



# U.S. Department of Energy

## Categorical Exclusion Determination Form

**Program or Field Office:** Advanced Research Projects Agency - Energy

**Project Title:** (0471-1508) NAVITASMAX - Novel Tuning of Critical Fluctuations for Advanced Thermal Energy Storage

**Location:** \*- Multiple States - Arizona, Massachusetts, New York, Colorado

**Proposed Action or Project Description:**

American Recovery and Reinvestment Act:

Funding will support a proof-of-concept project that evaluates and optimizes simple and complex supercritical fluids for use as novel heat storage, transfer, and working fluids in solar and nuclear applications.

Proposed work consists of indoor laboratory-based research and development (R&D), modeling, and analysis, including (1) developing theoretical models to explore inhomogeneities and heat capacity anomalies in supercritical fluids, and prove potential to increase heat capacity over ranges of pressure, temperature, and composition (P-T-X) for candidate fluid systems, (2) baseline physical property testing on candidate supercritical fluids and mixtures, (3) testing the supercritical fluid structure and heat capacity relationship over a range of P-T-X conditions, and (4) commercialization and engineering studies to evaluate the viability of using candidate fluids in solar and nuclear applications and evaluate commercialization potential. Indoor laboratory-based R&D will take place at Cornell University (Ithaca, NY) and Nano Terra Inc. (Boston, MA). Modeling and analytical studies will take place at Harvard University (Cambridge, MA), Barber-Nichols Inc. (Arvada, CO), and NAVITASMAX (Chandler, AZ).

**Categorical Exclusion(s) Applied:**

A9 - Information gathering, analysis, and dissemination

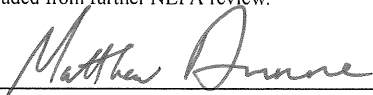
B3.6 - Small-scale research and development, laboratory operations, and pilot projects

\*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 1021 [Click Here](#)

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:



Date Determined: Nov 10, 2011

Comments:

Webmaster:

