Diesel Trucks	380	\$19 million	\$19 million (CSS funding with bank loans and bonds)
	Gladstein, Neandross and Associates - LNG Trucks	400	\$20 million	\$20 million (GNA bank loans) and \$16 million (SCAQMD AB 923 funds)
5	Locomotives	70	\$36.8 million	\$36.8 million (private funding)
	Total		\$125.2 million	\$141.4 million

Implementation Schedule

SCAQMD can ensure that a majority of all projects would be implemented by June 30, 2008, and all projects would be completed by December 31, 2008, with an exception of switch locomotives to be completed by December 31, 2009. SCAQMD is confident to achieve the following milestones for each project category:

SCAQMD's Proposal for Goods Movement Emission Reduction Program

<u>Project Category</u>	<u>Milestone</u>	<u>Due Date</u>
Trucks (Drayage and Non-Drayage)	100% of Contracts Executed Majority of Trucks Operational	June 30, 2008
	100% of Trucks Operational	December 31, 2008
Marine Vessels	100% of Contracts Executed Majority of Vessels Operational	June 30, 2008
	100% of Vessels Operational	December 31, 2008
Cargo Handling Equipment Vycon Flywheel	100% of Contracts Executed Majority of Funded Units Operational	June 30, 2008
	100% of Funded Units Operational	December 31, 2008
Locomotives Multi-Engine Switchers	100% of Switchers Operational	December 31, 2009*

* December 31, 2009 due date for switch locomotives is in accordance with agreements in the CARB's Prop. 1B teleconference with all participating local air districts on November 20, 2007.

Detailed Proposal

1. Non-Drayage Trucks

A. Geographic Coverage

All proposed replacement trucks will replace heavy-duty Class 8 trucks that almost exclusively operate in the Los Angeles / Inland Empire Trade corridor. The proposed replacement trucks will operate primarily along major goods movement routes in the SCAB (I-5, I-10, I-405, I-710, I-110, SR 60, etc.) to transport goods from major distribution facilities to retail establishments. Benefits of these projects will accrue to EJ areas within many Southland communities dispersed throughout the four counties that make up the SCAQMD.

In soliciting projects for this on-road truck category, SCAQMD staff contacted numerous major fleets that deploy heavy-duty Class 8 trucks in the goods movement vocation. SCAQMD then worked with seven major fleets individually to plan the proposed list of replacement trucks.

B. Old Equipment

SCAQMD certifies that all old equipment proposed for replacement performs at least 50% of their operations within the four trade corridors and averages 10,000 miles or more of VMT.

The basis for proposing 702 replacements of non-drayage trucks is to achieve expedited NOx and PM emissions reductions in the SCAB's heavily impacted goods movement corridors. The South Coast AQMP includes a major strategy for additional NOx and PM emission reductions from on-road heavy-duty vehicles. This strategy calls for further emission reductions, above and beyond CARB's proposed measure for heavy-duty vehicles, to be realized via two control methods: accelerated truck replacement and retrofit/repower of existing heavy-duty trucks. Our proposal for replacing 702 on-road trucks (non-intermodal drayage) is fully consistent with, and an integral part of, this AQMP control measure.

The SCAQMD has provided a list of old trucks that are proposed to be replaced in the attached spreadsheet detailing (among other data) the average age and annual VMT of the old trucks.

C. New Equipment

All proposed projects involve replacement trucks that will be model year 2007 or 2008, with **diesel** engines that meet California's 2007 heavy-duty engine emissions standards.

SCAQMD's Proposal for Goods Movement Emission Reduction Program

All average annual VMT for the replacement trucks will be roughly equivalent to the corresponding old (replaced) trucks. In all cases this is greater than 10,000 miles annually.

D. Funding Proposal

As noted in the summary table below, SCAQMD proposes a total of 702 replacement trucks in this category of heavy-duty (non-intermodal drayage) trucks. At an assumed Prop 1B funding maximum of \$50,000 per replacement truck, the total amount of Prop. 1B funding requested for this category is \$35,100,000. **SCAQMD recognizes that there will be insufficient funds under the Early Grant process to fund all these awards.** Therefore, upon notification from CARB about available funding for this category, we will prioritize awards using various "impact" factors as delineated in the CARB's guidance documents (cost effectiveness, EJ factors, etc.), and consistent with key AQMP objectives.

