



U.S. DEPARTMENT OF  
**ENERGY**

# Transfers of Civil Nuclear Technology

Report to Congress  
February 2019

United States Department of Energy  
Washington, DC 20585

# Message from the Secretary

The United States controls the transfer of unclassified civil nuclear technologies pursuant to Section 57 b. of the *Atomic Energy Act (AEA) of 1954*, as amended, which prohibits U.S. persons from engaging or participating directly or indirectly in the production or development of special nuclear material outside the United States except as specifically authorized under an Agreement for Cooperation made pursuant to AEA section 123 (including a specific authorization in a subsequent arrangement under section 131) or as authorized by the Secretary of Energy pursuant to regulations codified at 10 CFR Part 810 (Part 810).

42 U.S.C. § 2077a(e) requires that the Department of Energy (DOE) submit a report, concurrent with the President's budget submission to Congress, on DOE activities associated with the review of applications for authorization under section 57 b. of the AEA to transfer U.S. civil nuclear technology to any foreign country. Notably, this year's report shows that DOE has reduced processing times for approved Part 810 authorizations by over 40 percent relative to fiscal year 2017, primarily as a result of process improvements.

Pursuant to statutory requirements, this report is being provided to the following Members of Congress:

- **The Honorable Richard Burr**  
Chairman, Senate Select Committee on Intelligence
- **The Honorable Mark Warner**  
Vice Chairman, Senate Select Committee on Intelligence
- **The Honorable Lisa Murkowski**  
Chairman, Senate Committee on Energy and Natural Resources
- **The Honorable Joe Manchin III**  
Ranking Member, Senate Committee on Energy and Natural Resources
- **The Honorable Adam Schiff**  
Chairman, House Permanent Select Committee on Intelligence
- **The Honorable Devin Nunes**  
Ranking Member, House Permanent Select Committee on Intelligence
- **The Honorable Frank Pallone, Jr.**  
Chairman, House Committee of Energy and Commerce
- **The Honorable Greg Walden**  
Ranking Member, House Committee of Energy and Commerce
- **The Honorable Adam Smith**  
Chairman, House Committee on Armed Services

- **The Honorable William “Mac” Thornberry**  
Ranking Member, House Committee on Armed Services
- **The Honorable Eliot Engel**  
Chairman, House Committee on Foreign Affairs
- **The Honorable Michael McCaul**  
Ranking Member, House Committee on Foreign Affairs
- **The Honorable James Inhofe**  
Chairman, Senate Committee on Armed Services
- **The Honorable Jack Reed**  
Ranking Member, Senate Committee on Armed Services
- **The Honorable James Risch**  
Chairman, Senate Committee on Foreign Relations
- **The Honorable Bob Menendez**  
Ranking Member, Senate Committee on Foreign Relations
- **The Honorable Lamar Alexander**  
Chairman, Subcommittee on Energy and Water Development  
Senate Committee on Appropriations
- **The Honorable Dianne Feinstein**  
Ranking Member, Subcommittee on Energy and Water Development  
Senate Committee on Appropriations
- **The Honorable Marcy Kaptur**  
Chairwoman, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Mike Simpson**  
Ranking Member, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Jim Cooper**  
Chairman, Subcommittee on Strategic Forces  
House Committee on Armed Services
- **The Honorable Mike Turner**  
Ranking Member, Subcommittee on Strategic Forces  
House Committee on Armed Services
- **The Honorable Richard Shelby**  
Chairman, Senate Committee on Appropriations
- **The Honorable Patrick Leahy**  
Vice Chairman, Senate Committee on Appropriations

- **The Honorable Nita M. Lowey**  
Chairman, House Committee on Appropriations
- **The Honorable Kay Granger**  
Ranking Member, House Committee on Appropriations
- **The Honorable Deb Fischer**  
Chairman, Subcommittee on Strategic Forces  
Senate Committee on Armed Services
- **The Honorable Martin Heinrich**  
Ranking Member, Subcommittee on Strategic Forces  
Senate Committee on Armed Services

If you have any questions or need additional information, please contact me or Mr. Dwayne Bolton, Principal Deputy Assistant Secretary, or Shawn Affolter, Deputy Assistant Secretary for Senate Affairs, Office of Congressional and Intergovernmental Affairs, at (202) 586-5450, or Ms. Bridget Forcier, Office of the Chief Financial Officer, at (202) 586-0176.

Sincerely,

A handwritten signature in black ink that reads "Rick Perry". The signature is written in a cursive, slightly slanted style.

