STATEMENT OF CONSIDERATIONS

REQUEST BY ESOLAR, INC. ("ESOLAR") FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE AWARD NO. DE-EE0003595; W(A) 2011-018

ESOLAR has requested a waiver of domestic and foreign patent rights of the United States of America in all subject inventions *related to molten salt systems and integration of molten salt systems with other plant systems* arising from its participation under the above referenced cooperative agreement entitled "Modular & Scalable Baseload Molten Salt Conceptual Design & Feasibility Project" ("the Cooperative Agreement").

ESOLAR's partner for this project, that is funded by the Cooperative Agreement, is Babcock & Wilcox Power Generation Group, Inc. ("B&W"). Except as otherwise provided for below, this waiver pertains only to the subject inventions arising from ESOLAR's participation under the Cooperative Agreement. B&W has submitted a separate petition for a waiver of patent rights related to the subject inventions arising from its participation in the project.

According to the project narrative for the project funded by the Cooperative Agreement, the objective of the project is to "design, build, and test a full-scale molten salt power module with fundamentally new components: an advanced molten salt receiver, a distributed molten salt transport system, a thermal storage system, and a molten salt steam generator." This modular approach "enables custom scaling of capacity factor without re-engineering the entire system, reduces costs by rapidly deploying factory-built, shipped-to-site components and mass produced heliostats, and simplifies permitting with shorter towers." In general, ESOLAR is primarily responsible for the heliostats, controls, turbine/generator system and buildings. B&W is responsible for all equipment that contacts molt salt including the receivers/towers, salt piping, salt tanks and steam generation system.

The molten salt power plant design includes following major systems:

- Solar Collector System (SCS) collects and focuses incident solar energy by accurately controlling an array of independent heliostats organized into modular heliostat fields. The SCS consists of reflectors, drives, structures, ballasts, electronics, field wiring, camera towers, and calibration and control software. (According to ESOLAR, the SCS hardware and software have been developed previously by ESOLAR at private expense and no development of SCS hardware or software is being done as part of this Cooperative Agreement.)
- Solar Receiver System (SRS) receives concentrated solar energy from the SCS and transfers it to molten salt pumped from the cold storage tank, and delivers it to the hot storage tank. The SRS includes receivers, towers, piping to and from TSS, cold salt pumps, heat trace, and instrumentation and control.
- Thermal Storage System (TSS) stores thermal energy in molten salt to decouple solar

collection from energy dispatch. In the molten salt plant design, the thermal storage medium also serves as the heat transfer fluid, and is separated into hot and cold storage tanks. The TSS consists of cold tank shell, hot tank shell, foundations, foundation cooling pipes, insulation, heaters, and nitrate salt.

- Steam Generation System (SGS) takes energy from the hot salt tank to generate steam as an input to the power generation system. The SGS consists of shell and tube heat exchangers (pre-heater, evaporator, super-heater, and re-heater), steam drum, piping, shell heaters for initial preheating, foundations, insulation, bridging structure, hot salt pumps, and salt mixer pumps.
- Power Generation System (PGS) converts the energy in steam delivered by the SGS into electricity through a reheat Rankine cycle turbine generator. The PGS consists of the turbine, condenser, cooling tower, circulation pumps, condensate storage tanks, condensate and feedwater heaters and pumps, deaerator, water chemistry system, blow down system, and foundations. (According to ESOLAR, the PGS is comprised of available commercial technologies developed by the commercial power industry outside the scope of the Cooperative Agreement.)
- Plant Control System (PCS) interfaces with all subsystems to provide unified control of all automated plant functions and provides communication between subsystems for feedback and monitoring. The PCS consists of the distributed control systems, network, and environmental instrumentation.
- Balance of Plant (BOP) includes all plant components which are directly related to major plant systems. BOP components include buildings and structures, compressed air, electrical distribution, heat trace, control systems, instrumentation and controls not included in other systems, process vents and drains, and water systems.

The project includes three phases. During Phase I (System Feasibility Study and Conceptual Design), the project team will develop a conceptual design for a 100-MWe, molten salt CSP plant and will perform a feasibility study to determine the likelihood of achieving 75% capacity factor at a levelized cost of electricity ("LCOE") of 8.8¢/kWh. In Phase II (Engineering Design), the preliminary design of each major plant system will be completed leveraging the results from the conceptual plant design and engineering from Phase I. Phase III (Detailed Engineering, Prototype Build, Test and Evaluations) includes site selection and partnering, site-specific detailed design, engineering, procurement, construction, testing, and evaluation of the demonstration module.

The total anticipated cost of the Cooperative Agreement is approximately $49,000,000. The total dollar amount from the Department of Energy is $10,800,000 for the three phases of the Cooperative Agreement. The total cost share amount from ESOLAR and B&W is $38,000,000 for the three phases. Specifically, the total cost contributable to the work of ESOLAR under the Cooperative Agreement is $1,229,258 for Phase I, $1,775,489 for Phase II and $18,919,526 for Phase III with ESOLAR committed to at least 20% cost share for Phases I and II and 80% cost share for Phase III. This waiver is contingent upon ESOLAR maintaining approximately the forgoing cost share or greater for each phase. The period of performance of the Cooperative Agreement is September 2010 to September 2014.