All proposed truck replacement projects in this category will receive matching funds from the grant recipients (fleets) themselves. All seven fleets are aware of this requirement, and have stated their intent to meet these terms. **SCAQMD is prepared to provide AB 923 matching funds to reduce contributions from Prop. 1B funding for this category.**

Model Year	No. Of Trucks	Prop. 1B Total Award
pre-1998	370	\$18,500,000
98-99	175	\$ 8,750,000
00-02	157	\$ 7,850,000
	702	\$35,100,000

E. Milestone Requirements

SCAQMD can ensure that 100% of the contracts approved for early grants will be signed by June 30, 2008. SCAQMD will take all necessary actions to have a majority of replacement trucks fully operational by June 30, 2008, with all replacement trucks fully operational by December 31, 2008.

F. Implementation

As previously noted, SCAQMD staff has already contacted many major fleets that deploy heavy-duty Class 8 trucks in the goods movement vocation within the SCAQMD. Using preliminary feedback from the responsive fleets having the best candidate vehicles, SCAQMD selected seven major fleets on which to focus for Early

Grant proposals. Each of these fleets owns large numbers of Class 8 trucks that operate daily along the Los Angeles / Inland Empire Trade Corridor.

2. Marine Vessels

A. Geographic Coverage

We are submitting proposed projects to clean up 32 vessels operating out of the Ports of Los Angeles and Long Beach. The vessel operations serve businesses in the greater Long Beach, Los Angeles, and San Diego Port areas. These are highly impacted communities.

In the future, the SCAQMD will solicit the submittal of marine vessel applications under the Goods Movement Emission Reduction Program by way of the RFP process, and to generate interest, and market the Program, workshops will be held, and printed material will be distributed within the South Coast region. Also, the SCAQMD will utilize the present guidance material that CARB has prepared on the Goods Movement Emission Reduction Program to better acquaint and keep future applicants informed about the program.

The present proposals offer reductions in emissions of NO_x, PM and VOC in the environmentally sensitive port areas. The port communities suffer from some of the highest levels of toxic diesel particulate matter in the South Coast Air Basin.

B. Targeted Equipment

Marine engine repowering is a proven and reliable emission control technology. Main propulsion engines in older work boats and sport and commercial fishing boats would be repowered under this proposal. The existing engines are Tier 0, and the new engines will be Tier 2. These engines are best suited for repowering because these are the dirtiest engines operating, representing engine model years prior to 2002, and the introduction of Tier I emission standards. A great portion of such engines have model years that are 30 to 40 years old, and should be removed from the port emissions inventory. All of the newly repowered marine engines will be model years 2007 or 2008.

The commercial and sports fishing vessels will meet the Program eligibility requirement of above 2,500 operating hours and the work and crew boats will also meet the criterion for these vessel types with over 1,000 hours of annual operational time. The average amount of fuel used varies from 10,694 gallons per year for work and crew boats to 14,643 gallons annually for commercial and sport fishing boats. The vessel owners are committed to operating the boats 80% of the time within one or more corridors.

The existing vessels have operated on low-sulfur diesel (LSD) fuel and will continue to operate, after the repower, on LSD fuel that is cleaner and will provide efficiency and

economy for vessel owners. The added public health benefit is the improved air quality along port trade corridors.

C. Funding Proposal

The project cost for the 32 vessels is \$2.55 million. The majority of the marine vessels proposed for repowering in this source category exceed CARB's request to cap costs at \$135/hp. Very few marine vessels are less than or at the \$135/hp benchmark. However, the SCAQMD is proposing to use AB 923 funding as the local match for those projects that go above the cost limitation of \$135/hp. A cost range breakdown shows that 27 out of 32 vessels are either less than \$135/hp or between \$135/hp and \$175/hp, and the other 5 vessels fall within a cost range between \$176 and \$270 per hp. The average cost for the 32 harbor craft is \$160/hp.

