



U.S. DEPARTMENT OF  
**ENERGY**

# Transfers of Civil Nuclear Technology

Report to Congress  
April 2018

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.

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 Maria Cantwell**  
Ranking Member, Senate Committee on Energy and Natural Resources
- **The Honorable Devin Nunes**  
Chairman, House Permanent Select Committee on Intelligence
- **The Honorable Adam Schiff**  
Ranking Member, House Permanent Select Committee on Intelligence
- **The Honorable Greg Walden**  
Chairman, House Committee of Energy and Commerce
- **The Honorable Frank Pallone**  
Ranking Member, House Committee of Energy and Commerce
- **The Honorable William "Mac" Thornberry**  
Chairman, House Committee on Armed Services
- **The Honorable Adam Smith**  
Ranking Member, House Committee on Armed Services

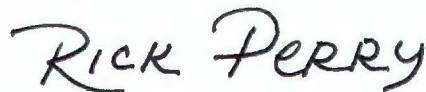
- **The Honorable Ed Royce**  
Chairman, House Committee on Foreign Affairs
- **The Honorable Eliot Engel**  
Ranking Member, House Committee on Foreign Affairs
- **The Honorable John McCain**  
Chairman, Senate Committee on Armed Services
- **The Honorable Jack Reed**  
Ranking Member, Senate Committee on Armed Services
- **The Honorable Bob Corker**  
Chairman, Senate Committee on Foreign Relations
- **The Honorable Ben Cardin**  
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 Mike Simpson**  
Chairman, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Marcy Kaptur**  
Ranking Member, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Mike Rogers**  
Chairman, Subcommittee on Strategic Forces  
House Committee on Armed Services
- **The Honorable Jim Cooper**  
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 Rodney Frelinghuysen**  
Chairman, House Committee on Appropriations



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

If you have any questions or need additional information, please contact me or Jennifer Loraine, Deputy Assistant Secretary for Senate Affairs, Marty Dannenfelser, Deputy Assistant Secretary for House Affairs, at (202) 586-5450, or 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 stylized font.

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 or abroad. DOE, working with the Departments of State (DOS), 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, 2016 through September 30, 2017, DOE:

- Received 27 applications for specific authorization;
- Closed out 38 applications for specific authorization, including 18 specific authorizations issued by the Secretary, 5 applications withdrawn at the request of the applicant, and 15 applications returned to the applicant without action; and
- Processed over 600 general authorization reports.

For the 18 issued specific authorizations, the average time from the receipt of all necessary information from the applicant to issuance of the authorization by the Secretary was 14 months. 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 coordinating with its U.S. interagency partners to reduce the time required to process Part 810 authorizations and eliminate redundant reviews wherever possible. DOE is committed to reducing time-in-process, 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.



# Transfers of Civil Nuclear Technology

## Table of Contents

I.	Legislative Language .....	1
II.	Introduction .....	1
III.	Reportable Transfers.....	2
IV.	Efforts to Streamline Reviews.....	3
V.	Conclusion.....	4



## I. Legislative Language

This report responds to legislative language set forth in section 3136(e) of the *National Defense Authorization Act for Fiscal Year 2016* (FY 2016 NDAA) (P.L. 114-92), 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; (C) the number of such applications that were granted; and (D) 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. Other activities within the scope of Part 810 – including transfers of technology or provision of assistance to destinations not listed in Appendix A (“specifically authorized” destinations) – 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. Whether a destination is determined to be generally or specifically 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.