As set forth in its petition, ESOLAR has designed, built, and operates the Sierra SunTower Generating Station in Lancaster, CA (the only operating solar power tower in the United States) and has several other commercial projects underway. ESOLAR has developed key technologies in this field including small modular heliostats designed for high-volume production and calibration and control software used to operate a heliostat field. ESOLAR also has experience with working with various partners to design, build, commission, and operate Sierra's power block and balance of plant. ESOLAR has sixteen pending U.S. utility patent applications, six U.S. provisional applications, and eighteen international and foreign patent applications related to the solar energy field. In addition to the approximate cost share of $19,000,000 for this Project, ESOLAR and its investors have invested over $150,000,000 over the past four years developing power tower technology.

ESOLAR has agreed that this Waiver shall be subject to the march-in and the 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.

According to ESOLAR, it is not a project developer or an Engineering. Procument, and Construction (EPC) company and would likely have very specific and defined role in any commercial project. In a typical project using this technology, a project developer would engage investors, raise money, negotiate project contracts, and hire an EPC company to do the site-specific plant design and build the plant. The EPC would utilize its standard processes, supply chain, manpower, and buying power for all elements of the plant (including the PGS, PCS, and BOP), except the SCS and molten salt systems. Except for integration issues with SCS and molten salt systems, ESOLAR is likely to have no substantial input to the EPC's scope of work or sources of supply. ESOLAR would, however, have a strong supporting role in the project by developing and supplying the SCS control software and only an ESOLAR-approved supply chain could be used for fabrication of SCS components. Likewise, ESOLAR and B&W would have key roles in providing the molten salt system design and integration, while B&W would manufacture and supply the molten salt systems.

In light of this project development model which gives ESOLAR no or little control over EPC scope and supply chain, ESOLAR has not agreed to the standard U.S. competitiveness provision that requires products embodying any waived invention or produced through the use of any waived invention to be substantially manufactured in the United States. Moreover, according to ESOLAR, compliance with the standard U.S. competitiveness provision would be difficult for any party due to the the competitive nature of solar plant construction and, in cases for solar plants outside of the U.S., possible local content requirements.

However, ESOLAR is willing to make specific commitments to U.S. investment in lieu of the standard U.S. competitiveness provision. Specifically, in lieu of the standard U.S. competitiveness provision, ESOLAR agrees to the following commitments:

(1) Substantially all molten salt systems, including the receivers and the steam generation system for the demonstration plant provided by or for ESOLAR as part of its scope of work under the Cooperative Agreement shall be substantially manufactured and engineered in the U.S. Notwithstanding the foregoing, salt storage system and pump engineering may be conducted in Europe, and some SGS design and manufacturing may be done at a B&W facility in Canada.
(2) Heliostat calibration and controls software, including technical support, will be developed and programmed in the U. S. Software maintenance will also be performed in the U.S., except where in-country maintenance is dictated for international projects.
(3) At least 80% of all molten salt systems (with respect to total cost of such content) provided by or for ESOLAR as part of its scope of work under a contract for the construction of a commercial molten salt solar power plant in the U.S. shall be substantially manufactured in the U.S.
(4) ESOLAR agrees to consider and give preference to manufacturing in the U.S. of any molten salt system product that embodies any waived invention intended for use in a commercial molten salt plant outside of the U.S. to the extent commercially and legally feasible (e.g., in accordance with any local content or other requirements). As part of the consideration, ESOLAR will, at a minimum, solicit U.S. manufacturers and review any domestic manufacturing capability for technology owned or controlled by ESOLAR to determine whether manufacturing substantially in the U.S. is cost competitive.
(5) Manufacturing pursuant to any license or other assignment of rights to B&W by ESOLAR of a waived invention of ESOLAR shall be subject to the terms and conditions of the patent waiver granted to B&W under the Cooperative Agreement.

The above commitments mostly relate to molten salt systems. This patent waiver is limited to subject inventions related to molten salt systems and integration of molten salt systems with other plant systems. Therefore, the scope of commitments substantially match the scope of this patent waiver and the scope of work under the Cooperative Agreement. Moreover, ESOALR has committed to certain activities in the U.S. regarding its heliostat calibration and controls software even though these activities are outside the scope of work under the Cooperative Agreement.

As a condition of this Waiver, ESOLAR will be required to provide utilization reports of any waived invention on an annual basis for the life of any patent protecting the waived invention. ESOLAR shall certify that it is complying with the terms of the patent waiver including the above commitments.

Referring to item 10 of the waiver petition, ESOLAR does not believe that the granting of this Waiver will have an adverse impact of competition. It believes that the waiver would enhance the commercial viability of the technology which in turn would spur additional investment and development of competing designs and technologies.

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

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Glen R. Drysdale
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Date: 10/11/11

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 Cooperative Agreement, where through such modification or extension, the purpose, scope, or cost of the Cooperative Agreement has been substantially altered.

CONCURRENCE:

[redacted]

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Date: 5-16-12

APPROVAL:

[redacted]

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Date: 5/30/2012