



Department of Energy

Washington, DC 20585

September 9, 2013

DETERMINATION OF EXCEPTIONAL CIRCUMSTANCES UNDER THE BAYH-DOLE ACT FOR ENERGY EFFICIENCY, RENEWABLE ENERGY, AND ADVANCED ENERGY TECHNOLOGIES

Under the Bayh-Dole Act, 35 U.S.C. §§ 200-12 (“Bayh-Dole”), Federal agencies may determine that “exceptional circumstances” exist such that a modification in the patent rights disposition provided under the Act would better promote its objectives. The Department of Energy (“DOE”) has determined that exceptional circumstances exist for disposition of patent rights arising under research, development, demonstration, and market transformation projects involving energy efficiency, renewable energy, and advanced energy technologies as described in Title IX, Subtitles A through D of the Energy Policy Act of 2005 (42 U.S.C. 16191 through 16256), and Title V, Section 5012 of the America COMPETES Act of 2007 (as amended by Title IX, Section 904 of the America COMPETES Act of 2010)(42 U.S.C. 16538) to better promote U.S. manufacturing.

These technologies are (1) energy efficiency, storage, integration, and related technologies, including (as examples only) for buildings, transportation, and energy-intensive industries; (2) renewable energy technologies, including (as examples only) for wind power, water power, photovoltaic, solar thermal, geothermal power, hydrogen power, biomass power, biofuel power, and fuel cells; and (3) advanced energy technologies, including transformational, breakthrough energy technologies in a variety of technical areas that have the potential to lead to revolutionary advances in the marketplace, including (as examples only) projects for advanced components and materials.

To better meet the objectives of Bayh-Dole, which include the goal of promoting commercialization of inventions by United States industry and labor, DOE proposes the use of U.S. Manufacturing Plans in funding agreements that support research, development, and demonstration of energy efficiency, renewable energy, and advanced energy technologies. The U.S. Manufacturing Plans consist of commitments proposed by applicants in response to funding opportunity announcements (FOAs), would be used by DOE during its evaluation and selection process, and would be formally incorporated into funding agreements following award negotiations. DOE may require the submission of U.S. Manufacturing Plans by all types of applicants, including large businesses, small businesses, and non-profit organizations. Once incorporated into a funding agreement, U.S. Manufacturing Plans may be enforced, among other possible remedies, through forfeiture of rights to subject inventions. Except for the U.S.



Manufacturing Plans and the enforcement mechanism, the patent rights granted to certain funding recipients under Bayh-Dole remain the same. In accordance with 37 C.F.R. 401.3(e), DOE makes the following determination of exceptional circumstances, along with the supporting statement of facts and analysis.

I. *The patent rights provided by Bayh-Dole may be modified to better promote the objectives of the Act when an agency determines that “exceptional circumstances” exist.*

a. *Bayh-Dole provides a standard set of patent rights to recipients of federal funds under a funding agreement.*

Rights to inventions that contractors, subcontractors, as well as recipients and sub-recipients of grants and cooperative agreements (“funding recipients”) conceive or first actually reduce to practice in performance of work under a funding agreement (“subject inventions”) are governed by Bayh-Dole and the federal regulations that implement Bayh-Dole.¹ A “funding agreement” is “any contract, grant, or cooperative agreement entered into by any Federal agency . . . and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government.”²

Bayh-Dole allows certain non-profit organizations and domestic small businesses who are recipients of a funding agreement (“Bayh-Dole entities”) to elect title to their subject inventions subject to limited government rights, and further provides that the recipients must comply with certain disclosure, patent prosecution, and other requirements.³ In order to comply with Bayh-Dole, Federal agencies are required to use a standard patent rights clause for funding agreements with Bayh-Dole entities.⁴

b. *Standard patent rights under Bayh-Dole may be modified when “exceptional circumstances” exist and a modification would better promote the Act’s objectives.*

A Federal agency may restrict, eliminate, or otherwise modify rights provided to Bayh-Dole entities and implemented through the standard patent rights clause in “exceptional circumstances” when the Federal agency determines that a restriction, elimination, or modification of the rights and requirements provided by Bayh-Dole would better promote the

¹ 35 U.S.C. §§ 200-212; 37 C.F.R. Part 401.

² 35 U.S.C. § 201 (b).

³ Bayh-Dole does not provide large business recipients the right to elect title to subject inventions under DOE statutory authorities. 42 U.S.C. §§ 2182 and 5908. Bayh-Dole also does not apply to Technology Investment Agreements, under DOE’s Other Transactions Authority. 42 U.S.C. § 7256.

⁴ 37 C.F.R. § 401.3(a).

