

EVERYBODY WINS PHASE II

A Small Trucking Company Project

Applicant: Lane Regional Air Pollution Authority
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Project Officer: Sharon K. Banks
Assistant Project Officer: Gordon Griffin
Federal Funding Requested: \$500,000

Project Description

Executive Summary

The Lane Regional Air Pollution Authority (LRAPA), a local air pollution authority in Lane County, Oregon, is currently in the process of installing 100 APU's. This project proposes to install 250 more Auxiliary Power Units (APU's) on long-haul tractor-trailer trucks with sleeper cabs that haul freight on the I-5 corridor, primarily in the West Coast states of Washington, Oregon and California. This project is designed to serve the needs of the independent owner-operator and the small fleet. This segment of the transportation industry lives in their trucks, buys their own fuel and owns the oldest and most polluting equipment on the road. They are the segment of the industry that can benefit the most from APUs, are the most economically disadvantaged and have the least access to capital.

All manufacturers with commercially available APU technology will be invited to participate in this project through a market-based approach. The owner-operator and small fleet will select equipment based on their evaluation, preference and competitive pricing. 100 of the 250 APUs will be fitted with passive GPS technology that will track the time and place that the APUs are used over a two-year period.

This project will:

- Break down the capital investment barrier for owner-operators and small fleets by providing interest-free financing for 250 APUs.
- Increase awareness of anti-idling technology by marketing APUs at truck stop cafes with placemats on the cafe tables and through our website at www.apucentral.com.
- Establish the baseline idle rate of participating trucks before the APU was installed and after the APU has been used for two years by computer analysis of electronic engines.

- Track the usage patterns of APUs over two years by location, time and season.
- Track each truck by year, make, model and engine family.
- Track cost of equipment and installation.
- Calculate actual fuel savings of each truck according to APU hours used vs. the fuel used by the main engine during an idle state.
- Calculate actual emissions reduced by each truck and map the cumulative emissions reduction on a nationwide basis by county.
- Continue to establish the installation and maintenance network at truck repair shops along the I-5 corridor.
- Submit a final report to include all findings to EPA for wide distribution.

NARRATIVE

The goal of this project is to provide a low-cost lease-to-own program for owner-operators and small fleets for approximately 250 APUs from commercially available technology of the trucker's choice. A second goal of this project is to collect data to determine (1) the baseline emissions prior to installation and again after 2 years of APU operation; (2) how many hours the APU is used; (3) where APUs are used; (4) the amount of fuel saved; and (5) emissions reduced.

MANUFACTURERS

Manufacturers providing APUs may participate in the program by contacting LRAPA. LRAPA has established solid working relationships with numerous manufacturers during the development of the current Everybody Wins Program. The high profile of that program has generated continuing interest among other APU manufacturers who are anxious to participate in a demonstration project like the one described in this solicitation. The ability to build on the framework of the current program provides an opportunity for more widespread participation by different APU manufacturers, which in turn offers a more complete analysis of the technology options that are commercially available. LRAPA may accept new manufacturers as new equipment becomes commercially available. So far the following manufacturers are participating in the program:

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| <ul style="list-style-type: none"> • Teleflex Energy Systems
3831 6 Road
Richmond, BC
Canada V6V 1P6 | Tel: 604-270-6899 (Mengo McCall)
Fax: 604-270-0137
E-mail: proheat@proheat.com
Web: www.proheat.com |
| <ul style="list-style-type: none"> • Auxiliary Power Dynamics
2060 East Greg Street
Sparks, NV 89431-6560 | Tel: 800-825-4631 (Will Watson)
Fax: 775-331-0278
E-mail: info@auxiliarypowerdynamics.com
Web: www.auxiliarypowerdynamics.com |

