

Statement of Considerations

CLASS WAIVER OF THE GOVERNMENT'S PATENT RIGHTS IN CERTAIN INVENTIONS MADE IN THE COURSE OF OR UNDER ARPA-E AWARDS FUNDED WITH FY2015 OR FY2016 FUNDING

W(C) 2015-001

This is a class patent waiver of the Government's rights to title in any invention that a domestic large business makes or conceives in the course of or under an Advanced Research Projects Agency-Energy (ARPA-E) funding agreement. The waiver is limited to (1) funding agreements selected through Funding Opportunity Announcements (FOAs) released by ARPA-E during the 2015 and 2016 fiscal years, and (2) funding agreements awarded on a non-competitive basis during the 2015 and 2016 fiscal years. This class waiver is identical in scope and subject to the same requirements as a prior class waiver W(C) 2013-010 (attached hereto) for similar ARPA-E awards for FOAs released and non-competitive agreements awarded during the 2013 and 2014 fiscal years.

Under section 152 of the Atomic Energy Act of 1954 (42 U.S.C. § 2182) and section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. § 5908), the Government obtains title to any invention made or conceived under a U.S. Department of Energy (DOE) award that is not subject to the Bayh-Dole Act (35 U.S.C. §§ 200-212) or a Technology Investment Agreement, unless title is waived by DOE. DOE may waive patent title rights through an advance waiver to a particular contractor or through a class waiver to a class of contractors. As set forth in 10 C.F.R. § 784.7, class waivers may be appropriate in situations where all members of a particular class would likely qualify for an advance waiver. In accordance with 10 C.F.R. § 784, the prior class waiver W(C) 2013-010 contains a complete analysis of the factors to consider the granting of a class advance waiver for awards made by ARPA-E. This analysis is still applicable to the ARPA-E awards that will be subject to this class waiver.

In its first six years of operation, ARPA-E has invested more than \$1.2 Billion in advanced energy technologies, including approximately 407 research and development projects selected under 25 FOAs. In addition, ARPA-E has undertaken robust outreach activities to maximize the return on taxpayer investment through ARPA-E-funded technologies meeting their full commercial potential. Critical success in ARPA-E projects has spurred millions of dollars in follow-on private-sector funding and a number of start-up companies. Over 400 inventions have been reported to DOE as having been made under these prior awards and over 40 patents have already issued to ARPA-E awardees.

As with the prior class waiver cited above, this class waiver is subject to the Government license, march-in rights, and preference for U.S. industry provisions set out in 35 U.S.C. §§ 202-204. The waiver is further subject to 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 participant demonstrates to the satisfaction of DOE Cognizant Patent Counsel, with the concurrence of the Cognizant ARPA-E Program Official, that it is not commercially feasible to do so. Cognizant Patent Counsel, for good cause shown in writing, may grant a deviation from this U.S. Competitiveness clause in advance of contracting. Each participant further agrees to make the above condition binding on any entity acquiring rights to any waived invention, including subsequent assignees or licensees. Should any participant or other 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. In the alternative, ARPA-E may, in its discretion, address U.S. competitiveness through the submission of U.S. Manufacturing Plans pursuant to the Determination of Exceptional Circumstances Under the Bayh-Dole Act for Energy Efficiency, Renewable Energy, and Advanced Energy Technologies (approved September 11, 2013).

As with the prior class waiver, this class waiver applies to the recipient of an award or a subaward under the relevant ARPA-E FOA that provides cost sharing of at least 20%, and shall apply to each domestic large business participant as defined in the prior class waiver under a teaming arrangement, provided the team provides aggregate cost sharing of at least 20%. Where cost sharing in the aggregate falls below 20%, any business receiving patent rights under this patent class patent waiver will be required to meet a minimum cost share of 20 percent of its portion of Total Project Costs. The requirement to provide at least 20% cost sharing shall be based on the Contracting Officer's written notice of such cost-sharing to Cognizant Patent Counsel that the participant, or a team in aggregate, is obligated to provide at least 20% cost sharing, and the waiver shall remain in effect for so long as such cost sharing is maintained, separately or in aggregate, over the term of the particular competitive and non-competitive awards funded during fiscal years 2013 or 2014.

Those participants in ARPA-E awards who are not subject to Bayh-Dole or who do not otherwise meet the criteria of this class waiver may still request an advance waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of a particular agreement funded during fiscal years 2015 or 2016 in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, such participants will have a continuing right under their awards to request a waiver of the rights of the United States in the title to identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of an ARPA-E award.

