

State of California
AIR RESOURCES BOARD

Resolution 05-19
February 24, 2005

Agenda Item No.: 05-2-3

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, a proposal, number 05-38 entitled "Field Demonstration of Prototype Super Boiler", has been submitted by the Gas Technology Institute in response to the 2005 Innovative Clean Air Technologies (ICAT) Program solicitation;

WHEREAS, the proposal has been independently reviewed for technical and business merit by highly qualified individuals; and

WHEREAS, the Research Division staff and the Executive Officer and Deputy Executive Officers have reviewed and recommend for funding:

Proposal Number 05-38, entitled "Field Demonstration of Prototype Super Boiler", submitted by the Gas Technology Institute, for a total amount not to exceed \$240,054.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby approves the following:

Proposal Number 05-38, entitled "Field Demonstration of Prototype Super Boiler", submitted by the Gas Technology Institute, for a total amount not to exceed \$240,054.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and agreements for the efforts proposed herein, and as described in Attachment A, in an amount not to exceed \$240,054.

I hereby certify that the above is a true and correct copy of Resolution 05-19, as adopted by the Air Resources Board.

Lori Andreoni, Clerk of the Board

ATTACHMENT A

Innovative Clean Air Technologies (ICAT) Grant Proposal: “Field Demonstration of Prototype Super Boiler”

Background

GTI and Cleaver-Brooks have developed a new gas-fired steam generation system--the Super Boiler--for increased energy efficiency, reduced equipment size, and reduced emissions. The Super Boiler is capable of 94% fuel efficiency (higher heating value), can operate on natural gas with 5 ppmv NO_x and CO (@ 3%O₂), and will be 50 percent smaller than conventional boilers of similar steam output.

Objective

The ICAT project would demonstrate the fuel economy, performance, and low NO_x emissions of the boiler.

Methods

The 250-HP commercial prototype boiler will be installed at an industrial host site in Turlock. The field demonstration will consist of parametric and life-cycle tests of up to 12 months. At the conclusion of the demonstration period, the host site will have the option to purchase the Super Boiler for continued operation at its facility.

Expected Results

The project should achieve NO emissions less than current BACT for a life-cycle cost less than that of the current BACT technologies for boilers.

Significance to the Board

The cost and effectiveness of NO_x control on boilers should be improved.

Applicant: Gas Technology Institute (Illinois)

Project Period: February 28, 2005, to May 28, 2007

Principal Investigator: Rick Knight

ICAT Funding: \$240,054

Co-funding: \$342,105

Past Experience with This Principal Investigator:

None. However, GTI has had two previous ICAT grants with different investigators. Our experience with the GTI staff during both projects was positive.

Prior ICAT Funding to 2005

Year	2004	2003	2002
Funding	0	\$45,832	\$106,941

BUDGET SUMMARY

Gas Technology Institute

“Field Demonstration of Prototype Super Boiler”

<u>Direct Costs and Benefits</u>	<u>ICAT</u>	<u>Total</u>
1. Labor	\$ 13,085	\$ 65,414
2. Employee Fringe Benefits	\$ 4,841	\$ 6,073
3. Subcontractors	\$133,900	\$147,180
4. Equipment	\$ 0	\$225,470
5. Travel and Subsistence	\$ 29,474	\$ 32,460
6. Materials and Supplies	\$ 10,340	\$ 25,425
7. Other Direct Costs	<u>\$ 0</u>	<u>\$ 0</u>
Total	\$191,640	\$502,022
<u>Indirect Costs</u>		
1. Overhead	\$ 22,229	\$ 27,884
2. Other Indirect Costs	<u>\$ 26,185</u>	<u>\$ 52,253</u>
Total	<u>\$ 48,414</u>	<u>\$ 80,137</u>
Total Project Costs	\$240,054	\$582,159