- Cummins Northwest (8 locations)
 - Coburg, OR - 91201 Coburg Industrial Way, 97401 (800-777-0336)
 - Portland, OR - 4711 North Basin Avenue, 97217 (800-283-0336)
 - Medford, OR - 4045 Crater Lake Hwy, 97504 (800-826-9414)
 - Pendleton, OR - 223 SW 23rd Street, 97801 (800-666-2561)
 - Seattle, WA - 811 SW Grady Way, 98055 (888-963-7278)
 - Spokane, WA - 11134 W Westbow Blvd, 99224 (800-825-2122)
 - Yakima, WA - 1905 East Central Ave, 98900 (800-688-9033)
 - Chehalis, WA - 926 Northwest Maryland, 98532 (800-451-5506)

- Thermo Tech Inc.
 - Portland, OR - 901 Northeast Gertz Road, 97211 (503-286-3999)

- Leavitt's Freight Service Inc.
 - Springfield, OR 3855 Marcola Road, 97477 (800-935-4236)

- Pape Machinery Inc.
 - Eugene, OR 460 North Danebo Ave, Suite 100 (800-443-5452)

INSTALLATION LOCATIONS (CURRENT)



During the course of the project, LRAPA will work with manufacturers and installers to continually improve the ability of the industry to effectively penetrate the growing APU market of small fleet and owner-operator drivers. This will include:

- increasing the number of installation locations available
- decreasing the time required for an installation

- increasing the number of qualified APU mechanics at install shops (creating new jobs)
- decreasing down time for drivers during an APU installation
- increasing the nationwide service and maintenance network for APU technology
- providing a forum for educational outreach to drivers, and for feedback and Discussion of idle reduction technology

This project will promote APU technology and demonstrate to the owner-operator and the small fleet, the economic and environmental benefits of installing an APU. Establishing installers for APUs will help the technology become more widely accepted and will support the market for the products. This project will provide jobs for diesel mechanics and increase the net profits of the owner-operator and small fleet, which will increase income tax revenue to the state and federal government.

HOW IT WORKS

The Lane Regional Air Pollution Authority (LRAPA) will borrow \$2,000,000 through the Oregon Department of Energy to purchase the equipment and pay for the installation. Owner-operators and small fleets will select the APU and an installer. There are multiple vendors and installers so price competition is inherent in this program. Owner-Operators and small fleets must fill out an application and LRAPA screens applications through a credit screening service (this is already set-up). Upon credit approval, LRAPA notifies the trucker and the installer who keeps an inventory of units on hand.

The installer schedules the installation of the APU and the GPS unit. If the truck has an electronic engine, prior to installation the installer runs a report and determines the current idle rate and reports to LRAPA. If the truck does not have an electronic engine, the driver will be asked to estimate the number of hours spent idling each day and the number of days per year that idling occurs. The installer acquires the signature of the trucker on the lease paperwork and collects the first monthly payment. After the first month, payments are collected by electronic fund transfer and deposited to LRAPA's account. The lease payments are designed to pay back the principle on the loan. This \$500,000 grant will pay the interest on the loan and pay for the GPS study on APUs. Without this grant, this project would not be possible.

The Oregon Department of Energy will allow a "pass-thru" tax credit to LRAPA for 25.5% of allowable project cost to pay for administration of the program. The Lane Council of Government's (LCOG) GIS (Geographic Information Systems) Services Group will collect and tabulate the data, perform emissions and spatial data analysis, and prepare project reports and documents in coordination with LRAPA.

The ability of the proposal to generate significant cost-sharing resources from numerous stakeholders will facilitate a high degree of success in pursuing the objectives of the project. The low-cost lease provides a mechanism for eliminating the high front-end capitalization costs of APU installation, and increases the number of participants

substantially. The quality of the data that is collected about the use and performance of the APU equipment will be improved when more data sets are generated, and the increased sample size will result in a final report that is statistically more representative and reliable.

