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| **Applicant (Prime Recipient): ThermoCapture LLC** |
| **Application Control Number: 0123-4567**  |

*INSTRUCTIONS: The Applicant (the proposed Prime Recipient) is required to complete and submit this form with the Full Application. Additional instructions are provided below. A sample response to this form is available on ARPA-E eXCHANGE (*[*https://arpa-e-foa.energy.gov*](https://arpa-e-foa.energy.gov)*).*

Certification: I certify that the information contained in this disclosure form is accurate and complete. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.

Authorized Representative Name: Jane Doe, Ph.D.

Date: 02-13-12

Authorized Representative Signature: [Insert below..]

1. **DISCLOSSURE OF POTENTIAL IMPROPRIETIES:** Mandatory. No page limit. The Applicant is required to disclose if any of the following conditions exist. If the answer to any of the questions below is “Yes,” the Applicant is required to provide a detailed explanation in an addendum to this form.
	1. **Is the proposed Prime Recipient, Subrecipient(s), Principal Investigator (PI), or Co-PI(s) currently under U.S. Federal or State investigation for potential fraud or similar acts that occurred in the last five years?**

YES [ ] NO [x]

* 1. **Has the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) been convicted by U.S. Federal or State entities of fraud or similar acts in the last two years?**

YES [ ] NO [x]

* 1. **Has the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) been convicted of any violations of U.S. export controls laws and regulations in the last two years?**

YES [ ] NO [x]

* 1. **Has the proposed Prime Recipient or Subrecipient(s) been convicted of any violations of the Drug-Free Workplace Act of 1988 in the last two years?**

YES [ ] NO [x]

* 1. **Is the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) currently under U.S. Federal or State investigation for research misconduct that occurred in the last five years?**

YES [ ] NO [x]

* 1. **Has the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) been convicted by U.S. Federal or State entities of research misconduct in the last two years?**

YES [ ] NO [x]

* 1. **Has any Federal agency proposed the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) for suspension or debarment?**

YES [ ] NO [x]

* 1. **Is the proposed Prime Recipient, Subrecipient(s), PI, or Co-PI(s) debarred, suspended, or otherwise declared ineligible from receiving Federal contracts, subcontracts, or financial assistance and benefits?**

YES [ ] NO [x]

* 1. **Is the proposed Prime Recipient or Subrecipient(s) insolvent?**

YES [ ] NO [x]

* 1. **Is the proposed Prime Recipient or Subrecipient(s) at risk of insolvency?**

YES [ ] NO [x]

* 1. **Has the proposed Prime Recipient or Subrecipient(s) filed for bankruptcy or insolvency in any domestic or foreign jurisdiction in the last three years?**

YES [ ] NO [x]

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| **Application Control Number: 0123-4567**  |

1. **POTENTIAL CONFLICTS OF INTEREST WITHIN PROJECT TEAM:** Mandatory. No page limit. The Applicant is required to disclose potential conflicts of interest within the Project Team. An apparent or actual conflict of interest may exist where an individual or entity has different, and potentially conflicting, duties or relationships with respect to other individuals or entities within the Project Team. Complete a separate table for each potential conflict of interest. If additional tables are required, include the tables in an addendum to this form. If no conflicts of interest exist, check the box marked “None” below. Examples of potential conflicts of interest include but are not limited to:
* The PI for the Prime Recipient has an equity stake in a Subrecipient;
* The PI for a Subrecipient has a consulting arrangement with the Prime Recipient; or
* A Subrecipient is a subsidiary of or otherwise affiliated with the Prime Recipient.

