

Back-up Documentation for Business Meeting August 27, 2014

EISG Program Solicitation 14-01G

TRUSTEES OF THE CALIFORNIA STATE UNIVERSITY. Possible approval of a resolution approving the six highest ranking grant applications totaling \$854,016 from the Public Interest Energy Research (PIER) program's Energy Innovations Small Grant Solicitation 14-01 Natural Gas portion. These grants were competitively selected and are capped at \$150,000 each. (PIER natural gas funding) Contact: Quenby Lum (10 minutes)

List of recommended grants are:

Natural Gas (14-01G)

Six Proposals valued at \$854,016

Project Title: On-Site Agricultural Biomass Gasification as a Natural Gas Substitute

Principal Investigator: Liao, Chang-hsien, West Biofuels, LLC. San Rafael, CA

Rank: 1

Amount: \$150,000

Project Summary: This project will determine the feasibility of using currently under-utilized agricultural biomass residues for conversion to synthetic gas to replace or blend with natural gas for direct, on-site industrial and agricultural use. If successful, this project will benefit California rate payers by providing a viable alternative to natural gas to help achieve environmental and energy sustainability goals.

Project Title: Natural Gas Leak Detection Sensor for Widely Deployable Networks

Principal Investigator: Frish, Michael, Physical Sciences Inc., Pleasanton, CA

Rank: 2

Amount: \$150,000

Project Summary: Natural gas leaks from pipeline infrastructure are potential safety risks as well as greenhouse gas sources. This project will determine the feasibility of developing miniature methane laser sensors to detect natural gas leaks in pipelines. The goal is to achieve low-cost mass production and low power consumption for widespread deployment at gas meters and other key locations within the natural gas pipeline infrastructure. If successful, this project will benefit California rate payers by decreasing the safety risks associated with natural gas leaks from gas pipelines.

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Project Title: Apparatus for In-Situ Determination of Gas Pipeline Yield Strength
Principal Investigator: Stephanou, Phillip, Palios Corporation, Santa Clara, CA
Rank: 3
Amount: \$148,087

Project Summary: This project will determine the feasibility of using a novel ultrasonic measurement system to enable quick and cost effective non-destructive determination of the yield strength of undisturbed and in-place steel natural gas transmission pipelines in the field. If successful, this project will benefit California rate payers by improving public safety and reducing the cost and disruptions to service caused by intrusive measurements or unnecessary repairs.

Project Title: Energy-Efficient Clothes Dryers: Self-Calibrating Automatic Cycle Termination Controller
Principal Investigator: Pistochni, Theresa, University of California, Davis, Davis, CA
Rank: 4
Amount: \$129,614

Project Summary: This project will develop a low-cost, self-calibrating automatic controller that will reduce energy use in gas clothes dryers by 20% or more through accurately terminating the drying cycle when the remaining moisture content of the load is 2% or less. If successful, this project will benefit California rate payers by reducing the cost to operate clothes dryers.

Project Title: Enrichment of Microbial Communities for Biogas Production in High-Solids
Principal Investigator: Simmons, Christopher, University of California, Davis, Davis, CA
Rank: 5
Amount: \$126,315

Project Summary: This project will enhance biorenewable methane production by improving anaerobic digestion through development and characterization of a microbial community adapted to high-solids conditions. This project targets seasonal food processing residues, and aims to facilitate the distribution and to accelerate the adoption of anaerobic digestion in the food processing industry. If successful, this project will benefit California rate payers by increasing renewable biomethane production to offset fossil fuel use.

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Project Title: Enhancing Winter Solar Water Heating and High Temperature Chiller Operation

Principal Investigator: Lee, Jeffrey, Solar Stream Innovations, Chino Hills, CA

Rank: 6

Amount: \$150,000

Project Summary: This project will determine the feasibility of fabricating a vacuum insulated manifold for retrofitting evacuated tube solar water heating collectors to increase winter water and space heating, and to generate high temperatures for efficient summer chiller operation. If this project is successful, the impact of the proposed project on California ratepayers will be to decrease natural gas peak demand during the winter for heating and during the summer for electricity generation.

Benefits to California

The EISG program is bringing energy solutions to California ratepayers. It encourages growth in the clean tech industry by proving the feasibility of numerous innovative energy concepts. Many new California companies have been started after successful completion of EISG projects. These companies are providing benefits to California and California ratepayers.

The EISG program funds and helps bring to market energy technologies that provide increased environmental benefits, greater system reliability, lower system costs, and tangible benefits to electric utility customers through the following investments:

- Advanced transportation technologies that reduce air pollution and greenhouse gas emissions beyond applicable standards and that benefit electricity and natural gas ratepayers.
- Increased energy efficiency in buildings, appliances, lighting, and other applications beyond applicable standards and that benefit electric utility customers.
- Advanced electricity generation technologies that exceed applicable standards to increase reductions in greenhouse gas emissions from electricity generation and that benefit electric utility customers.