Act's objectives.⁵ The degree or scope of the modification should only be to the extent necessary to address the exceptional circumstances.⁶

II. *Promoting domestic manufacture of products derived from federally-funded research is a primary objective of Bayh-Dole.*

A fundamental objective of Bayh-Dole is to promote U.S. manufacturing by encouraging the domestic manufacture of products derived from federally-funded research. Among the listed objectives of Bayh-Dole is "to promote the commercialization and public availability of inventions made in the United States by United States industry and labor."⁷

Bayh-Dole was enacted in 1980, in part, to address a growing concern regarding the ability of U.S. manufacturing to compete in an increasingly globalized marketplace. The House Report filed by the Judiciary Committee when Bayh-Dole was presented to Congress identified the need for legislation to address the "failure of American industry to keep pace with the increased productivity of foreign competitors."⁸ Bayh-Dole's passage was spurred in part by the President's Advisory Committee on Industrial Innovation, convened in 1978 to study the possibilities for encouraging increased productivity in the United States. Chief among the recommendations of the committee was a legislative proposal to promote industrial innovation through the commercial manufacture of federally-funded technologies. The legislative proposal led to Bayh-Dole.⁹

III. *DOE has determined that exceptional circumstances exist because Bayh-Dole's objective of promoting U.S. manufacturing of federally-funded research is not fully being met with respect to energy efficiency, renewable energy, and advanced energy technologies.*

The current state of domestic manufacturing for energy efficiency, renewable energy manufacturing, and advanced energy technologies makes clear that the objective of promoting U.S. manufacture of U.S. inventions has not been adequately achieved.

⁵ 35 U.S.C. § 202(a)(ii); 37 C.F.R. § 401.3(a).

⁶ 37 C.F.R. § 401.3(b).

⁷ 35 U.S.C. § 200.

⁸ H.R. REP. 96-1307, 1, 1980 U.S.C.C.A.N. 6460, 6460 ("Need for the Legislation: Many analysts of the U.S. economy have warned that the roots of the current recession lie in a longer term economic malaise which arises out of a failure of American industry to keep pace with the increased productivity of foreign competitors.").

⁹ *Id.* at 6462. See U.S. DEPT. OF COMMERCE, ADVISORY COMMITTEE ON INDUSTRIAL INNOVATION: FINAL REPORT (Sept. 1979).

- a. The U.S. has made significant investments in energy efficiency, renewable energy, and advanced energy technologies through DOE.*

The United States is a leader in the research and development of energy efficiency, renewable energy, and advanced energy technologies. America's leadership in research and development has been maintained in part due to DOE's significant and strategic investments in these types of technologies. The investments are made primarily through two DOE organizations: (1) the Office of Energy Efficiency and Renewable Energy (EERE) and (2) the Advanced Research Projects Agency-Energy (ARPA-E).

EERE works to strengthen the United States' energy security, environmental quality, and economic vitality in public-private partnerships. It supports this goal through (1) enhancing energy efficiency and productivity; and (2) bringing clean, reliable and affordable energy technologies to the marketplace., EERE partners with business, industry, universities, national laboratories, consumers, federal energy managers, inventors, states, and tribes to research, develop, and advance energy efficiency and renewable energy technologies. EERE funds R&D in programs that include building technologies, advanced manufacturing, vehicle technologies, weatherization technologies, bio-energy technologies, fuel cell technologies, geothermal technologies, solar energy technologies, and wind and water power technologies. EERE programs are focused on developing next-generation energy efficiency and renewable energy technologies and lowering the associated cost so that these technologies are broadly adopted and used across the United States. EERE has invested \$28.8 billion in energy efficiency and renewable energy technologies over the last ten years.

ARPA-E is dedicated to advancing energy technologies that have the potential to be transformational in the marketplace. ARPA-E works to identify high-risk, high-reward technical areas of interest to advance the agency's three mission areas: to enhance our nation's economic security, enhance our nation's energy security, and reduce energy-related emissions. ARPA-E enters into funding agreements with businesses, non-profit research organizations, universities, and national laboratories to research, develop and advance energy technologies that industry and other government programs are not likely to support because of technical and financial uncertainty.

In its first four years of operation, ARPA-E has invested more than \$777 million in advanced energy technologies, including approximately 285 research and development projects selected under 14 targeted FOAs and two open FOAs. In addition, ARPA-E has undertaken robust technology transfer and 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 ARPA-E awardees have formed start-up companies as a result of ARPA-E funding.