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 advance class waiver as set forth above will best serve the interests of the United States and the general public. It is recommended that the waiver be granted.

Paul Gottlieb
Senior Advisor for Intellectual Property
ARPA-E

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:

Dr. Ellen Williams
Director
Advanced Research Project Office-Energy
Date 5/8/15

APPROVED:

John T. Lucas
Assistant General Counsel
for Technology Transfer &
Intellectual Property
Date 5/19/2015

CONCURRENCE:

Dr. Ellen Williams

Director

Advanced Research Project Office-Energy

Date 5/8/15

APPROVED:

John T. Lucas

Assistant General Counsel
for Technology Transfer &
Intellectual Property

Date 5/19/2015

Statement of Considerations

CLASS WAIVER OF THE GOVERNMENT'S PATENT RIGHTS IN CERTAIN INVENTIONS MADE IN THE COURSE OF OR UNDER ARPA-E COMPETITIVE AWARDS FUNDED WITH FY2013 OR FY2014 FUNDING

W(C) 2013-010

This is a class patent waiver of the Government's rights to title in any invention that a domestic large business makes or conceives in the course of or under an Advanced Research Projects Agency-Energy (ARPA-E) funding agreement. The waiver is limited to (1) funding agreements selected through Funding Opportunity Announcements (FOAs) released by ARPA-E during the 2013 and 2014 fiscal years, and (2) funding agreements awarded on a non-competitive basis during the 2013 and 2014 fiscal years. The waiver is subject to the Government license, march-in rights, and preference for U.S. industry provisions set out in 35 U.S.C. §§ 202-204. The waiver is further subject to a U.S. competitiveness provision in ARPA-E awards that requires products embodying any waived invention or produced through the use of any waived invention be manufactured substantially in the United States. Application of this class patent waiver is contingent on a 20% cost share, as set forth below.

Under section 152 of the Atomic Energy Act of 1954 (42 U.S.C. § 2182) and section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. § 5908), the Government obtains title to any invention made or conceived under a U.S. Department of Energy (DOE) award that is not subject to the Bayh-Dole Act (35 U.S.C. §§ 200-212) or a Technology Investment Agreement, unless title is waived by DOE. DOE may waive patent title rights through an advance waiver to a particular contractor or through a class waiver to a class of contractors.² As set forth in 10 C.F.R. § 784.7, class waivers may be appropriate in situations where all members of a particular class would likely qualify for an advance waiver.

A patent waiver is warranted when it is determined that the waiver will best serve the interests of the United States and the general public. In determining whether to waive patent title rights, DOE has the following policy objectives: (1) making the benefits of the energy research, development, and demonstration program widely available to the public in the shortest practicable time; (2) promoting the commercialization of inventions; (3) encouraging participation by private persons in DOE's energy research, development, and demonstration programs; and (4) fostering competition. For advance waivers in particular, DOE also takes into account specific considerations listed in the DOE patent waiver regulations. Based on these policy objectives and considerations, DOE finds this class waiver is appropriate and best serves the interests of the United States and the general public.

¹ For the purposes of this class waiver, "domestic large business" includes a U.S. subsidiary or affiliate (i.e., one that is incorporated in the United States (including U.S. territories)) of a foreign large business, where that U.S. subsidiary or affiliate is performing work under an award. For contractors that do not meet the definition of domestic large business, but where the considerations discussed in this class waiver otherwise apply, the Assistant General Counsel for Technology Transfer and Intellectual Property may grant rights under this waiver with the concurrence of ARPA-E.

² The term "contractor" includes all participants under ARPA-E financial assistance agreements, including grants and cooperative agreements.

ARPA-E's work is consistent with DOE's policy objectives. The America COMPETES Act of 2007 authorized the establishment of ARPA-E within DOE. ARPA-E's mission is to: (1) enhance the economic and energy security of the United States through development of energy technologies that decrease our nation's dependence on foreign energy sources, reduce greenhouse gas emissions, and improve energy efficiency of all economic sectors; and (2) ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies (42 U.S.C. § 16538(c)(1)). Since its formal establishment in 2009, ARPA-E has dedicated itself to advancing high-potential, high-impact energy technologies that are too risky for private-sector investment and that are not supported by other government programs. ARPA-E invests in research projects that can have transformational impacts -i.e., the potential to radically improve U.S. economic prosperity, national security, and environmental well-being. ARPA-E empowers America's energy researchers with funding, technical assistance, and market readiness.

In its first five years of operation, ARPA-E has invested more than \$900 million in advanced energy technologies, including approximately 362 research and development projects selected under 18 FOAs. In addition, ARPA-E has undertaken robust outreach activities to maximize the return on taxpayer investment through ARPA-E-funded technologies meeting their full commercial potential. Critical success in ARPA-E projects has spurred millions of dollars in follow-on private-sector funding and a number of start-up companies.

Domestic large businesses performing work under an ARPA-E funding agreement constitute a class of contractors in which all members would likely qualify for an advance patent waiver after taking into account the following considerations:

- (1) *The extent to which the participation of the contractor will expedite the attainment of the purposes of the program.*

Each ARPA-E program issues FOAs for research and development efforts in areas that the program has determined will lower the cost associated with its respective technology so that the technology will be more broadly adopted and used across the U.S.

ARPA-E selects the recipients (i.e., contractors) through a competitive process based on the merit criteria set forth in the FOA. Specifically, ARPA-E selects each recipient based on the determination that the recipient is most likely to achieve the purpose of the FOA compared to the other organizations that have applied for funding. In unique circumstances, ARPA-E may also determine that a domestic large business competitively selected under a FOA merits additional support on a non-competitive basis. In both competitive and non-competitive circumstances, the participation of a particular domestic large business is determined by ARPA-E to be the best means of attaining the program's purposes.

- (2) *The extent to which a waiver of all or any part of such rights in any or all fields of technology is needed to secure the participation of the particular contractor.*

Waiving patent rights encourages participation in ARPA-E-funded research and development projects. With patent rights, an organization is more likely to invest in research and development projects that may lead to valuable inventions.

Congress recognized the value of patent rights with the passage of the Bayh-Dole Act (35 U.S.C. §§ 200-212). One of the objectives of Bayh-Dole was to encourage participation in federally-funded research and development projects. Congress understood that more organizations would participate in federally-funded research and development projects when the organizations can own the rights to the inventions conceived or first actually reduced to practice in performance of the work under a funding agreement (referred to as "subject inventions"). Therefore, Bayh-Dole requires that funding agencies generally afford domestic small businesses and nonprofit organizations the right to retain title to their subject inventions. Bayh-Dole was extended to all types of contractors, including domestic large businesses, under Executive Order 12591, to the extent permitted by law. However, Section 9 of the Federal Non-nuclear Research and Development Act of 1974 (42 U.S.C. § 5908) provides that title to subject inventions vests with DOE unless title is waived. Because of this provision, the Executive Order does not extend Bayh-Dole to domestic large businesses under ARPA-E funding agreements, and the right for domestic large businesses to retain title to subject inventions must be granted through the patent waiver process. The same policy reasoning behind Bayh-Dole and the Executive Order applies here to domestic large businesses under ARPA-E funding agreements (i.e., allowing domestic large businesses to take title to their subject inventions will encourage their participation). Therefore, granting a patent waiver encourages the participation of domestic large businesses in ARPA-E funded projects.

- (3) *The extent to which the contractor's commercial position may expedite utilization of the research, development, and demonstration results.*

The utilization of the research and development results is more likely expedited with a domestic large business having patent rights instead of the Government retaining the patent rights. With the patent rights, the domestic large business is more likely to be able and willing to make the necessary investment to commercialize the results.

In order to progress the technology beyond research and development to commercialization, a business must make a significant investment in time, equipment, and other resources. The investment is not guaranteed due to the risk associated with being the first one to introduce a new technology to the marketplace. A business is less likely to make the investment and accept the risks if it does not have the patent protection to prevent its competitors from copying

the technology if and when the business establishes a market for the new technology.

Congress recognized that federally-funded technology was more likely to be used and commercialized when the organizations that made the inventions had the patent rights to the inventions with the passage of Bayh-Dole. Congress passed Bayh-Dole, in part, to promote the use of federally-funded inventions by domestic small businesses and nonprofit organizations. Executive Order 12591 implicitly recognized that the same policy considerations behind Bayh-Dole also apply to domestic large business contractors. This same reasoning also applies to domestic large businesses under ARPA-E funding agreements.

- (4) *The extent to which the Government has contributed to the field of technology to be funded under the contract.*

The Government has made significant and strategic contributions to support the development and deployment of advanced energy technologies. Although the Government's contributions have been important, private industry contributions have been significant, as well. In addition to cost share provided under a particular funding agreement, it is typical that the work of the funding agreement relies significantly on past investments made by a domestic large business and will rely on future investments from the domestic large business in order to commercialize the technology.

