STATEMENT OF CONSIDERATIONS

REQUEST BY THE DOW CHEMICAL COMPANY (DOW) FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE AWARD NO. DE-EE0002867; W(A)-2011-034

The Petitioner, Dow, has requested a waiver of domestic and foreign patent rights for all subject inventions arising from its participation under the above referenced award entitled "Recovery Act: Integrated Pilot-Scale Biorefinery for Producing Ethanol from Hybrid Algae." Dow is a subawardee of Algenol Biofuels, Inc., which is not subject to this patent waiver because it is a small business.

The objective of the agreement is to construct an integrated pilot-scale biorefinery that will convert carbon dioxide into ethanol using Algenol's proprietary algae technology. The biorefinery will be located in an existing, U.S. Gulf Coast Algenol-owned site. The biorefinery will consume two dry tonnes per day of carbon dioxide and will produce more than 100,000 gallons of ethanol per year. Dow is contributing personnel, facilities, and funding to the award, including 1) polymer science research and development for photobioreactors; 2) engineering and process research related to operations scale-up, separations, analytical chemistry, and process management; and 3) technical expertise in water treatment and management.

The total project cost of the agreement with Algenol is $49,590,150, with a total cost share of $25,396,153. The total project cost of Dow's subagreement with Algenol is $2,767,964, with Dow cost sharing $553,593, or 20%. This waiver is contingent upon the Petitioner maintaining the above cost sharing percentage over the course of the agreement.

Under this subagreement, Dow will work on the commercial scale photobioreactor research and development, focusing on the materials of construction and manufacturing of the photobioreactor, the materials, methods of construction and installation of the end caps and the internal mixing system of the photobioreactor bioreactor system.

As part of this effort, Dow will:

1. Assemble, benchmark and rank current relevant polyethylene film technologies for suitability.
2. Develop a cost/performance analysis for photobioreactor and geomembrane materials.
3. Assemble, benchmark and rank current relevant existing anti-fog additives.
4. Manufacture photobioreactor material that will be used to confirm performance.
5. Develop a protocol for monitoring the physical and optical performance of the photobioreactor material for long-term use.
6. Initiate an engineering analysis on monitored photobioreactor film to predict in-service lifetime.
7. Develop specialized anti-fog polymers for use in the photobioreactors.
8. Research, assess and evaluate new anti-oxidant packages to be used in the photobioreactor resins mixtures.
9. Research and evaluate optimal film thickness specifications based on cost/performance targets for the photobioreactor film.

10. Research and optimize the photobioreactor film for maximum light transmission.
11. With Algenol, finalize the design, additive and resin formula for the photobioreactor film.
12. Manufacture the photobioreactor tubes for use in the Biorefinery.

Petitioner is a leading science and technology company that provides innovative chemical, plastic, and agricultural products and services to many essential consumer markets. Dow connects chemistry and innovation with the principles of sustainability to help address many of the world's most challenging problems, such as the need for clean water, renewable energy generation and conservation, and increasing agricultural productivity. Dow's diversified industry-leading portfolio of specialty chemical, advanced materials, agrosciences, and plastics businesses delivers a broad range of technology-based products and solutions to customers in approximately 160 countries and in high-growth sectors such as electronics, water, energy, coatings, and agriculture. In 2010, Dow had annual sales of $53.7 billion and employed approximately 50,000 people worldwide. Dow's more than 5,000 products are manufactured at 188 sites in 35 countries.

As a world-leading supplier of innovative specialty film solutions, Dow is committed to customer success and provides resources and expanded offerings to maximize value for our customers. Dow has dedicated resources for focused market and application development, and continues to offer a broad line of product families. Dow provides innovative and efficient high-quality films and film substrate products to many essential consumer and industrial markets, including postal window envelopes, medical packaging, food and label packaging, protective textiles, lamination, and building and construction.

Petitioner has agreed that this waiver shall be subject to the march-in and preference for U.S. industry provisions, as well as the U.S. Government license, comparable to those set out in 35 U.S.C. 202-204. Further, Petitioner has agreed to the U.S. competitiveness provisions as attached to this Statement. In brief, Petitioner has agreed that products embodying intellectual property developed under this agreement shall be substantially manufactured in the United States, and that Petitioner will not license, assign, or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements.

Referring to item 10 of the waiver petition, granting this waiver is not anticipated to have any adverse impact on competition because Dow does not currently have a market presence in this field. Granting the waiver will encourage Dow to pursue this technology and make the associated investment which will have a positive impact on competition by encouraging new product offerings by a new entrant, Dow, to the market.

Considering the foregoing, it is believed that granting this waiver will provide Petitioner with the necessary incentive to invest its resources in commercializing the results of the agreement

in a manner that will make the above technology available to the public in the shortest time. Therefore, upon evaluation of the waiver petition and in view of the objectives and considerations set forth in 10 CFR 784, all of which have been considered, it is recommended that the requested waiver be granted.

[redacted]

Julia Cook Moody
Patent Attorney
Golden Field Office

Date: 7/7/

Based upon the foregoing Statement of Considerations and representations in the attached waiver petition, it is determined that the interests of the United States and the general public will best be served by a waiver of patent rights of the scope determined above, and therefore the waiver is granted. This waiver shall not apply to any modification or extension of the agreement, where through such modification or extension, the purpose, scope, or cost of the agreement has been substantially altered.

CONCURRENCE:

[redacted]

Paul F. Bryan
Biomass Program Manager

Date: 5/24/2011

APPROVAL:

[redacted]

John T. Lucas
Assistant General Counsel for
Technology Transfer and
Intellectual Property

Date: 5/31/2011

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 DOE that it is not commercially feasible to do so. In the event 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 further agrees to make the above condition binding on any assignee or licensee or any entity otherwise acquiring rights to any waived invention, including subsequent assignees or licensees. Should the Contractor 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 any waived invention is suspended until approved in writing by DOE.