Original

Attachment 1

PROJECT SUMMARY

Applicant: Clean Energy Technologies
Contact Person: Glenn Klupsak
Address: 5236 Pacheco Blvd, Martinez, CA, 94553
Telephone: 510-205-3611 **FAX:**
Email: klupsak@sbcglobal.net

Project Description: CET has developed a highly efficient on-demand hydrogen system to retrofit diesel engines significantly reducing emissions and **increasing** fuel economy. The system utilizes a proprietary method of variable production rate technology to produce hydrogen and oxygen on-demand as dictated by vehicle load requirements. By introducing hydrogen into the combustion process, diesel fuel burns more efficiently and cleaner, resulting in reduced hydrocarbon particulate emissions, lower NOX and increased horse power / fuel economy. Field tests on commercial trucks using the CET prototype, and independently verified test results, prove hydrocarbon particulate emission reductions in excess of 95% and a 15% increase in fuel economy.

The proposed project would include the installation of the CET device on 2 on-road vehicles in the county that are currently emission non-compliant (garbage trucks in Placerville may be a good choice) and 2 stationary generators (non-compliant DOT generators may be a good choice)

The installation is relatively simple and does not require any modification to the engine – ongoing maintenance by fleet staff or generator operators would be to simply add distilled water when needed – approximately once a month.

Estimated Emission Reductions/Cost-Effectiveness	
Useful Life of Project (years)	**5 years or longer**
Total Lifetime Emissions Reduced (lbs. of ROG, NOx, PM-10)	***see RFP response**
Cost-Effectiveness (total project costs)*	***see RFP response**
Cost-Effectiveness (AQMD Funded project costs)*	***see RFP response**

*: See Attachment 3 for instructions

Budget Summary	AB 2766 Funds	Matching Funds	In-Kind Match	Total Project Costs
Materials	$40,000	$4,000	$4,000	$48,000
Personnel	$7,500	$750	$750	$9,000
Other	$6,000	$600	$600	$7,200
TOTAL	**$47,000**	**$4,700**	**$4,700**	**$64,200**

BUDGET ITEMIZATION

Expand Table as necessary to itemize all expenditures

Line Item	Title/Classification	No. Of Hours	Salary Rate	Benefit %	Total	Total Costs
Personnel	Installation Engineers	150	$50.00	20%	9,000	9,000
Contracts (removal, transportation, disposal)		N/A				0
Materials & Supplies		CET will provide 4 devices to be installed on 4 engines to include all wiring, hoses, connectors and mounting gear				48,000
Equipment Rental		N/A				0
Other Costs		Baseline opacity / emissions testing, comparison testing at month 1 and month 2 per vehicle / unit Reporting results and progress				$7,200

PROJECT GRAND TOTAL: $ 64,200

Revised 5/1/12

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The proposed project would include the installation of the CET device on (1) City of Placerville street sweeper and (1) dump truck. The project will also include the installation of 1 CET device on an El Dorado County 1998 Cat Grader currently out-fitted with a diesel particulate filter that significantly impedes the efficiency of the engine.

The installation is relatively simple and does not require any modification to the engine. Ongoing maintenance by fleet staff would be minimal. Depending on miles, or hours of use, simply adding distilled water to the device may be all that is required.

In summary, CET proposes the installation of (3) devices to be installed as defined above. These units will become the property of the County and City of Placerville upon project grant funding.

Estimated Emission Reductions/Cost-Effectiveness	
Useful Life of Project (years)	**5 yrs minimum**
Total Lifetime Emissions Reduced (lbs. of ROG, NOx, PM-10)	***see RFP response**
Cost-Effectiveness (total project costs)*	***see RFP response**
Cost-Effectiveness (AQMD Funded project costs)*	***see RFP response**

*: See Attachment 3 for instructions

Budget Summary	AB 2766 Funds	Matching Funds	In-Kind Match	Total Project Costs
Materials	$24,000	$3,000	$3,000	$30,000
Personnel	$5,000	$500	$500	$6,000
Other	$3,200	$400	$400	$4,000
TOTAL	**$32,200**	**$3,900**	**$3,900**	**$40,000**

BUDGET ITEMIZATION

Expand Table as necessary to itemize all expenditures

Line Item	Title/Classification	No. Of Hours	Salary Rate	Benefit %	Total	Total Costs
Personnel	Installation Engineers	120	$50.00	20%	5,000	6,000
Contracts (removal, transportation, disposal)		N/A				0
Materials & Supplies		CET will provide 3 devices to be installed on 3 vehicle engines to include all wiring, hoses, connectors and mounting gear				30,000
Equipment Rental		N/A				0
Other Costs		Baseline opacity / emissions testing, comparison testing at month 1 and month 2 per vehicle / unit. Oil testing and misc. reporting results and progress				$4,000

PROJECT GRAND TOTAL: $ 40,000

Attachment 2

CONTENTS CHECKLIST

Applicant: _____

- ☐ Project Summary Sheet (Cover) – page: 1
- ☐ Request for Proposal Contents Checklist (Second Page) – page: 4
- ☐ Authorization Letter/Resolution page _____N/A_____
- ☐ Project Description – page: 1
- ☐ Project Organization/Background – page: 5
- ☐ Emission Benefits/Cost Effectiveness – page: 5
- ☐ *(Must utilize March 2010 Emission Factors)*
- ☐ Work Statement – page: 6
- ☐ Funding Request/Cost Breakdown – page: 6
- ☐ Matching Funds – page: 7
- ☐ Schedule of Deliveries/Self-Monitoring Program – page: 5 (included in work statement)
- ☐ Local TRPA Review (If Applicable) – page: N/A
- ☐ 2 Copies of Proposal – page: Included

Project Organization / Background

Corporate Overview:

Clean Energy Technologies (CET), is a California Corporation located in Pacheco CA, 45 minutes from San Francisco and 1 hour from Silicon Valley. The company was established 12/2008 and consists of a 5 member Board of Directors combining C-level functions and 3 founding engineers.
The Board of Directors consists of: Glenn Klupsak, Chairman and COO, Jack Heidt, CFO, Reed Guest, Director & General Counsel, Jeff Eandi, Director and Jim Hayes, Director. Mike Green, CTO, Jeff Robinson, Senior VP Marketing and Mike Lokmor Senior Engineer.

CET has per performed numerous lab tests over the years to refine product efficiency and maximize emission reductions. Field tests have also been conducted and independently verified to prove emission reduction claims and fuel savings. The most impressive field test was performed on a commercial truck routing from Reno to the Bay Area. This was a model year 2000 vehicle with approximately 250Kk miles and a baseline opacity reading of 36.7%. After less than two months of operation the vehicle was re-tested by an independent third party resulting is an opacity reading of less than .005%!! In addition, average fuel saving were also independently verified at 13.75%!

Stationary generators have been tested in our lab and would be very similar to the stationary generator test we are proposing for the county.

In addition, in May of 2011 CET outfitted a truck with our device from Tony's Fine Foods in Sacramento for a demonstration with Senator Ted Gaines at the Capital. The Senator was very impressed with this demonstration and we have met with him on several occasions to discuss the lengthy and expensive approval process through CARB. CET has received an approval letter from CARB to proceed with testing for our E/O exemption certificate – this testing will commence upon further funding for CET.

All work on this project will be performed by CET personnel. Also, 2 Board members live in the Placerville area and will be directly involved.

Emissions Benefits / Cost Effectiveness

Due to the unique nature of this project, and the new technology CET has proposed, the models and formulas provided by the calculator and the ARB website cannot be applied at this time with reasonable accuracy. Additional data is required like vehicle / engine

type miles driven, if vehicles are DPF equipped, hours of operation of generators etc. For accuracy of data, it is recommended that CET work with a representative at the AQMD to arrive at these calculations.

Work Statement

A detailed installation manual can be provided upon project selection. This manual has been submitted to CARB as part of the requirement for the E/O application. This will provide a detailed step-by-step description on how we will install our device.