- (5) *The purpose and nature of the contract, including the intended use of the results developed thereunder.*

ARPA-E funding agreements selected through an ARPA-E FOA or on a non-competitive basis are financial assistance instruments. The principal purpose of financial assistance is to transfer a thing of value to a recipient to carry out a public purpose of support or stimulation authorized by law rather than acquiring property or services for the direct benefit or use of the U.S. government. The purpose of ARPA-E funding agreements is to lower the cost associated with advanced energy technologies so that the technologies are more broadly adopted and used across the United States, and ultimately the world. Granting a patent waiver encourages participation in ARPA-E funded projects and supports the commercialization of technologies developed with ARPA-E support. Therefore, granting a waiver is consistent with the purpose of ARPA-E funding agreements.

- (6) *The extent to which the contractor has made or will make substantial investment of financial resources or technology developed at the contractor's private expense which will directly benefit the work to be performed under the contract.*

Under ARPA-E funding agreements, domestic large businesses are usually required to meet certain cost share requirements. Specifically, under Section 988 of the Energy Policy Act of 2005, a domestic large business is usually required to provide at least a 20% cost share for research and development activities.

In addition to cost share, a domestic large business will typically have made a past investment and intend to make a future investment beyond the funding agreement related to the technology developed under an ARPA-E funding agreement. The past and anticipated future investments vary from one domestic large business to another. However, based on past patent waiver requests, it is typical that the research and development tasks to be pursued by a domestic large business under an ARPA-E funding agreement are based on and benefit from a past investment by the domestic large business (e.g., use of equipment and facilities and background intellectual property). It is also typical that a domestic large business has the intent and capability to make future investments in promising technologies resulting from work under the funding agreement in order to commercialize those technologies. In any event, patent waivers are subject to march-in rights that would require licensing the technologies to others if the large business fails to make reasonable efforts to use the technologies.

- (7) *The extent to which the field of technology to be funded under the contract has been developed at the contractor's private expense.*

The extent to which a domestic large business has developed a particular technology at private expense will vary from one domestic large business to another. It is typical, however, for a domestic large business to rely on its past investments to perform the work under an award.

- (8) *The extent to which the Government intends to further develop to the point of commercial utilization the results of the contract effort.*

A particular domestic large business may receive additional federal funding related to the technology developed under an ARPA-E funding agreement. However, it would be unusual for the Government to conduct any development work on advanced energy technologies by itself related to an ARPA-E funding agreement to the point of commercial utilization. Any additional federal funding to a domestic large business is likely to be made in support of existing ARPA-E program objectives and subject to the required terms and conditions for receiving federal funding (e.g., 20% cost share for research and development activities).

- (9) *The extent to which the contract objectives are concerned with the public health, public safety, or public welfare.*

The purpose of the ARPA-E funding agreements is to de-risk and prove the technical feasibility of advanced energy technologies so that the technologies are broadly adopted and used within the U.S. and global markets. In many circumstances, the adoption of advanced energy technologies could directly benefit the public health, safety and welfare through the use of more environmentally friendly sources of energy. Granting a waiver should expedite the adoption of advanced energy technologies (see paragraph (3) above). Therefore, granting a waiver is in the interest of public health, safety and welfare.

(10) *The likely effect of the waiver on competition and market concentration.*

Energy is a globally competitive market. In order to be commercially viable, advanced energy technologies, including clean and renewable energy technologies, must compete with more conventional sources of energy. Within clean energy, the different types of technologies (*e.g.*, wind, water, solar, biomass, and geothermal) compete among themselves. Moreover, even within a particular type of technology, there are typically several different approaches and systems competing among themselves (*e.g.*, silicon-based solar cells versus non-silicon-based solar cells).

Typically, a patent waiver encourages a domestic large business to make the necessary investments needed to bring its particular technology solution to the market. A patent waiver should not have an impact on the other technology solutions in the market. By encouraging the domestic large business to bring another technology solution to the market without impacting the other solutions already in the market, a patent waiver supports competition in energy.

(11) *Such other considerations, such as benefit to the U.S. economy, that the Secretary or designee may deem appropriate.*

Most patent waivers include a U.S. competitiveness provision that requires products embodying any waived invention or produced through the use of any waived invention to be manufactured substantially in the United States. In the past, DOE has agreed to other commitments to the U.S. economy in lieu of the U.S. competitiveness provision. This class waiver will be subject to the standard U.S. competitiveness provision.