- b. *Despite DOE's significant investment in energy efficiency, renewable energy, and advanced energy technologies research, development, and deployment, U.S. clean energy manufacturing lags behind other nations.*

Notwithstanding its leadership in research, development, and deployment of energy efficiency, renewable energy, and advanced energy technologies, the U.S. lags behind other nations in the manufacturing of those technologies. For example, China has 711 commissioned renewable energy manufacturing plants, five times as many as the U.S.¹⁰ China has an additional 13 partially commissioned plants and 122 under construction, for a total of 60% of all renewable energy plants on record.¹¹ The U.S. has only an additional 5 partially commissioned plants and 18 under construction.¹² More particularly, in the field of solar technologies, China currently has 523 fully commissioned solar manufacturing plants (44% of world total) and Germany has 96 (8% of world total), while the US has 87 (7% of world total).¹³ In the area of wind power technology, China has 109 wind manufacturing plants, or 41% of the world total.¹⁴ India has 34 wind manufacturing plants, or 14% of the world's total.¹⁵ The U.S. has only 23 plants, or 10% of the world total.¹⁶ According to consulting firm MAKE Consulting, U.S. manufacturing capacity to produce wind turbine components is insufficient, in many cases, even to keep up with U.S. demand, much less demand in foreign markets.¹⁷

- c. *Congress has expressly recognized the need to improve the level of U.S. manufacturing from DOE's investments in energy efficiency, renewable energy, and advanced energy technologies.*

In the accompanying House Report for the 2013 Energy and Water Appropriations Bill, the Committee on Appropriations identified the specific need for DOE to take a leadership role in improving U.S. manufacturing and domestic intellectual property retention:

The Department's research and development efforts yield several thousand patents and licenses each year, and taxpayers expect their support to result in commercialized technologies that benefit both American consumers and American industry. This expectation is not met when intellectual property that

¹⁰ *Industry Intelligence*, BLOOMBERG NEW ENERGY FINANCE, <http://www.bnef.com/> (last visited Feb. 12, 2013).

¹¹ *Id.*

¹² *Id.*

¹³ Bloomberg New Energy Finance, *supra* note 10.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ Whitehouse.gov "Promoting Clean, Renewable Energy: Investments in Wind and Solar" 2010
<http://www.whitehouse.gov/recovery/innovations/clean-renewable-energy#19>

was developed with public funding is commercialized only by foreign manufacturers. The Committee believes that intellectual property policies offer substantial opportunities to encourage domestic manufacturing without obstructing commercial efficiency, eroding the value of intellectual property, or under-mining free trade. The technology transfer efforts of the Department should support domestic manufacturing wherever possible and the Department must take proactive steps to ensure taxpayer-funded research and development result in domestic jobs and revenues.¹⁸

The Committee requested that DOE examine what authorities are available to control intellectual property, specifically including the Bayh-Dole Act.¹⁹

Congress has also emphasized the importance of U.S. manufacturing through the authorizing statute for ARPA-E. Specifically, Congress established ARPA-E through the passage of the America Competes Act of 2007 and, among other things, charged ARPA-E with accelerating “the research and development of manufacturing processes for novel energy technologies.”²⁰ As a reflection of Congress’s focus on U.S. manufacturing, ARPA-E responsibility regarding research and development of manufacturing was modified in the America Competes Reauthorization Act of 2010 to state the following: “research and development of advanced manufacturing process and technologies for the *domestic manufacturing* of novel energy technologies.” (emphasis added)²¹

It is critical that energy efficiency, renewable energy, and advanced energy technologies funded by DOE support manufacturing in the United States, particularly in view of the necessity of creating and maintaining jobs, including manufacturing jobs, in the U.S. The objectives of DOE’s research and development programs are to decrease the dependence of the U.S. on foreign energy supplies, enhance U.S. economic and energy security, increase the export of renewable generation equipment from the U.S., and ensure that the United States maintains a technological lead in developing and deploying next-generation energy technologies.²² A strong and vibrant domestic manufacturing base is needed for these objectives to be met. If the U.S. cannot maintain a manufacturing base for energy efficiency, renewable energy, and advanced energy technologies then it will remain dependent on foreign energy supplies and fail to achieve economic, energy, and national security.

¹⁸ H.R. Rep. No. 112-462 (May 2, 2012) at 81.

¹⁹ *Id.* at 82.

²⁰ America COMPETES Act, Pub. L. 110-69, § 5012 (2007).

²¹ America COMPETES Reauthorization Act of 2010, Pub. L. 111-358, § 904 (2010).

²² 42 U.S.C. § 16231(a).

