STATEMENT OF CONSIDERATIONS

REQUEST BY PPG INDUSTRIES, INC. (PPG) FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE AWARD NO. DE-EE0004736; W(A) 2011-028

PPG has requested a waiver of domestic and foreign patent rights of the United States of America in all subject inventions arising from its participation under the above referenced grant entitled "Glass Innovations for Improved Efficiency Thin Film PV." The grant was awarded under the DE-FOA-0000234 High Impact Supply Chain Research and Development for PV Technologies and Systems Funding Opportunity Announcement. Colorado State University and Oak Ridge National Laboratory are also performing work under the grant. However, this waiver only applies to inventions of PPG. The inventions of Colorado State University are subject to the Bayh-Dole Act and the inventions of Oak Ridge National Laboratory are subject to the prime contract between DOE and the contractor operating Oak Ridge National Laboratory.

The objective of the project funded by the grant is to develop a coated glass product that combines improved transparent conducting oxide ("TCO"), a buffer layer, a high transmission glass substrate, and a low-soiling anti-reflective (LSAR) coating. The intent is to use such a coated glass product as the superstrate in the fabrication of CdTe thin film PV modules. Although the performance gain due to each attribute represents a solid improvement in module cost; the combination of these various technologies into a single product should result in an innovative and significant step forward with an estimated reduction in CdTe module cost of 17% by 2015. These cost reductions can be achieved by the choice of deposition technology, scaling to large area and large volume manufacturing, and systems integrations of multiple coating operations.

The total anticipated cost of the grant is $5,298,489 with PPG providing $2,135,895 as cost share funds for a cost share percentage of approximately 40%. This waiver is contingent upon PPG maintaining, in aggregate, a cost share percentage of approximately 40% or more over the course of the grant.

Work under the grant is expected to start in April 2011 and last for approximately three years.

As set forth in its petition, PPG is recognized worldwide as a leader in flat glass manufacturing technology, has been manufacturing glass for over one hundred years, and is one of the largest flat glass manufacturers in North America. PPG operates manufacturing lines in five different locations in the U.S. PPG has vacuum coating capabilities in three U.S. plants.

PPG's researchers at its Glass Technology Center in Pittsburgh, PA has a long history and continues to develop competencies in the areas of glass melting and forming, properties control through glass chemistry, functional coatings, coating design and fabrication for optics and solar control, lamination, tempering, complex bending, insulated glass unit technology, and

surface treatments for hydrophobic and hydrophilic functionality. PPG has nearly 30 years experience in depositing functional coatings with both chemical vapor deposition and magnetron sputtered vapor deposition technologies. In those technologies, areas of development have included discovery of new materials and materials combination, precursor and targets fabricated from these materials, new and improved methods for depositing these materials in a uniform and controlled manner over large areas, applying optical physics to the design of thin film structures to control the optical and other functional properties of those coatings, and scaling, transferring, and support for these products and processes into manufacturing. PPG holds many patents in the areas of glass, glass manufacturing, and coating for glass.

PPG 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, PPG has agreed to the U.S. competitiveness provisions as attached to this Statement. In brief, PPG has agreed that products embodying any waived invention or made through the use of any waived invention shall be substantially manufactured in the United States, and that PPG 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, in granting this waiver, PPG may be able to reduce solar system production costs over the long term, improving the marketplace economics and spurring the development of similar and competing technologies. PPG historically has made new technologies available to the marketplace via licensing, partnering, through vertical integration, and working with suppliers, customer, and competitors. Also, PPG believes that any anti-competitive effects of the waiver would be reduced by competitive PV technologies outside of CdTe.

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

[redacted]

Glen R. Drysdale
Patent Attorney
Golden Field Office

Date: 5/12/11

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 approved. This waiver shall not apply to any modification or extension of the grant, where through such modification or extension, the purpose, scope, or cost of the grant has been substantially altered.

CONCURRENCE:

[redacted]

Ramamoorthy Ramesh
Program Manager
Solar Energy Technologies

Date: 2/15/12

APPROVAL:

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

Date: 2/22/2012

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.