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**

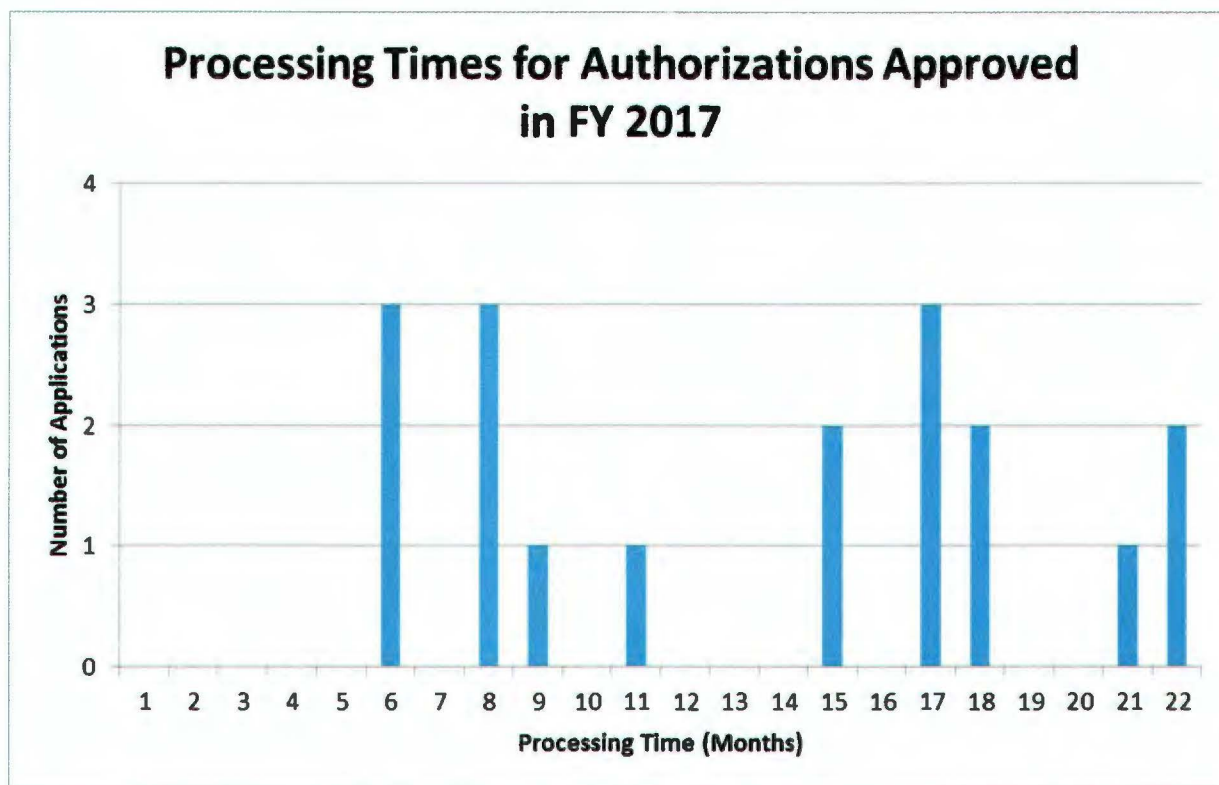
During fiscal year (FY) 2017, DOE received 27 applications for specific authorization. During the same time period, DOE closed out a total of 38 applications, including applications submitted in FY 2017 and other applications that were submitted prior to FY 2017. Of the 38 closed-out applications, 18 specific authorizations were issued by the Secretary, 5 applications were withdrawn at the request of the applicant, and 15 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 18 issued specific authorizations, the average time for approval, from the time all required documentation was received to issuance by the Secretary, was 14 months. 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 the 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 over 600 Part 810 general authorization reports for compliance with Part 810 regulations. Ongoing transfers were also made during FY 2017 between the United States and China pursuant to the “Implementing Arrangement between the Government of the United States of America and the Government of the People’s Republic of China Concerning Peaceful Uses of Nuclear Energy,” which was processed as a subsequent arrangement (under AEA section 131) to the “United States-China Agreement for Peaceful Nuclear Cooperation” to specifically authorize certain technology transfers and collaboration in accordance with section 57 b.(1) of the AEA.

## 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 and ISO-9001 compliance. 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 include 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;
- Launched a major data analytics project that will eventually allow for sophisticated and continuous analysis of Part 810 data;
- 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.

DOE/NNSA continues to work with other DOE elements and U.S. interagency partners to reduce the time required to process Part 810 authorizations and eliminate redundant reviews wherever possible.

## 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 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.