Based on the foregoing considerations, DOE finds that this class waiver is appropriate and best serves the interests of the United States and the general public. This finding is consistent with Bayh-Dole and governing DOE authorities.

Historically, DOE has agreed to the proposition that domestic large businesses qualify for advance patent waivers under ARPA-E funding agreements because the objectives and considerations set forth in the DOE patent waiver regulations are usually met by such domestic large businesses. DOE has granted class patent waivers for awards made under multiple ARPA-E FOAs and for multiple non-competitive ARPA-E awards. DOE's past practice is consistent with the above finding that domestic large businesses working under a funding agreement made pursuant to an ARPA-E FOA or on a non-competitive basis during fiscal years 2013 or 2014 would likely qualify for an advance patent waiver.

Through this advance class waiver, DOE waives to domestic large business participants in competitive and non-competitive ARPA-E awards made during fiscal years 2013 or 2014 title to the inventions made by employees of such participants in a fashion enabling the participants to expediently commercialize the various technologies. DOE waives the Government's title to subject inventions only to domestic large business participants agreeing to the terms of this waiver. This waiver may be superseded or modified by other advance or class waivers, or

cancelled, for particular FOAs or awards. This class waiver does not apply to inventions made by Bayh-Dole participants pursuant to P.L. 96-517, as amended, or National Laboratories who already have been provided with the right to elect title to subject inventions, or to inventions made under Technology Investment Agreements, where no statute governs disposition of title to such inventions and thus no waiver is required.

This advance class patent waiver is subject to terms and conditions that include the usual Government license, march-in rights, and preference for U.S. industry provisions set out in 35 U.S.C. §§ 202-204. This 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 participant demonstrates to the satisfaction of DOE Cognizant Patent Counsel, with the concurrence of the Cognizant ARPA-E Program Official, that it is not commercially feasible to do so. Cognizant Patent Counsel, for good cause shown in writing, may grant a deviation from this U.S. Competitiveness clause in advance of contracting. Each participant further agrees to make the above condition binding on any entity acquiring rights to any waived invention, including subsequent assignees or licensees. Should any participant or other 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. In the alternative, ARPA-E may, in its discretion, address U.S. competitiveness through the submission of U.S. Manufacturing Plans pursuant to the Determination of Exceptional Circumstances Under the Bayh-Dole Act for Energy Efficiency, Renewable Energy, and Advanced Energy Technologies (approved September 11, 2013).

This advance class waiver applies to the recipient of an award or a subaward under the relevant ARPA-E FOA that provides cost sharing of at least 20%, and shall apply to each domestic large business participant under a teaming arrangement, provided the team provides aggregate cost sharing of at least 20%. Where cost sharing in the aggregate falls below 20%, any business receiving patent rights under this patent class patent waiver will be required to meet a minimum cost share of 20 percent of its portion of Total Project Costs. The requirement to provide at least 20% cost sharing shall be based on the Contracting Officer's written notice of such cost-sharing to Cognizant Patent Counsel that the participant, or a team in aggregate, is obligated to provide at least 20% cost sharing, and the waiver shall remain in effect for so long as such cost sharing is maintained, separately or in aggregate, over the term of the particular competitive and non-competitive awards funded during fiscal years 2013 or 2014.

There is no evidence that the grant of this advance class waiver will have any adverse effects on competition or market concentration. Rather, the waiver should enhance U.S. economic and energy security through the development of new energy technologies that will compete with existing technologies and other new emerging technologies. In any event, if a participant who is subject to this waiver and who has obtained title to an invention arising under the project is not making reasonable efforts to achieve practical application of a waived invention, DOE can exercise march-in rights.

Those participants in ARPA-E awards who are not subject to Bayh-Dole or who do not otherwise meet the criteria of this class waiver may still request an advance waiver of all or any

part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of a particular agreement funded during fiscal years 2013 or 2014 in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, such participants will have a continuing right under their awards to request a waiver of the rights of the United States in the title to identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of an ARPA-E award.

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 advance class waiver as set forth above will best serve the interests of the United States and the general public. It is recommended that the waiver be granted.

Linda P. Field
Patent Attorney

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:

Dr. Cheryl Martin
Acting Director
Advanced Research Projects Agency-Energy
Date: 19 August 2014

APPROVED:

John T. Lucas
Assistant General Counsel for
Technology Transfer & Intellectual Property
7/31/2014

(t) U.S. COMPETITIVENESS

The participant 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 participant 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 participant 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 participant 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.