	No. Of Marine Vessels	Proposition 1B Funding Requested (\$)
< \$175/hp*	27	1,879,000
\$176/hp - \$275/hp*	5	675,000
Total	32	2,554,000

The marine vessels are separated into two categories: (1) cost range <\$135/hp - \$175/hp, and (2) cost range \$176/hp - \$270/hp

D. Milestone Requirements

The vessel owners can install new engines within 90 days of approval and therefore all the contracts for the marine vessels in the project would be executed and a majority, if not all, of the vessels would be completed by June 30, 2008.

3. Cargo Handling Equipment

A. Geographic Coverage

Vycon is proposing to install REGEN energy storage units onto rubber tired gantry (RTG) cranes located at the ports of Los Angeles and Long Beach. Benefits of this project will positively impact surrounding EJ communities.

B. Targeted Equipment

The Vycon REGEN energy storage systems for rubber tired gantry cranes (RTG) are CARB verified to achieve Level 1 (25% - 50%) diesel PM reduction, 30% NOx reduction, and also reduces fuel consumption by 15% - 25%. This level of fuel savings translates to approximately \$20,000 in annual fuel savings per RTG. The emission reductions achieved by this project will be excess over CARB's Mobile Cargo Handling Equipment regulation.

Emission tests were conducted on RTGs equipped with Tier 2 engines at the Port of Long Beach and to comply with CARB's Cargo Handling Equipment regulation, these emissions were corrected to reflect the use of Tier 4 engines.

C. Funding Proposal

It is estimated that Vycon can have 150 REGEN energy storage units installed onto rubber tired gantry (RTG) cranes located at the ports of Los Angeles and Long Beach. The total cost for the 150 units would be \$22.5 million at \$150,000 each. The amount of Proposition 1B funding requested for this source category is \$11.25 million.

D. Milestone Requirements

For the units that receive funding in the Early Grant program, installation work will start before June 30th, 2008 and all units will be operational by December 31st, 2008.

4. Drayage Trucks – Truck Lease Programs

A. Geographic Coverage

All proposed replacement trucks will replace heavy-duty Class 8 trucks that almost exclusively operate in the Los Angeles/Inland Empire Trade corridor. The proposed replacement trucks will operate primarily along major goods movement routes in the SCAB (I-5, I-10, I-405, I-710, I-110, SR 60, etc.) to transport goods from ports to major distribution facilities within the SCAB. Benefits of these projects will accrue to EJ areas within many Southland communities dispersed throughout the four counties that make up the SCAQMD.

B. Old Equipment

SCAQMD certifies that all old equipment proposed for replacement performs at least 50% of their operations within the four trade corridors and averages 10,000 miles or more of VMT.

The basis for proposing replacement of drayage trucks is to achieve expedited NOx and PM emissions reductions in the SCAB's heavily impacted goods movement corridors. The South Coast AQMP includes a major strategy for additional NOx and PM emission reductions from on-road heavy-duty vehicles. This strategy calls for further emission reductions, above and beyond CARB's proposed measure for heavy-duty vehicles, to be realized via two control methods: accelerated truck replacement and retrofit/repower of existing heavy-duty trucks.

The SCAQMD has provided a list of old trucks that are proposed to be replaced in the attached spreadsheet detailing (among other data) the average age and annual VMT of the old trucks.

C. New Equipment

All proposed projects involve replacement trucks that will be model year 2007 or 2008, with diesel or LNG engines that meet California's 2007 heavy-duty engine emissions standards. All average annual VMT for the replacement trucks will be roughly equivalent to the corresponding old (replaced) trucks. In all cases this is greater than 10,000 miles annually.

D. Funding Proposal

In order to provide the benefits of Prop. 1B funding to individual owners who may not have financial capacity to meet the matching fund requirement, the SCAQMD is exploring a couple of more creative concepts to finance and fund replacement of old trucks in this category.