Rick Perry

## Executive Summary

The Department of Energy (DOE), through section 57 b. of the Atomic Energy Act (AEA) of 1954, as amended, holds the statutory responsibility for authorizing the transfer of unclassified nuclear technology and assistance to foreign atomic energy activities within the United States and abroad. DOE, working with the Departments of State, Defense, and Commerce, the Nuclear Regulatory Commission, and, in certain cases, the Office of the Director of National Intelligence, must authorize technology transfers and assistance related to certain nuclear fuel-cycle activities, commercial nuclear power plants, and research and test reactors. Covered transfers may include the transfer of physical documents or electronic media, electronic transfers, or the transfer of knowledge and expertise.

Part 810 of Title 10, Code of Federal Regulations (Part 810), implements AEA section 57 b.(2) to control the export of unclassified nuclear technology and assistance and enable peaceful nuclear trade by helping to assure that nuclear technologies exported from the United States will not be used for non-peaceful purposes. 42 U.S.C. § 2077a(e) requires DOE to submit a report on its activities associated with the review of applications for authorization under section 57 b. of the AEA to transfer U.S. civil nuclear technology to any foreign country.

For the period of October 1, 2017 through September 30, 2018, DOE:

- Received 28 applications for specific authorization;
- Closed out 32 applications for specific authorization, including 16 specific authorizations issued by the Secretary, 9 applications withdrawn at the request of the applicant, and 7 applications returned to the applicant without action; and
- Processed nearly 500 reports on generally authorized activities and 49 reports on specifically authorized activities.

For the 16 approved specific authorizations, the average time from the receipt of all necessary information from the applicant to issuance of the authorization by the Secretary was 8 months. This is over 40 percent faster than the average processing time for specific authorizations approved in fiscal year (FY) 2017.

This reduction is attributable to major process improvements that DOE implemented in FY 2018, as well as other factors. Key accomplishments in FY 2018 included eliminating duplicative reviews, establishing timely and realistic review deadlines, and ensuring that required reviews are performed in parallel (rather than sequentially) where possible. DOE is continuing to make further improvements to the Part 810 process.



# Transfers of Civil Nuclear Technology

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## I. Legislative Language

This report responds to legislative language set forth in section 3136(e) of the *Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA)* (P.L. 114-92), as amended, codified at 42 U.S.C. § 2077a(e), wherein it is stated:

*(e) Report On Transfers To All Foreign Countries. —*

*(1) IN GENERAL.—Concurrent with the submission to Congress of the budget of the President for a fiscal year under section 1105(a) of title 31, United States Code, the Secretary of Energy shall submit to the appropriate congressional committees a report on the activities of the Department of Energy associated with the review of applications for authorization under section 57 b. of the Atomic Energy Act of 1954 (42 U.S.C. 2077(b)) to transfer United States civil nuclear technology to any foreign country.*

*(2) ELEMENTS.—The report required by paragraph (1) shall include— (A) the number of applications for authorization under section 57 b. of the Atomic Energy Act of 1954 (42 U.S.C. 2077(b)) to transfer United States civil nuclear technology to a foreign country submitted during the year preceding the submission of the report; (B) the length of time each such application was under review; (B) for each such application, an identification of any officer to which the authorization under such section 57 b. was delegated pursuant to section 161 n. of that Act (42 U.S.C. 2201(n)); (D) the number of such applications that were granted; and (E) a description of efforts to streamline the review of such applications, taking into account the proliferation and diversion potential of end-users in the country to which United States civil nuclear technology would be transferred pursuant to such applications.*

## II. Introduction

The Department of Energy (DOE) holds the statutory responsibility for authorizing the transfer of unclassified nuclear technology and assistance to foreign atomic energy activities within the United States or abroad. In accordance with section 57 b. of the Atomic Energy Act of 1954, as amended (AEA)(42 USC § 2077(b)), persons may engage, directly or indirectly, in the production or development of special nuclear material outside the United States only: (1) as specifically authorized under an Agreement for Cooperation made pursuant to AEA section 123 (including a specific authorization in a subsequent arrangement under section 131); or (2) upon authorization by the Secretary of Energy, with the concurrence of the Department of State (DOS) and after consulting with the Departments of Defense and Commerce, the Nuclear Regulatory Commission, and, in certain cases, the Office of the Director of National Intelligence. This requirement, as implemented by DOE, applies to technology transfers and assistance related to certain nuclear fuel-cycle activities, commercial nuclear power plants, and research and test reactors. Covered transfers may include the transfer of physical documents or electronic media, electronic transfers, or the transfer of knowledge and expertise.

Part 810 of Title 10, Code of Federal Regulations (Part 810) implements AEA section 57 b.(2). Part 810 controls the export of unclassified nuclear technology and assistance and enables peaceful nuclear trade by helping to assure that nuclear technologies exported from the United States will not be used for non-peaceful purposes. The Secretary has granted a general authorization for certain categories of activities which the Secretary has found to be “non-inimical,” or not harmful, to the interest of the United States – including assistance or transfers of technology to the “generally authorized destinations” listed in Appendix A to Part 810. Whether a destination is determined to be generally authorized depends on a number of factors, including the existence of a bilateral “123 Agreement” with the United States, the country’s nonproliferation credentials, and the significance and scope of its nuclear trade relationship with the United States.

