



JouleLabs Cooperative Research and Development Agreement

Cooperative Research and Development Final Report

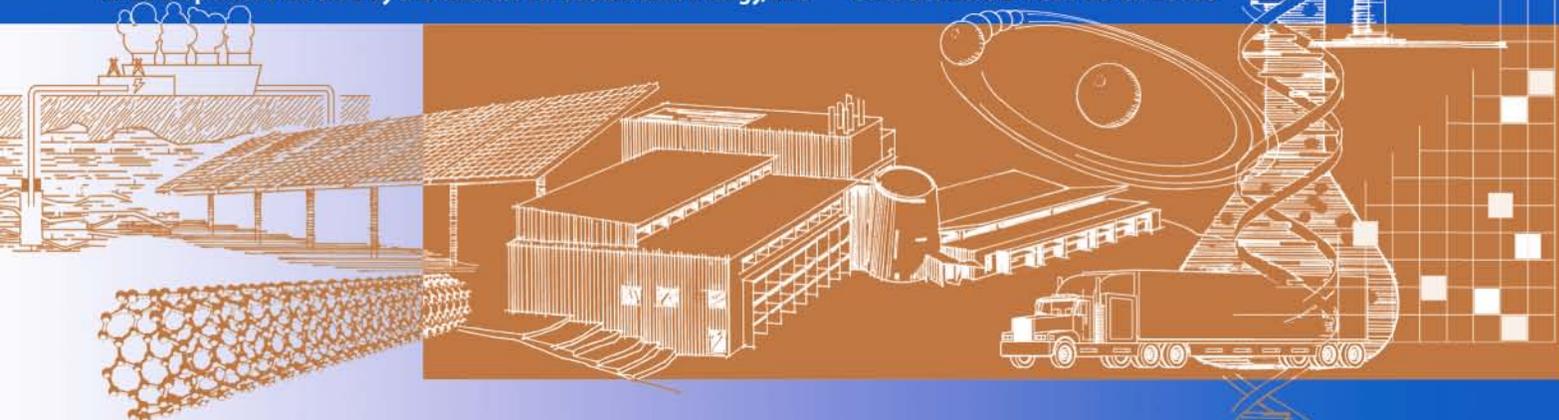
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CRADA Report
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In accordance with Requirements set forth in Article XI.A(3) of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

CRADA number: CRD-08-00301

CRADA Title: JouleLabs Cooperative Research and Development Agreement

Parties to the Agreement: Joule Labs, Inc. + NREL

Joint Work Statement Funding Table showing DOE commitment:

| Estimated Costs | NREL Shared Resources |
|-----------------|---------------------------------|
| Year 1 | \$ 149,000.00 |
| Year 2 | \$ 50,000.00 |
| Year 3 | \$ 50,000.00 |
| TOTALS | \$ 249,000.00 |

Abstract of CRADA work:

The National Renewable Energy Laboratory (NREL) and Joule Labs Inc. (Joule Labs) will collaborate on creating a software platform for the development and distribution of renewable energy and energy efficiency analysis tools. The platform will streamline the development of advanced analysis tools and provide significant commercial value to users of the tools.

Summary of Research Results:

The National Renewable Energy Laboratory (NREL) and Joule Labs Inc. (Joule Labs) collaborated on creating elements of a software platform for the development and distribution of renewable energy and energy efficiency analysis tools – specifically building upon the Renewable Energy Optimization (REO) tool. The platform provided a proof of concept version incorporating wind and solar PV technology module as well as a “site module” that makes use of either one or both of the PV and Wind modules to estimate Lifecycle cost, Dispatch, 25 yr cash-flows, and Internal Rate of Return (IRR). JouleLabs integrated the REO data model into JouleLabs common model to calculate lifecycle costs for PV and wind. The code provided by NREL also enabled Joule to calculate rate of return on based on input

technology sizes. JouleLabs also developed a complete online Service Delivery Platform with its own elastic compute cloud to serve as the basis for their own commercial tool.

Research contributions and improvements benefiting NREL and the REO tool development overall under this effort included:

- 1) Service to automatically extract required renewable energy resource information from multiple GIS Databases;
- 2) Service to automatically extract incentives data from incentives database; and,
- 3) Life Cycle Cost module to calculate the present value of future cash flows.

These improvements reduce the time to process resource and incentives data for a large number of locations. Manual data extraction costs \$200/site, which is inexpensive for just a few sites but expensive for projects that involve several hundred sites.

Subject Inventions listing: None.

Report Date: 4/30/10 Responsible Technical Contact at Alliance/NREL: Bilello, Dan

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