STATEMENT OF CONSIDERATIONS

ADVANCE CLASS WAIVER OF PATENT RIGHTS FOR TECHNOLOGY DEVELOPED UNDER THE INDUSTRIAL TECHNOLOGIES PROGRAM (ITP) FUNDING OPPORTUNITY ANNOUNCEMENT, "INDUSTRIAL ENERGY EFFICIENCY GRAND CHALLENGE", DE-FOA-0000113, W(C) 2009-010

This advance waiver is intended to apply to inventions of all current and future recipients and subrecipients awarded under the Funding Opportunity Announcement (FOA), "*Industrial Energy Efficiency Grand Challenge*", regardless of tier, except recipients eligible to obtain title pursuant to P.L. 96-517, as amended, and National Laboratories.

The Department of Energy (DOE) is providing federal assistance under its Industrial Technologies Program (ITP) to strengthen America's energy security, environmental quality, and economic vitality in public-private partnerships that enhance energy efficiency and productivity. ITP's defined mission is to improve national security, climate and environment, and economic competitiveness by transforming the way U.S. industry uses energy, and ITP's goal is to drive a 25% reduction in U.S. industrial energy intensity by 2020 in support of EPAct 2005.

The purpose of this FOA is to fund cost-shared development of transformational industrial processes and technologies that reduce the energy intensity (million Btu's per unit system output) or greenhouse gas emissions (carbon equivalent) of the system by a minimum of 25% while providing a return on investment of 10% or greater and complies with the goals and strategies of the Energy Security Theme of DOE's 2006 Strategic Plan, *e.g.*, to cost-effectively improve the energy efficiency of the U.S. economy and to partner with energy-intensive industries to develop transformational manufacturing processes and technologies that enable more efficient use of energy in industrial processes. This FOA includes the following topic areas: (1) Next Generation Manufacturing Concepts; (2) Energy Intensive Processes; (3) Advanced Materials; and (4) Industrial Greenhouse Gas Emissions Reduction.

The Next Generation Manufacturing Concepts topic area is directed to concept studies of entirely new manufacturing processes that will potentially replace conventional manufacturing processes. The studies will focus on specific, promising technologies that offer the potential for major energy, carbon, and economic benefits associated with top energy-intensive industries.

The Energy Intensive Processes (EIP) topic area is directed to addressing specific technology areas that are expected to generate large energy-saving benefits across a variety of industries. The four technology areas that are expected to generate large energy-saving benefits across a variety of industries under EIP are: (A) Reactions and Separations - new technologies with improved energy intensity and process

intensification capabilities which yield dramatic energy and cost savings to a wide range of industries such as in oil refining, food processing, and chemical production; (B) High-temperature Processing - improvements for producing metals and non-metallic materials that include deployment of low-energy or non-thermal alternatives to conventional high temperature processing technologies; (C) Waste Heat Minimization and Recovery - technology advances in ultra-efficient steam production, high performance furnaces and broadly applicable waste-heat recovery that contribute to sustainability, reduced water usage and a lower carbon footprint for U.S. industry; and (D) Sustainable Manufacturing - technologies that enable the manufacture of components with multiple market applications and new manufacturing options that reduce process steps or parts count, thereby reducing energy intensity through the manufacturing value chain.

The Advance Materials topic area is directed to studies focusing on specific, promising industrial materials technologies that offer the potential for major energy, carbon, and economic benefits in the following two areas of interest: (A) Thermal and Degradation Resistant Materials and (B) Materials for Energy Systems. In regards to the former, the goal is to develop and deploy advanced industrial materials that would last longer and operate at higher temperatures; thereby improving productivity, reducing or eliminating plant down time, and reducing energy intensity. The quantitative goal for thermal and degradation resistant materials is to increase lifetime by a factor of ten (10x), thus achieving reduction in energy intensity. In regards to materials for energy systems, the goal is to develop and deploy advanced industrial materials that improve performance (by at least 50%) of energy production and energy transfer equipment and reduce energy losses. Examples include but at not limited to: photovoltaic and thermoelectric materials, refractories and insulation, materials for heat exchangers, or other waste heat recovery technologies.

The Industrial Greenhouse Gas Emissions Reduction topic area is directed to studies focusing on transformational technologies that address not only carbon intensity reductions, but also absolute carbon reductions. In the United States in 2005, industry accounted for approximately 28% of total energy-related CO_2 emissions. Significant reduction of industrial greenhouse gases (GHG) emissions (tracked in CO_2 equivalents) can be attained through changes in energy use, development of new materials, and improvement of process efficiencies. In addition, development of advanced manufacturing technologies could significantly reduce industrial CO_2 emissions. Innovative enabling technologies for energy-efficient and low CO_2 emission products and processes can take advantage of developments in sensors and controls, catalysis, nanotechnology, micro-manufacturing, and other areas to reduce GHG emissions, including industrial gases with high global warming potential (GWP). Of particular interest for this topic area are technologies that apply to industries that have been identified as major sources of carbon emissions.

