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Document Name:

Port of Houston Bayport Terminal Container Yard Emissions Control

Organization/Agency Responsible:

Port of Houston Authority

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Description: Port of Houston Bayport Terminal Container Yard Emissions Control

The contract language was developed and has been successfully implemented at the Port of Houston's Bayport Container and Cruise Terminal -- a new terminal under construction since January 2007. The Port committed to general conformity (GC) standards(25 tons NOx/year) without being required to do so. As a result, the terminal is being built under general conformity standards. This commitment forced contractors to be innovative in reducing equipment emissions. Clean contractors were not necessarily the least expensive contractors. It's been estimated the Port paid in excess of $8 million dollars for clean contractor measures.

13. Emission Control – Clean Non-Road Engine Management Plan

A. Background

The Port of Houston Authority is strongly committed to doing its part to improve the air quality in the Houston region. Reducing emissions from on-road as well as non-road equipment is one of several ways to improve air quality. The Port Authority has undertaken several internal programs with the objective of putting emission controls into place, including the use of cleaner fuels and engines in its own non-road equipment fleet. In accordance with this commitment to cleaner air, the Port Authority now strongly encourages its contractors to make a good faith effort to use cleaner equipment for Port Authority projects. The details of this policy are outlined in the following text:

B. Obligations of Proposers

All proposers on this project are encouraged to submit a Clean Non-Road Engine Management Plan (hereinafter called the Plan) that is consistent with the goals and objectives set forth in this section. (See attached for Plan form and example.) The Port Authority staff will evaluate each Clean Non-Road Engine Management Plan when making recommendations to select the Contractor, taking into consideration all other sections and requirements of this document. The goal of the plan should be the reduction of air emissions such as nitrogen oxides and particulate matter from the project equipment.

The Plan should contain reasonable measures to reduce airborne emissions of oxides of nitrogen (NOx),carbon monoxide (CO), volatile organic compounds (VOCs), and exhaust particulate matter (PM) over the lifetime of the project such as by purchasing, retrofitting or otherwise upgrading the equipment and/or fuels to be used on the project. The Plan's contents should include a discussion of the scope of the Proposal in terms of non-road equipment that will be located and operated on PHA property for more than 24 consecutive hours. Additionally, the Plan should specify if the reductions will be from on-road, non-road, or both types of engines.

C. Commercially Available Clean Technologies

Clean technologies that may reduce equipment emissions include retrofits, fuels and clean engines. These are further discussed below. Technologies approved and accepted by the US EPA, California Air Resources Board (CARB) and/or the Texas Commission on Environmental Quality (TCEQ), or otherwise approved by the Port of Houston Authority are acceptable to include as part of the Plan.

Technologies that have been recognized by the TCEQ as part of its Texas Emission Reduction Plan (TERP) funding program are as follows (note that this list is continually being expanded to included additional technologies; please refer to TCEQ's website at www.tceq.state.tx.us for an updated list):

Table 1: List of Technologies funded in Rounds 1 and 2 of TCEQ's TERP Program*

Technology	Type of Technology	Emission Reductions	Engines Types	Comments
Lubrizol's PuriNOx Diesel Emulsion	Diesel Emulsion	19% NOx	Any diesel engine	EPA registered/ verified fuel
Extengine/ADEC Systems Catalytic Converter	SCR/SNCR	75% NOx	Medium horsepower diesel engine	Approved for use on excavators
Alternative/Clean Fuels	Natural Gas, Propane	~10% NOx	Wide variety	Reduce pollutants without increasing other pollutant
Ultra-Low Sulfur Diesel	To be determined	NOx reductions only if used in conjunction w/after-treatment device	Any diesel engine	Not currently commercially available
Tier 2/3 Engines	Cleaner engine	>30% NOx	Variety of engines and manufacturers	Limited availability in some horsepower ranges
Engelhard DNOx System	Exhaust Gas Recirculation	Varies	Heavy duty; bus	Approved with filter

***Source: TCEQ's TERP Report to the 78th Legislature, 12/02.**

A list of EPA-verified diesel retrofit technologies can be found at the following website: http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm. Please consult this list prior to submittals, as it is updated regularly by the EPA.

A list of CARB certified technologies can be found at the following website: www.arb.ca.gov/diesel Please consult this list prior to submittals, as it is updated regularly by the CARB.

In addition to the above technologies, various commercially available clean engines meeting EPA standards are also eligible to be part of the Plan. A "clean engine" is defined as Tier 1 or cleaner (according to EPA's engine certification levels contained in 40 CFR Part 89). Tier 1 diesel engines were made available beginning in 1996. Any engine older than this will be considered Tier 0 and will not apply to the clean equipment requirement, unless retrofitted with an approved device as discussed above.