Listed below is a summary of the project steps:

1) County selects vehicles and generators for the test, upon receipt of the selected vehicles CET will construct the devices specific for the engine type and displacement
2) Baseline opacity / emissions tests to be performed by independent third party
3) CET will install and test the devices – each device should take about 5 hours to install
4) CET will monitor the functioning on-site of the device on a weekly basis and make any adjustments necessary. A weekly report with be provided by CET to AQMD staff detailing any problems and performance issues
5) After one month of operation for the vehicles and a predetermined number of hours of operation for the generators, another opacity / emissions test will be run by an independent third party
6) Results will be provided to all involved parties
7) Step 5 will be repeated after 2 months of operation – results to be provided to all involved parties

Acknowledgement

CET agrees to provide in any form required by AQMD related to this project

Funding Request / Cost Breakdown

This information is provide in the table supplied in the RFP – please refer to Attachment #1

Matching Funds

Summary of Emission Tested Vehicles

This list of vehicles and diesel powered industrial equipment were 3rd party verified for emissions reductions by State of California approved testing facilities. Each first test establishes the baseline without a hydrogen / oxygen supplement to the engine:

Gasoline Tested Vehicles:

1999 Chevrolet Suburban, 5.7 V8 / 85,231 miles

Baseline w/o supplement:

CO	HC	O2	CO2	NOx
0.0	18	0.2	14.7	22

W/ Supplement:

CO	HC	O2	CO2	NOx
0.0	9	0.0	15.0	3

1998 Lincoln Navigator, 5.4 V8 / 67,542 miles

Baseline w/o supplement:

CO	HC	O2	CO2	NOx
0.01	9	0.0	14.8	214

W/ Supplement:

CO	HC	O2	CO2	NOx
0.01	1	0.0	14.9	23

1985 Ford LTD, 5.0 V8 / 163,000 miles

Baseline w/o supplement:

CO	HC	O2	CO2	NOx
0.79	126	5.1	9.44	1097

W/Supplement:

CO	HC	O2	CO2	NOx
0.03	93	8.48	11.1	60

Diesel Tested Engines:

****Thermo king equipped refrigeration trailer, 1.0 liter Kubota, 744 hours**

Baseline w/o supplement: (5 gas analyzer)

CO	HC	O2	CO2	NOx
0.02	8	16.21	3.42	198

W/Supplement after 16 hours:

CO	HC	O2	CO2	NOx
0.03	6	17.18	2.72	86

** This unit achieved a 12% increase in fuel economy during emissions testing.

****Maersk Clip-on Taylor Power System w/ 2.2 liter Isuzu, 3077 hours**

Opacity w/o supplementing: 4.6
Opacity w/ supplementing: 0.9*
* This unit later achieved 0 opacity at operating RPM's

Baseline w/o supplement: (5 gas analyzer)

CO	HC	O2	CO2	NOx
0.01	4	17.41	2.48	87

W/Supplement after 21 hours:

CO	HC	O2	CO2	NOx
0.00	0.17	17.57	2.41	72

** Fuel consumption was reduced from 3.41 lbs to 3.06 lbs per hour during emission testing (10.3%).

****Sprint Cell Site Boss 50 KW Generator w/ 4.3 Isuzu, 1163 hours**

Opacity w/o supplement: 13.2
Opacity w/ supplement: 0*
* This unit later achieved 0 opacity at both idle and operating RPM

Baseline @ 1847 RPM's w/o supplement (5 gas analyzer):

CO	HC	O2	CO2	NOx
0.02	4	18.83	1.49	134

W/Supplement @ 1849 RPM's:

CO	HC	O2	CO2	NOx
0.01	1	18.58	1.65	85

**Fuel consumption was reduced from 4.25 lbs to 3.75 lbs per hour during emission testing (11.8%).

During the miles or hours of emission testing all vehicles supplemented with hydrogen / oxygen achieved a fuel economy gain with most averaging approximately 12%.

State of California approved testing facility which verified gasoline emission testing: BAR # ARD229783

State of California approved testing facility which verified diesel emission testing: BAR # ARD2631

CET
AQMD RFP Response
March 23, 2012
This information is also provided in Attachment #1. All CET matching funds are available for this project. Matching funds are both monetary and in-kind split 50/50