IV. *EERE and ARPA-E will implement U.S. Manufacturing Plans to further promote the U.S. manufacture of inventions resulting from Federally-funded research.*

a. *U.S. Manufacturing Plans may be required under a FOA and may be used as a basis for selection.*

Depending on the nature of the FOA, EERE and ARPA-E may require a U.S. Manufacturing Plan from each applicant of the FOA as part of its application. The U.S. Manufacturing Plan will represent the applicant's measurable commitment to support U.S. manufacturing of the technologies related to its EERE or ARPA-E funding agreement. The Plans shall apply equally to all types of applicants, including large businesses, small businesses, and non-profit organizations. Once incorporated into a funding agreement, the U.S. Manufacturing Plan will provide that it may be enforced, among other possible remedies, through forfeiture of rights to subject inventions. Except for the U.S. Manufacturing Plan proposed by the applicant and the enforcement mechanism, the patent rights of funding recipients granted by Bayh-Dole remain the same.

The nature and specificity of the applicants' U.S. Manufacturing Plans will vary based on the FOA and the program issuing the FOA. A higher level of specificity may be required in the U.S. Manufacturing Plans for technologies at higher technology readiness levels due to the greater certainty surrounding the commercialization of these technologies. U.S. Manufacturing Plans submitted in response to FOAs targeting technologies at high technology readiness levels or demonstration activities should include specific commitments to manufacturing in the U.S. For example, the U.S. Manufacturing Plan may specify products related to the funding agreement that will be manufactured in the U.S. or may identify investments in U.S. facilities to support product manufacture. U.S. Manufacturing Plans submitted in response to FOAs directed at technologies at lower technology readiness levels may have fewer specific manufacturing details and may focus more on licensing and other strategies to promote U.S. manufacturing.

The weight given to the U.S. Manufacturing Plans during the review and selection process likely will also vary based on the particular FOA and may be part of the evaluation or merit criteria. For example, the U.S. Manufacturing Plans may constitute 30% of the overall merit review score of the proposals. Alternatively, the U.S. Manufacturing Plans may be treated as a qualitative program policy factor, thereby allowing the selecting official to give preference to applications based on the U.S. Manufacturing Plans. FOAs directed to technologies at high technology readiness levels or demonstration type activities may require greater consideration of applicants' U.S. Manufacturing Plans.

Following selection and award negotiations, the U.S. Manufacturing Plan will be incorporated into the funding agreement. The funding agreement may further require that the

funding recipient submit annual reports to DOE (including after expiration of the funding period) to demonstrate compliance with the U.S. Manufacturing Plan.

The funding agreement terms and conditions will further provide for the remedies upon breach of the U.S. Manufacturing Plan. Individual FOAs, for example, may specify remedies such as repayment (including repayment with interest) of the DOE funding received under the funding agreement. Remedies may also include a loss of all rights to subject inventions by the funding recipient, including title reverting back to DOE if the funding recipient had title to the subject inventions.

- b. The standard patent rights clause will be modified to allow U.S. Manufacturing Plans to be enforceable and to serve as a basis for selection.*

To the extent that a U.S. Manufacturing Plan is connected to subject inventions or that the remedy for a breach of a U.S. Manufacturing Plan is connected to subject inventions (e.g., title reverts back to DOE), the standard patent rights clause for Bayh-Dole entities will be modified accordingly. The modification would be necessary to implement and enforce the U.S. Manufacturing Plan proposed by the Bayh-Dole entity and was in part the purpose for selecting the Bayh-Dole entity's proposal.

The funding recipient, including any Bayh-Dole entity, may request a waiver or modification of the U.S. Manufacturing Plan from DOE upon a satisfactory showing that the original U.S. Manufacturing Plan is no longer economically feasible and where the funding recipient can demonstrate an alternate net benefit to the U.S. economy notwithstanding the requested waiver or modification.

V. *Conclusion*

EERE and ARPA-E have determined that exceptional circumstances exist for energy efficiency, renewable energy, and advanced energy technologies. The U.S. Manufacturing Plan strategy described herein would better promote the objectives of Bayh-Dole by providing stronger support to U.S. manufacturing. Moreover, DOE is not imposing additional restrictions, requirements, or modifications from the standard patent rights clause beyond what is necessary to address the exceptional circumstances.

Any Bayh-Dole entity affected by this determination of exceptional circumstances has the right, and will be informed of that right, to appeal it.²³

Approved:



Date: 09/05/13

DAVID DANIELSON
ASSISTANT SECRETARY
FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY

Approved:



Date: 9/9/13

CHERYL MARTIN
DEPUTY DIRECTOR
FOR ADVANCED RESEARCH PROJECTS AGENCY-ENERGY

Approved:



Date: Sept. 11, 2013

GENA E. CADIEUX
DEPUTY GENERAL COUNSEL
FOR TECHNOLOGY TRANSFER AND PROCUREMENT

²³ See 35 U.S.C. § 202(b)(4); 37 C.F.R. § 401.4.