First, Cascade Sierra Solutions (CSS) is a non-profit organization that coordinates grant funding from public and private sources and provides low-cost financing to truck owners enabling them to either upgrade or replace their trucks. CSS proposes a low-cost lease program that will enable individual truck owners with limited financial means to participate in the Prop. 1B program. In their proposal, CSS would purchase in bulk new replacement trucks then lease them to truck owners at very competitive rates; by working with public or private financing institutions such as California Municipal Financial Authority or Bank of America, CSS can offer rates as low as 4.5% to truck owners. CSS and its financing institutions would retain ownership of the trucks for the duration of the lease contracts at which time the ownership would transfer to truck owners for a minimal residual value. CSS currently has about 380 trucks that are ready to be replaced.

Second, Gladstein, Neandross & Associates (GNA) proposes another leasing program for port trucks. In this program, GNA is proposing to replace 400 diesel trucks with LNG trucks. GNA and participating fleet operators would purchase Freightliner LNG trucks at \$140,000 per unit with grants from Prop 1B (\$50,000) and SCAQMD (\$40,000) then lease the trucks to truck owners at competitive rates, 6 to 7 %. As in CSS' proposal, the ownership would be retained by GNA and fleet operators for the duration of the lease contracts.

As noted in the summary table below, SCAQMD proposes a total of 780 replacement trucks in this category. At an assumed Prop. 1B funding maximum of \$50,000 per replacement truck, the total amount of Prop. 1B funding requested for this category is \$39,000,000. **SCAQMD recognizes that there will be insufficient funds under the Early Grant process to fund all these awards.** Therefore, upon notification from

SCAQMD's Proposal for Goods Movement Emission Reduction Program

CARB about available funding for this category, we will prioritize awards using various "impact" factors as delineated in CARB's guidance documents (cost effectiveness, EJ factors, etc.), and consistent with key AQMP objectives.

Model Year	No. Of Trucks	Prop 1B Total Award
Cascade Sierra; Diesel Trucks	380	\$19,000,000
GNA; LNG Trucks	400	\$20,000,000
	780	\$39,000,000

E. Milestone Requirements

SCAQMD can ensure that 100% of the contracts approved for early grants will be signed by June 30, 2008. SCAQMD will take all necessary actions to have a majority of replacement trucks fully operational by June 30, 2008, with all replacement trucks fully operational by December 31, 2008.

F. Implementation

As previously noted, SCAQMD staff has already contacted CSS and GNA regarding their lease programs. Provided that CARB approves their programs, SCAQMD will work closely with CSS and/or GNA to implement the programs to replace old drayage trucks with new diesel or LNG trucks.

5. Locomotives

Retrofit Multi-Engine Switchers with DPF and SCR Systems

A. Geographic Coverage

About seventy (70) 3-engine switch locomotives from National Railway Equipment Corporation will be placed into railyard service in the South Coast Air Basin by 2009

B. Targeted Equipment

These switchers will replace conventional switch locomotives, will have one-sixth the emissions and will use about half the fuel. They are each equipped with three Cummins QSK 19-liter 700 horsepower engines. From one to three engines operate depending upon the required power, and the non-working engines are ordinarily shut-down.

SCAQMD's Proposal for Goods Movement Emission Reduction Program

Maintenance costs for these engines are much lower than for conventional locomotive engines. These new switchers are not equipped with any exhaust after-treatment system.

It is proposed that each engine be retrofitted with a diesel particulate filter (DPF) and selective catalyst reduction (SCR) system.

C. Funding Proposal

The cost for this retrofit will be \$175k per engine (\$85k for the DPF muffler + \$90k for the SCR catalyst, urea storage tank and urea control system) or \$525k per locomotive. The total cost to retrofit all 70 locomotives will be \$36.75M. This retrofit after-treatment system will reduce NOx by 65%, PM by 65% and ROG by 10%. The following emission benefits are expected based upon the use of 35,000 gallons of fuel annually:

	<u>Baseline</u> <u>gm/bhp-hr</u>	<u>w/ DPF+SCR</u> <u>gm/bhp-hr</u>	<u>Reduction</u> <u>single loco</u> <u>tons/year</u>	<u>Reduction</u> <u>70 locos</u> <u>tons/year</u>
NOx	2.67	0.93	1.28	89.35
PM	0.06	0.02	0.032	2.24
ROG	0.10	0.09	0.12	8.65