Teaming arrangements among the recipients under this award are anticipated for all topic areas. Where appropriate, each team may be composed of a prime recipient and one or more subrecipients. The team can be composed of large and small companies, academia, trade organizations and research organizations including DOE National

Laboratories. However, DOE FFRDCs cannot be prime recipients. It is anticipated that each of the teams will develop an appropriate allocation of patent rights among the recipients to facilitate the commercial development of the respective technical areas forming the subject matter of each award, subject to the requirements of the Bayh-Dole Act. Although the recipients have not yet been selected, about 50 awards are anticipated under this FOA depending on the size of the awards with the cost sharing being at least 20%.

It is the purpose of this class waiver to vest title to the parties' inventions with the recipients and subrecipients in a fashion enabling them to expediently commercialize the various technologies. Accordingly, DOE will waive the Government's title to subject inventions, other than inventions made by Bayh-Dole recipients pursuant to P.L. 96-517, as amended, or National Laboratories, to the respective recipient or other recipients as may be designated by the parties agreeing to the terms of this waiver.

This advance class waiver of the Government's rights in inventions is subject to the usual Government license, march-in rights, and preference for U.S. industry provisions set out in 35 U.S.C. 202-204. The class waiver also includes the attached U.S. Competitiveness clause, paragraph t, which requires that products embodying any waived invention or produced through the use of any waived invention be manufactured substantially in the United States unless the recipient demonstrates to the satisfaction of DOE Field Patent Counsel, with the concurrence of the cognizant DOE program, that it is not programmatically or commercially feasible to do so. Field Patent Counsel, for good cause shown in writing, may grant a deviation from this U.S. Competitiveness clause in advance of contracting. The recipient further agrees to make the above condition binding on any entity acquiring rights to any waived invention, including subsequent assignees or licensees. Should the recipient or other such entity receiving rights in any waived invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in the waived invention is suspended until approved in writing by DOE.

The grant of this class waiver is not expected to have any adverse effects on competition or market concentration. Rather, the waiver should enhance competition and growth of ITP's mission in having the U.S. industry lead the world in energy efficiency and productivity. In any event, if a recipient who has obtained title is not making reasonable efforts to utilize a waived invention, DOE can exercise march-in rights.

This advance class waiver shall apply to each of the recipients under the teaming arrangements upon the Contracting Officer's written notice to Field Patent Counsel that the recipient is obligated to provide cost sharing as set forth in the applicable FOA, and shall remain in effect for so long as such cost sharing is maintained over the term of the agreement.

In addition to the above, all recipients under this FOA, other than recipients which are domestic small businesses or non-profit organizations under P.L. 96-517, as amended, or National Laboratories, shall give DOE written notice of their acceptance of the terms and

conditions of this class waiver prior to entering into any agreement incorporating the terms of this waiver. Except as otherwise specifically approved by DOE Patent Counsel, a recipient's acceptance of an agreement under this award, at any tier, shall constitute that recipient's notice to DOE of its acceptance of the terms and conditions of this class waiver.

In the event a recipient which is a member of a teaming arrangement does not participate in subsequent phases of its project, the remaining recipients in that recipient's team shall retain, as a minimum, a royalty-free, nonexclusive license throughout the world, with the right to grant sublicenses, in each subject invention held by such recipient pursuant to this class waiver, except as otherwise approved by DOE Field Patent Counsel. However, in no event will recipients eligible to obtain title pursuant to P.L. 96-517, as amended, of National Laboratories be required to license other recipients its subject inventions.

Considering the foregoing, and in view of the statutory objectives to be obtained and the factors to be considered under DOE's statutory waiver policy, all of which have been considered, it has been determined that this class waiver as set forth above will best serve the interest of the United States and the general public. It is recommended that the waiver be granted.

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Glen R. Drysdale
Patent Counsel, Golden Field Office

Date: 9/30/9

Based upon the foregoing Statement of Considerations, it is determined that the interests of the United States and the general public will best be served by a waiver of the United States and foreign patent rights as set forth herein, and, therefore, the waiver is granted. This waiver shall not affect any waiver previously granted.

CONCURRENCE:

[redacted]

Douglas Kaempf, Program Manager
Industrial Technologies Partnerships

Date: 10/20/09

APPROVAL:

[redacted]

Paul A. Gottlieb
Assistant General Counsel for
Technology, Transfer, and
Intellectual Property, GC-62

Date: 10-26-09

(t) U.S. COMPETITIVENESS

The Contractor agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States unless the Contractor can show to the satisfaction of the DOE that it is not commercially feasible to do so. In the event the DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, e.g., recoupment of the Government's investment, etc. The Contractor agrees that it will not license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements. Should the Contractor or other such entity receiving rights in the invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in the waived invention is suspended until approved in writing by the DOE.