PROJECT BENEFITS

PUBLIC BENEFITS:

This project is expected to:

- Conserve fuel - approximately 2.5 million gallons of diesel fuel will be saved over the life of the 250 APUs.
- Reduce emissions - by an estimated 75%-90% over idling at truck stops, rest areas, warehouses, ports, parking lots, residential neighborhoods and any place trucks idle from:
 - Highly respirable diesel PM (92% less than 1 micron)
 - NO_x, an ozone precursor
 - CO₂, a harmful green-house gas
 - More than 40 toxic carcinogenic and mutenogenic substances found in diesel exhaust.
- Improve public health - The cost of inhaling diesel exhaust from highway grade diesel is estimated at \$2 per gallon for health care. This project is expected to save about \$5 million in future health care costs.

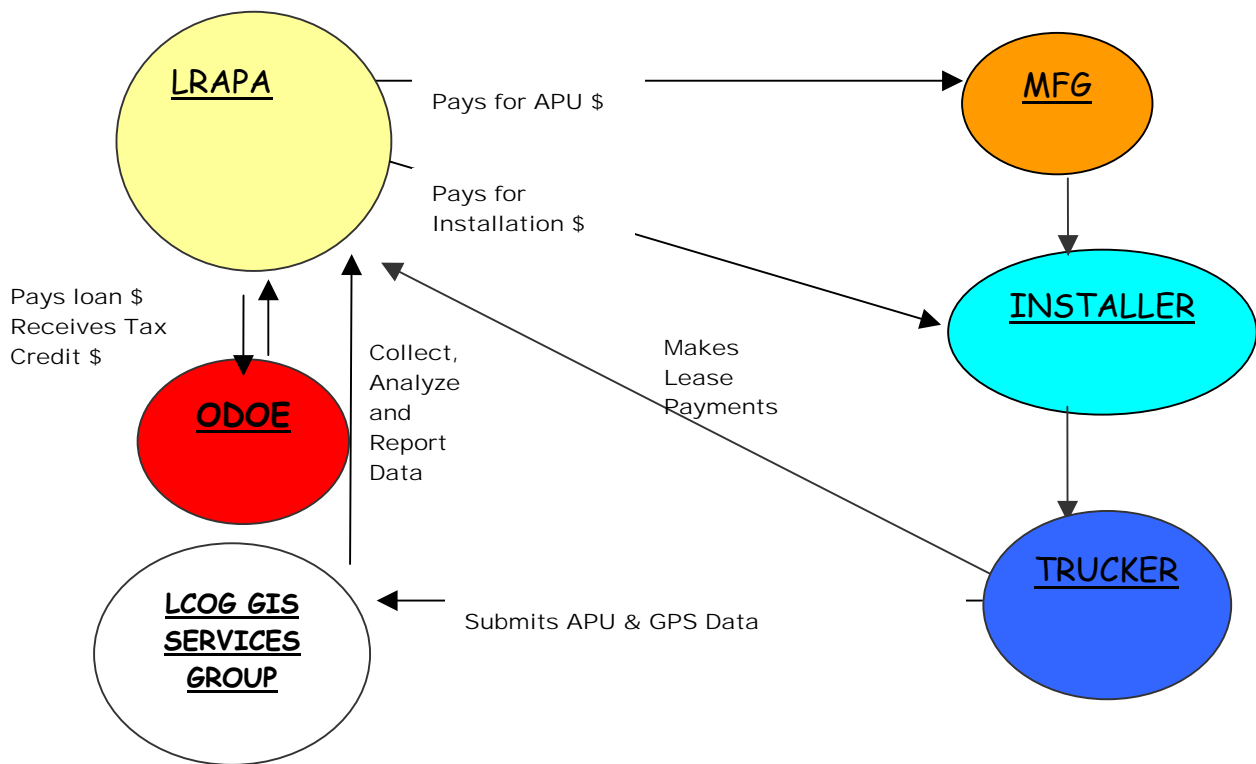
TRUCKER BENEFITS:

- Save fuel - At 2.50 per gallon, each APU will save about \$400 per month in fuel over the life of the APU.
- Affordable payments with no interest, no down payment is required. The average payment is about \$150 per month for a 60-month term. The ownership vests to the trucker at the end of the term.
- Extends life of engine and increases maintenance interval.
- Reduces exposure to diesel exhaust.
- Reduces noise pollution in cab.
- Provides heat, air conditioning and 110v power to sleeper compartment.
- Allows trucker to operate legally in areas with anti-idling ordinances. Currently many truckers ignore these laws. This places an unnecessary enforcement burden on local authorities.

TRUCKING SECTOR BENEFITS:

- Data from the GPS study will show typical operating patterns of APUs. It will correlate APU use with the season and the location of use. It will show on a map where drivers are using the APUs. This data could be used as an assessment tool by a fleet to determine how much drivers will use an APU.
- Data from the end of study survey will poll the drivers and tabulate feedback on the level of satisfaction truckers have with APUs. These results will be a comparison of APU units by model.
- Data from the GPS study will also show how many hours each APU operated over the period. This data could be used for calculating cost-benefit for fleets and pay-back periods to support investment decisions.

CONCEPT SKETCH:



HOW THIS PROJECT MEETS THE CRITERIA

PROJECT DESCRIPTION:

- Approach – The approach is to install 250 commercially available auxiliary power units of different types on individually owned trucks and small fleets with sleeper cabs, and fit at least 100 trucks with passive GPS dataloggers to identify where and when APUs are used. Spatial and temporal analysis of APU data in concert with emissions modeling will support conclusions as to reduction of air pollutants and fuel consumption.
- Reputation – Sharon Banks and Gordon Griffin of the LRAPA have been working with the trucking industry and the APU manufacturers for several years. Most recently LRAPA has designed and implemented a program to install 100 APUs on trucks with sleeper cabs. LRAPA has developed a strong reputation with OIIDA (An Association of 125,000 Owner-Operators) and has been featured in *Landline Magazine* and *Fleet Owner Magazine*; has been working with the Oregon Trucking Association; Cummins NW; Coast Transit Refrigeration; Auxiliary Power Dynamics; Teleflex Pro-heat; Rigmaster; Pony Pack; and Idle Solutions. LRAPA is a local agency with a mission to maintain and improve air quality, and has been in existence since 1968.
- Outreach – LRAPA uses a combination of media events, press releases, direct mail and placement of flyers at fuel desks in local truck stops and placemats in truck stop coffee shops. So far the response has been overwhelmingly positive. We are currently installing 10-15 APUs per month. The installation infrastructure is developing to keep up with the demand of these units. LRAPA has had to hold back on advertising in order to keep the waiting list from being so long that drivers lose interest.
- Environment – The truck engine idling information (baseline) will be collected by the APU installers which are also professional truck maintenance facilities. Part of the normal maintenance procedure for the newer trucks with electronic engines is to determine and analyze the idle rate. LCOG will combine its more than 30 years of GIS and spatial data analysis and mapping experience with expertise in transportation air quality conformity and project evaluation to establish and document project outcomes. Data collected from the APUs, GPS units, installers, and other project sources will be compiled, analyzed and reported using a variety of formats and visualization media to meet the needs of the diverse audience of the Everybody Wins Phase II Project.

PROGRAMMATIC CAPABILITY:

- Past Performance – LRAPA has been a recipient of federal grants for more than 35 years. Recent awards related to mobile source emission reduction are:
 - \$100,000 for ultra low sulfur diesel subsidy.
 - \$500,000 for school bus retrofits.
 - \$80,000 for ultra low sulfur subsidy for non-road applications.
 - \$1.4 million for installing 100 APUs (a combination of a low-interest loan, private funds and a tax credit).
 - \$200,000 for clean fuel infrastructure; \$160,000 from private funds.