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| **If NONE, check here** **[ ]**  |

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| **Conflicted Individual or Entity #1:** Co-PI John Doe, Ph.D. and Subrecipient Analytics Technologies |
| **Description of Potential Conflict of Interest:** Co-PI John Doe was a majority shareholder and founding partner of Analytics Technologies, selected to be a subrecipient on this project. To correct the conflict, Dr. Doe has divested all stock held in the Analytics Technologies and stepped down from Analytics' Board of Directors. There is no longer any financial or business relationship between the parties.  |

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| **Conflicted Individual or Entity #2:**       |
| **Description of Potential Conflict of Interest:**       |

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| **Applicant: ThermoCapture LLC** |
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1. **COST SHARE VERIFICATION** (see Section III.B.8 of the FOA)**:** Mandatory. The Applicant must provide written assurance of its cost share commitment. The Applicant is bound by the cost share proposed in this form. Complete a separate table for each source of cost share. If additional tables are required, include the tables in an addendum to this form.

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| **Source of Cost Share #1:** ThermoCapture LLC |
| **Type of Contribution (Cash or In-Kind):** 70% Cash ($1,853,098); 30% In-Kind ($794,185) |
| **Value of Contribution (in Dollars):** $2,647,283 |
| **Value of Contribution (as % of Total Project Cost):** 45.3% |
| **If In-Kind, Detailed Description of Contribution:** ThermoCapture LLC is purchasing two key pieces of equipment in order to carry out project objectives, and offers this equipment as in-kind Cost Share. The first piece is a customized containment tank designed to withstand temperatures of over 3000 Kelvin and 75 bar. ThermoCapture will acquire this chamber for $562,100. Secondly, ThermoCapture will acquire a specialized monitoring system for the containment tank, which will cost $232,085.  |
| **If In-Kind, Relevance to Project Objectives:** The containment chamber and monitoring system are required to conduct assements of the supercritical fluid's feasibility to meet the project objectives. Only by studying and carefully monitoring the supercritical fluid at an optimal temperature and pressure will accurate results be possible. |

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| **Source of Cost Share #2:** Midwestern University |
| **Type of Contribution (Cash or In-Kind):** In-Kind |
| **Value of Contribution (in Dollars):** $276,000 |
| **Value of Contribution (as % of Total Project Cost):** 4.7% |
| **If In-Kind, Detailed Description of Contribution:** Midwestern University will contribute the time of Co-PIs Drs. Mahoney and Doe. |
| **If In-Kind, Relevance to Project Objectives:** Drs. Mahoney and Doe are leading authorities in the field of supercritical liquid energy storage. They will be responsible for development and experimentation of various supercritical fluids to determine the optimal arrangment for this project. |

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| **Source of Cost Share #3:**       |
| **Type of Contribution (Cash or In-Kind):**       |
| **Value of Contribution (in Dollars):**       |
| **Value of Contribution (as % of Total Project Cost):**       |
| **If In-Kind, Detailed Description of Contribution:**       |
| **If In-Kind, Relevance to Project Objectives:**       |

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1. **WAIVER REQUEST – FOREIGN WORK** (see Section IV.G.6 of the FOA)**:** Optional. No page limit. ARPA-E requires all work to be performed in the United States . Applicants may request a waiver of this requirement if they wish to perform some work overseas. Complete a separate table for each entity that is requesting to perform work overseas. If additional tables are required, include the tables in an addendum to this form. If no work will be performed overseas, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [ ]**  |

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| **Entity #1:** Specialized Systems |
| **Countries in Which Work Will Be Performed :** Canada |
| **Description of Work to Be Performed:** Specialized will manufacture the supercritical containment chamber necessary to house the supercritical fluids studied in this project. |
| **Rationale for Performing Work Overseas:** Specialized Systems is a leading manufacturer of high-heat, high-pressure containment chambers. Due to the heat and pressure demands the proposed supercritical fluid will place on any chamber in which it is placed, there is an overriding need for a highly-customized and reliable containment chamber in order to create a likelihood of project success.  |

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| **Entity #2:**       |
| **Countries in Which Work Will Be Performed :**       |
| **Description of Work to Be Performed:**       |
| **Rationale for Performing Work Overseas:**       |