Additionally, clean fuels not on the above-referenced TCEQ, EPA and/or CARB lists may also be eligible. For a list of fuels that may apply, please refer to the US Department of Energy's list of approved alternative fuels.

The Port of Houston Authority does not specifically recommend the use of any of the above technologies nor is it responsible in any way for use of these or other products. Further, under no circumstances may a contractor utilize after-market retrofit kits or reformulated fuels and additives that would violate the Federal Clean Air Act, regardless of any condition expressed above. However, if an official research and development exemption exists that makes such products legal to use on a limited basis, then they may be incorporated into the Contractor's Plan.

D. Proposal Evaluation Process

The Port Authority staff will evaluate each Clean Non-Road Engine Management Plan when making recommendations to select the Contractor, taking into consideration all other sections and requirements of this document.

Proposers are not required to estimate emissions or emission reductions, but simply must fill out the attached form indicating what clean technologies will be utilized. Again, this may be achieved by purchasing new engines, using reformulated diesel, using alternative fuels, or retrofitting the non-road equipment with new exhaust technology that lowers a pollutant but does not result in an increase in emissions for any other pollutant.

Proposal contents will be evaluated according to the guidelines outlined in this document. Additional credits will be awarded according to the following guidance for the Clean Non-Road Engine Management Plan component of each proposal:

- Completeness. The Plan has discussed all of the facets of the project and has identified off-road or on-road equipment that could reasonably be controlled by using cleaner equipment or fuels.

- Magnitude of Emissions. The Plan may contain a mixture of new and old equipment but the commitment to new technology would result in greater emission reductions in terms of hours of use multiplied by manufacturer's rated horsepower.

- Commitment to Clean Technology. Evidence of new engine purchases, funding commitments from state, local, and federal agencies (done in a timely manner), and purchase orders for emissions-reducing equipment will be given priority over those that are vague, uncertain, or nondescript.

- Quality Management Response Program. Plans that evaluate the above subsections but also give preference to in-use testing, verification, and/or auditing will be given preference over those that have no follow-up action plans.

E. Example Plan

A blank Plan for proposers to fill out and submit and an example Plan to be used as reference are attached.

Clean Non-Road Engine Management Plan
Port of Houston Contracts

1. Contact Information

Contractor name: _____

Address: _____

Phone number: _____

Contact name: _____

2. Name of Port of Houston Project Bidding on: _____

3. Project Equipment to be Used on Port of Houston Authority Property for More than 24 Consecutive Hours:

Horsepower Range of Equipment	Equipment Type/Description	Number of Pieces	Total Anticipated Hours of Usage
<100 hp			
100-300 hp			
300-600 hp			
>600 hp			
On-Road Vehicles/Equipment			

4. Clean Technologies Planned to be Used on Project Equipment

Clean Technology	Equipment/Engine Used On	Number of Pieces of Equipment
A. Clean Fuels		
1. Diesel Emulsions	_____	_____
2. Alternative Fuel/Other (specify: _____)	_____	_____
B. Cleaner Engines		
1. Engine Type: _____	_____	_____
2. Engine Type: _____	_____	_____
3. Engine Type: _____	_____	_____
C. Retrofits		
1. SCR	_____	_____
2. Catalysts	_____	_____
3. Other	_____	_____
D. Other		
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____

Clean Non-Road Engine Management Plan
Port of Houston Contracts

1. Contact Information

Contractor name: General Construction

Address: 7924 SE Houston Parkway, Houston, TX

Phone number: (713) XXX-XXXX

Contact name: Mr. Joe Q Public

2. Name of Port of Houston Project Bidding on: Bayport

3. Project Equipment to be Used on Port of Houston Authority Property for More than 24 Consecutive Hours:

Horsepower Range of Equipment	Equipment Type/Description	Number of Pieces	Total Anticipated Hours of Usage
<100 hp	Forklift Gradall	1 2	5 10
100-300 hp	Tractor	3	24
300-600 hp			
>600 hp			
On-Road Vehicles/Equipment			

4. Clean Technologies Planned to be Used on Project Equipment

Clean Technology	Equipment/Engine Used On	Number of Pieces of Equipment
A. Clean Fuels		
1. Diesel Emulsions	tractor	3
2. Alternative Fuel: Other (specify: propane)	forklift	1
B. Cleaner Engines		
1. Engine Type:		
2. Engine Type:		
3. Engine Type:		
C. Retrofits		
1. SCR	gradall	1
2. Catalysts		
3. Other		
D. Other		
1.		
2.		
3.		