Other activities within the scope of Part 810 – including transfers of technology or provision of assistance to destinations not listed in Appendix A – require a case-by-case specific authorization from the Secretary. A specific authorization is also required for any assistance involving sensitive nuclear technologies (enrichment and reprocessing), plutonium fuel, and heavy water production regardless of the destination’s status under the regulation.

The DOE’s National Nuclear Security Administration (DOE/NNSA) is the Departmental element responsible for implementing the Part 810 process, including analysis of Part 810 applications, development of recommendations for the Secretary, and coordination of interagency reviews.

42 U.S.C. § 2077a(e) mandates that DOE submit a report, concurrent with the President’s budget submission to Congress, on DOE’s activities associated with the review of applications for authorization under section 57 b. of the AEA to transfer U.S. civil nuclear technology to any foreign country.

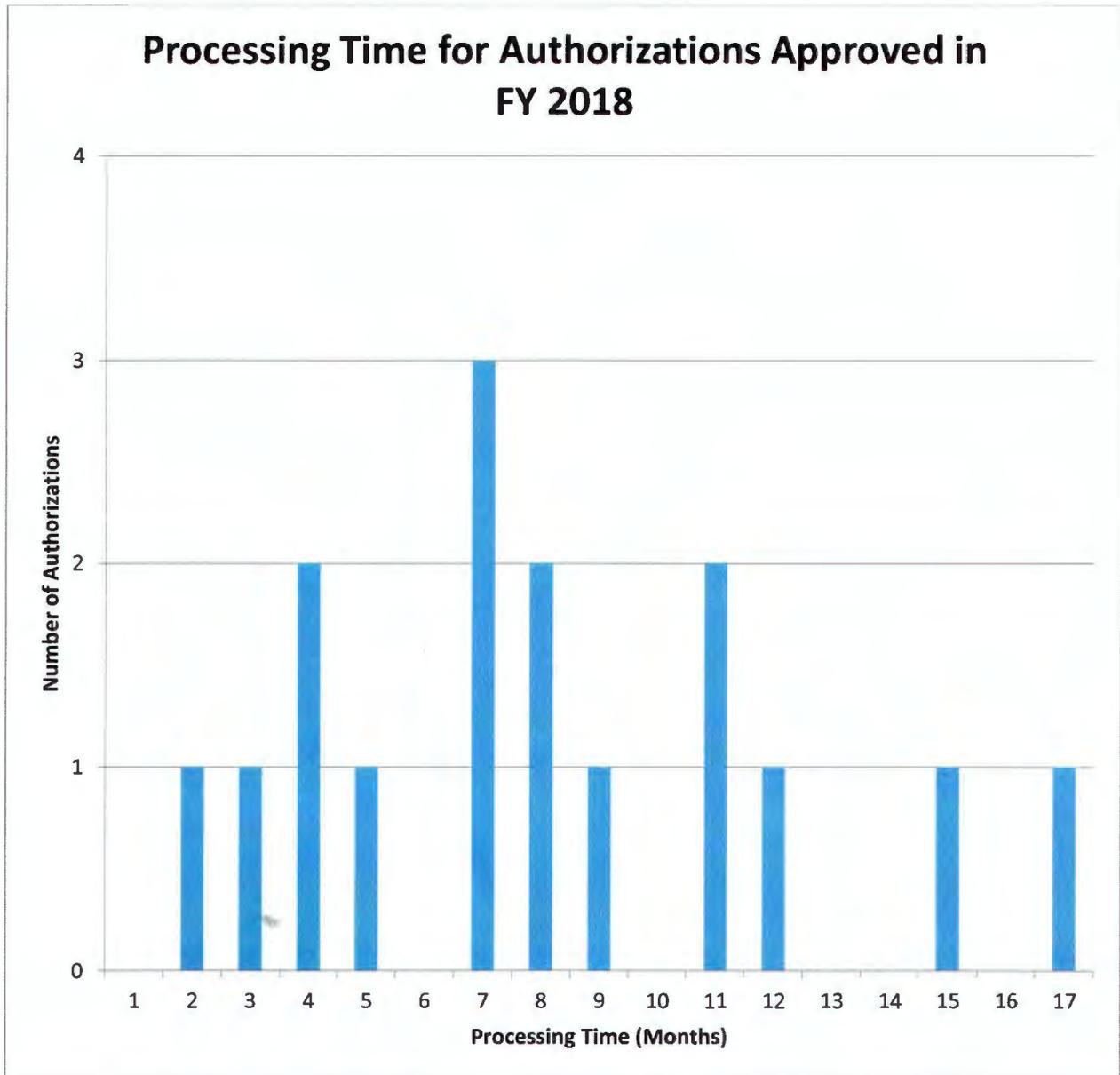
### **III. Reportable Transfers**

During FY 2018, DOE received 28 applications for specific authorization. During the same time period, DOE closed out a total of 32 applications, including applications submitted in FY 2018 and other applications that were submitted prior to FY 2018. Of the 32 closed-out applications, 16 specific authorizations were issued by the Secretary, nine applications were withdrawn at the request of the applicant, and seven applications were returned to the applicant without action.