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| **Entity #3:**       |
| **Countries in Which Work Will Be Performed :**       |
| **Description of Work to Be Performed:**       |
| **Rationale for Performing Work Overseas:**       |

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| **Application Control Number: 0123-4567**  |

1. **WAIVER REQUEST – TECHNOLOGY TRANSFER AND OUTREACH COSTS** (see Section IV.G.8 of the FOA)**:** Optional. No page limit. ARPA-E requires the Prime Recipient to spend at least 5% of ARPA-E funding on Technology Transfer and Outreach (TT&O) activities. Applicants may request a waiver of this requirement in whole or in part. If the Applicant is seeking a waiver, please provide the information in the table below. If the Applicant is not seeking a waiver, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [ ]**  |

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| **Proposed % to Be Spent on TT&O Activities:** 0% |
| **Rationale for Waiver Request :** The proposed project is still at a very early stage of development. Ideal goals at project completion will be testing and analysis of proof-of-concept. Commercialization activities, at this stage, would be an inappropriate use of funding, and the 5% normally required for Technology Transfer and Outreach would better serve development of the technology to proof-of-concept levels. |

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| **Application Control Number: 0123-4567**  |

1. **REQUEST – TECHNOLOGY INVESTMENT AGREEMENT** (see Section II.B.3 of the FOA)**:** Optional. No page limit. Applicants may request a Technology Investment Agreement by responding to the questions below. If the Applicant is not requesting a Technology Investment Agreement, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [ ]**  |

* 1. **Briefly explain why you would prefer to use a Technology Investment Agreement instead of ARPA-E’s Model Cooperative Agreement** **(**[**http://arpa-e.energy.gov/FundingAgreements/Overview/Award.aspx#Cooperative\_Agreements**](http://arpa-e.energy.gov/FundingAgreements/Overview/Award.aspx#Cooperative_Agreements)**).**

If ThermoCapture is able to demonstrate proof-of-concept, the supercritical fluid will represent a significant advance in energy storage technology. ThermoCapture would ideally to prefer to commercialize the technology as rapidly as possible, at that time. Due to potential investor fears regarding some aspects of the ARPA-E Cooperative Agreement, specifically the "March-In" rights and Unlimited Government Use license, ThermoCapture would like to remove these provisions from the Cooperative Agreement before finalization.

* 1. **Briefly describe the specific objectives that you are seeking to accomplish through the Technology Investment Agreement, including any special terms and conditions.**

ThermoCapture would like to negotiate the removal of the "March-In" rights and Government Use License provisions of the ARPA-E Cooperative Agreement.

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| **Application Control Number: 0123-4567**  |

1. **WAIVER REQUEST – U.S. MANUFACTURING REQUIREMENT** (see Section VI.B.8 of the FOA**):** Optional. No page limit. Applicants may request a modification or waiver of the U.S. Manufacturing Requirement described in Section VI.B.8 of the FOA. Modifications or waivers will be granted only in exceptional circumstances. In return for a modification or waiver, the Applicant is required to make specific, tangible commitments for investments in the United States that are consistent with ARPA-E’s statutory mission (42 U.S.C. § 16538(c)). If the Applicant is not seeking a modification or waiver of the U.S. Manufacturing Requirement, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [ ]**  |

* 1. **Briefly describe your business model and plans for manufacturing products embodying subject inventions (or products produced through the use of subject inventions) in the United States and overseas, and explain why the products cannot be manufactured in the United States.**

ThermoCapture intends to design a system that will enable energy storage with the use of extremely high-heat and high-pressure supercritical fluid stored in a customized containment chamber. The amount of heat and pressure necessary to sustain the system will not vary from model to model, and therefore each unit will need to have a customized containment chamber in order to accommodate the fluid. Currently, there is only one manufacturer of containment systems that has the ability to produce such a chamber: Specialized Systems in Ontario, Canada. Therefore, ThermoCapture has an agreement with Specialized for the production of the containment chambers and final integration of the supercritical fluid at Specialized's facilities in Canada. Until a competitive American containment chamber alternative exists, the subject invention cannot be manufactured in the United States.

