## STATEMENT OF CONSIDERATIONS

REQUEST BY PPG INDUSTRIES, INC. (PPG) FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE AWARD NO. DE-EE0003170; W(A) 2011-003

The Petitioner, 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 "Low Cost Production of Thin-Film Photovoltaic (PV) Cells."

The objective of the project funded by the grant is to determine the feasibility of depositing thin-film PV active layers on a glass fabrication line. More specifically, the objective is to identify an approach for the deposition of the different components of photovoltaic materials at lab scale, develop the kinetics of that process, and use those kinetics in the modeling and designing of the equipment necessary to fabricate prototypes of the active layer sub-component of the module at one of PPG's manufacturing facilities. As the work progresses, estimates for the reduction in levelized cost of electricity will be made to verify the path to grid parity.

The total anticipated cost of the grant is $1,500,111 with PPG providing $300,111 as cost share funds for a cost share percentage of 20%. This waiver is contingent upon PPG maintaining, in aggregate, a cost share percentage of at least 20% over the course of the grant.

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, any anti-competitive effects of the waiver would be reduced by competitive technologies. PPG's competitors are also carrying out research and development on economically viable applications which should maintain a competitive environment.

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: [redacted]

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
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APPROVAL:

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