Applications may be returned without action for several reasons, to include:

- DOE is unable to conclude the required interagency consultations;
- The requisite foreign government nonproliferation assurances are not received in a timely manner; or
- DOE has determined that the proposed activity is outside the scope of Part 810 and therefore does not require authorization under this regulation.

For the 16 approved specific authorizations, the average time from the receipt of all necessary information from the applicant to issuance of the authorization by the Secretary was 8 months. This is a reduction of over 40 percent compared to the average processing time for specific authorizations approved in FY 2017. The processing time for each application is captured in the graph below.



As DOE has reported previously, the most significant delays in application processing are caused by long wait times for DOS to receive written nonproliferation assurances from foreign governments, which DOS requires prior to providing concurrence (except in cases of “deemed exports” to foreign nationals in the United States). DOE is working to streamline and improve the Part 810 review process, as described in Section IV, below.

In addition to specific authorization processing activities, DOE also reviewed nearly 500 Part 810 general authorization reports and 49 reports on specifically authorized activities for compliance with Part 810 regulations.

## **IV. Efforts to Streamline Reviews**

As the Departmental element responsible for implementing the Part 810 process, DOE/NNSA commissioned the development of a Process Improvement Plan (PIP) to identify key factors causing the delays in processing Part 810 applications and to identify possible process improvements. The PIP process was completed by an external team that included experts in Six Sigma™ methodology. The PIP team analyzed data from 1982 to 2015, interviewed several dozen key stakeholders, and developed a list of key factors contributing to the delays.

This PIP review led to the development of six broad recommendations to improve the Part 810 process:

- Improve process and data management;
- Reform the interagency process;
- Reduce DOE/NNSA time-in-process;
- Improve assistance to exporters;
- Expand enforcement and compliance monitoring; and
- Increase the use of risk-based decision-making.

DOE/NNSA has implemented a number of process improvements identified in the PIP. Key accomplishments in prior years included the following:

- Developed and deployed a web-based electronic system known as e810 that allows applicants to apply for specific authorization, file reports, and request determinations online rather than using an outdated paper process;
- Added a docketing process for all incoming specific authorization applications to provide DOE/NNSA and the applicant with the necessary time to ensure that all required information and any scope questions have been resolved prior to moving forward with the applications;
- Adopted standard templates for documents used in the application review process;
- Established a key single point of contact for inquiries;
- Instituted a “Return without Action” process to clearly and transparently close requests that cannot move forward; and
- Implemented internal process monitoring to identify and resolve issues more quickly.

In FY 2018, DOE/NNSA built on these previous accomplishments by completing the following actions in coordination with other Departmental elements and other U.S. Government agencies:

- Established timely and realistic deadlines for internal reviews of Part 810 applications, which helps reduce processing times and increase the predictability of the review process;
- Streamlined the review process so that most reviews can be completed at the same time that DOS works to obtain the required nonproliferation assurances;
- Eliminated duplicative internal reviews; and
- Established regular online training sessions for the e810 electronic submissions portal.

DOE/NNSA continues to work with other DOE elements and U.S. interagency partners to reduce the time required to process Part 810 authorizations while maintaining strong nonproliferation controls on U.S. nuclear technology and assistance.

## V. Conclusion

DOE is committed to reducing time-in-process for Part 810 applications, making guidance widely available to U.S. exporters to improve the Part 810 process, and removing unnecessary barriers to peaceful nuclear commerce and the dissemination of safe civilian nuclear technology. DOE made significant progress toward this goal in FY 2018, reducing the average processing time for approved specific authorizations by over 40 percent relative to FY 2017.

DOE will continue to implement rigorous and thorough reviews prior to granting approval for specific authorizations, including receiving concurrence from DOS and completing consultations with the Department of Defense, Department of Commerce, and the Nuclear Regulatory Commission, as well as Office of the Director for National Intelligence for transfers to covered foreign countries as defined in the FY 2016 NDAA. Additionally, for transfers to China, DOE is fully implementing the U.S. Policy Framework on Civil Nuclear Cooperation with China, which serves to prevent China's illegal diversion of U.S. civil nuclear technology for military or other unauthorized purposes.