* 1. **Briefly describe your existing investments in the United States, including (1) the number of employees, facilities, and locations, and (2) the types of activities performed at each location (e.g., RD&D, manufacturing, administration).**

ThermoCapture has one facility comprised of 8 employees in Kingston, NY. We are are a startup, so the bulk of our work is focused on R&D, with light manufacturing for product testing and design. In addition, we have a three-member administrative team performing non-scientific, day-to-day activities at the facility.

* 1. **Briefly describe your planned investments in the United States with respect to the subject inventions, including staffing, manufacturing, RD&D, and facility usage or buildout.**

Due to the very early nature of project progress, no significant investments are planned at this time. However, if the technology studied in this program is successful, ThermoCapture hopes to produce a manufacturing facility in Kingston, NY, that will allow us to domestically produce and sell products related to this research.

* 1. **Briefly describe your business plan for the subject inventions (e.g., initial work in the United States with subsequent global diversification).**

The idea for energy storage using supercritical fluid was conceived in an attempt to address specific issues regarding the American electrical grid system. The bulk of our business plan is to tailor or produce to help grow and strengthen the grid. Global diversification would ideally occur if the success of our product in creating stable price signals for intermittent forms of energy generation such as Solar and Wind allowed us to expand internationally. Our technology will ideally be suitable for electrial grids worldwide.

* 1. **Briefly describe any U.S. jobs that will be created as a result of activities relating to the subject inventions.**

If we are successfully able to leverage initial profits into a manfacturing plant, we expected to need approximately 150 workers to staff that facility. For the current work, some additional personnel may be brought in if necessary.

* 1. **Briefly describe how your investments will further the development and deployment of the technology in the United States and any other benefits that its work may have for the U.S. economy.**

This technology was conceived primarily with American energy and grid interests in mind. Despite the necessary manufacture in Canada in the near term, ThermoCapture hopes to eventually create domestic production facilities that will create jobs in underserved locations. Furthermore, the technology itself is designed to bring stability to intermittent energy generation, which will enhance the overall reliability and manageability of the electrical grid, creating long-term economic benefits.

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| **Application Control Number: 0123-4567**  |

1. **FFRDC AUTHORIZATION** (see Section II.B.2 of the FOA)**:**  Mandatory for FFRDCs only. No page limit. Before submitting a Full Application, DOE/NNSA FFRDCs are required to obtain written authorization from the cognizant DOE/NNSA contracting officer. Non-DOE/NNSA FFRDCs are required to obtain written authorization from the cognizant Federal agency sponsoring the FFRDC. If the Applicant is not a FFRDC, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [x]**  |

The written authorization must be appended to this form and be signed and dated by the authorizing contracting officer. The following wording is suggested (but not mandatory) for the written authorization. The authorizing contracting officer may use other language, as appropriate.

“Authorization is granted for [FFRDC Name] to participate in the proposed project. The work proposed for [FFRDC Name] is consistent with or complimentary to the missions of [FFRDC Name], will not adversely impact execution of assigned programs at [FFRDC Name], and will not place [FFRDC Name] in direct competition with the domestic private sector.”

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| **Application Control Number: 0123-4567**  |

1. **FIELD WORK PROPOSAL** (see Section II.B.2 of the FOA): Mandatory for DOE/NNSA FFRDCs only. No page limit. DOE/NNSA FFRDCs are required to append a Field Work Proposal to this form. The Field Work Proposal must conform to the instructions in DOE O 412.1A, “Work Authorization System” (<https://www.directives.doe.gov/directives/0412.1-BOrder-a/view>). If the Applicant is not a DOE/NNSA FFRDC, check the box marked “Not Applicable” below.

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| **If NOT APPLICABLE, check here [x]**  |