- History of Meeting Reporting Requirements - LRAPA has met all federal grant reporting requirements and has submitted all required reports in a timely manner.
- Organizational Experience - LRAPA has experience in managing grant-funded projects for 37 years. During this time, LRAPA has never failed to meet grant requirements. Since 1945, LCOG has served local governments and agencies within Lane County by providing regional planning, coordination, program-development, technical and information-based services. LCOG's assemblage of expert staff has successfully completed thousands of contract and grant funded projects for a wide range of clients including USEPA, USDOT, USACE, USDOJ, US Department of Commerce, FEMA, Oregon DEQ, and other federal, state, local, and private agencies. LCOG has a national reputation for technological innovation.
- Staff Expertise/Qualifications:
 - Sharon Banks has a BS in Accounting from the University of Oregon and 15 years experience designing and implementing programs and projects to reduce emissions from mobile, area and stationary sources in Lane County, Oregon. During her career at LRAPA, Sharon has managed over 40 EPA funded projects. Sharon also has experience in logistics management. She is a graduate of the Army Transportation School in Ft. Eustis, VA. She is a Major in the Oregon Army National Guard and has completed Command & General Staff College. Sharon designed the *Everybody Wins* Program—which is in the process of installing 100 APUs on tractor-trailer trucks that operate on the I-5 corridor and is expanding the program through this application.
 - Gordon Griffin has a BS in Environmental Geography. Gordon has 14 years working in air pollution monitoring and marketing. Gordon's work includes developing a market for the *Minivol* air pollution sampler through LRAPA's enterprise fund, *Airmetrics*. Gordon is the lead coordinator for the *Everybody Wins* Program.
 - Susan Payne (LCOG) has a BS in Mathematics/Computer Science, MS in Ecology, and Master of Landscape Architecture degree. She has worked in scientific research for over 25 years, and has specialized in computer modeling and analysis of physical and environmental problems. She works in the Transportation Planning Group at LCOG and is responsible for air quality planning and modeling. She has worked with ARC/INFO GIS for 7 years, has field experience with GPS units, and has conducted outcome evaluations for the GPS-based Right Route Emergency Vehicle Route-Finding Project and for the Lane County Mental Health Court Program.
 - Eric Brandt has a BA and MS in Resources Geography and Economics. Eric has 20 years professional experience managing GIS programs and projects, and has helped design and develop successful GIS systems for numerous organizations across the country. At LCOG Eric manages the GIS Services Group and serves as the Coordinator for the Regional Land Information Database (RLID), a shared multi-agency land information system for Lane County, Oregon.
 - Bob DenOuden – has a MS in Geography and a BS in Mathematics. Bob is a Senior Analyst at LCOG and has 16 years experience working for agencies in both the public and private sectors. Bob's areas of expertise include: transportation planning

and analysis, advanced data analysis, statistical modeling and research, database development, and GIS Analysis.

- Warren Roe earned a BA in geography from Virginia Tech. Before moving to Oregon, he served as a GIS contractor for the city government of Washington, DC. His experiences there included emergency planning and vehicle routing, and he co-authored a paper about DC's effort to create a "routable" GIS street network. Warren has since relocated to Eugene, Oregon as a GIS analyst for LCOG. He continues his focus in GIS and transportation.

RESOURCES

Budget Summary

Revenues:

Trucker payments:	\$ 2,250,000
Tax Credit Pass-thru:	758,278
EPA Grant:	<u>500,000</u>
Total	\$ 3,508,278

Expenditures:

Equipment (APUs)	\$ 1,675,000	
Installation Costs	625,000	
Interest & Loan Fees	322,140	
GIS Equipment	50,000	
Data Collection & Analysis	145,500	
Project Manager (4 years)	40,000	.15 FTE
Project Coordinator (4 years)	364,800	1 FTE
Printing	10,000	
Advertising	15,000	
Postage	5,000	
Web Page Maintenance	7,000	
Indirect	18,838	
Uncollectible Accounts Expense	<u>230,000</u>	
	\$ 3,508,278	

Leveraging: This project leverages more than \$3 million in match, \$2,250,000 from trucker lease payments, and \$758,278 in State "pass-thru" tax credits.

Technology: All commercially available technology will be eligible to participate in this program.

Program Integration: Truckers will be encouraged to join EPA's Smart Way Transport Program and will be awarded LRAPA's Environmental Leadership Award. All participating trucks will be given the US Department of Energy's bumper sticker and brochure about the benefits of reducing idling.