

Department of Commerce Review of Export Controls on Emerging Technologies

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On November 19, 2018, the Department of Commerce (DOC), Bureau of Industry and Security (BIS) published in the *Federal Register* (FR) an advance notice of proposed rulemaking (ANPRM) titled *Review of Controls for Certain Emerging Technologies*.¹ This ANPRM seeks public comment on criteria for identifying emerging technologies that are essential to US national security, for example because they have potential conventional weapons, intelligence collection, weapons of mass destruction, or terrorist applications or could provide the United States with a qualitative military or intelligence advantage.

The ANPRM was published pursuant to the National Defense Authorization Act (NDAA) for Fiscal Year 2019, which enacted the Export Control Reform Act of 2018 (ECRA).² In Section 1758 of the NDAA, the ECRA authorized DOC to establish appropriate controls—including interim controls—on the export, re-export, or transfer (in country) of (1) emerging and (2) foundational technologies.³ In identifying emerging and foundational technologies, ECRA states that the process must consider:

- The development of emerging and foundational technologies in foreign countries;
- The effect export controls may have on the development of such technologies in the United States; and
- The effectiveness of export controls on limiting the proliferation of emerging and foundational technologies in foreign countries.

¹ <https://www.federalregister.gov/documents/2018/11/19/2018-25221/review-of-controls-for-certain-emerging-technologies>.

² <https://www.congress.gov/bill/115th-congress/house-bill/5515/text>.

³ The NDAA also included the Foreign Investment Risk Review Modernization Act (FIRRMA), which added “emerging and foundational technologies” to the list of critical technologies in the Committee on Foreign Investment in the United States (CFIUS) regulations. In October 2018, CFIUS released an interim rule establishing a pilot program implementing portions of FIRRMA. Our client alert on this subject can be found [here](#), and our virtual tool for helping determine whether a transaction is subject to the CFIUS pilot program under FIRRMA can be found [here](#).

Objectives of the ANPRM and Guidance on Public Comments

According to BIS, the underlying purpose of the November 19 ANPRM is to help inform the ECRA implementation process, and identify certain technologies that are not yet listed on the Commerce Control List (CCL) – which is administered by BIS – or controlled multilaterally, because they are emerging technologies and as such have not yet been evaluated for their national security impacts. Comment on this ANPRM will help inform the interagency process to identify and describe such emerging technologies. This interagency process is anticipated to result in proposed rules for new Export Control Classification Numbers (ECCNs) on the CCL, and more broadly to help DOC and other agencies propose specific emerging technologies for control.

An objective of the ANPRM is to achieve balance between national security and innovation: “Responses to this ANPRM will help Commerce and other agencies identify and assess emerging technologies for the purposes of updating the export control lists without impairing national security or hampering the ability of the US commercial sector to keep pace with international advances in emerging fields.”

Please note that DOC will issue a separate ANPRM regarding identification of foundational technologies that may be important to US national security. DOC is seeking comments under the November 19 ANPRM on whether emerging technologies and foundational technologies should be approached separately or together.

The public comments are due **30 days** after publication of the FR notice, *i.e.*, December 19, 2018. BIS welcomes comments on:

- how to define emerging technology to assist identification of such technology in the future;
- criteria for determining whether there are specific technologies within the general listed representative technology categories that are important to US national security;
- sources to identify such technologies;
- other general technology categories that warrant review to identify emerging technologies that are important to US national security;
- the status of development of these technologies in the United States and other countries;
- the impact that specific emerging technology controls would have on US technological leadership; and
- any other approaches to the issue of identifying emerging technologies important to US national security, including the stage of development or maturity level of an emerging technology that would warrant consideration for export control.

The fourteen general representative technology categories, for which BIS currently seeks to determine whether there are specific emerging technologies that are essential to the national security of the United States, include the following categories and subcategories:

Category	Subcategory
Biotechnology	<ul style="list-style-type: none">• Nanobiology• Synthetic biology• Genomic and genetic engineering, or• Neurotech
Artificial intelligence (AI) and machine learning technology	<ul style="list-style-type: none">• Neural networks and deep learning (e.g., brain modelling, time series prediction, classification)• Evolution and genetic computation (e.g., genetic algorithms, genetic programming)• Reinforcement learning• Computer vision (e.g., object recognition, image understanding)

	<ul style="list-style-type: none"> • Expert systems (e.g., decision support systems, teaching systems) • Speech and audio processing (e.g., speech recognition and production) • Natural language processing (e.g., machine translation) • Planning (e.g., scheduling, game playing) • Audio and video manipulation technologies (e.g., voice cloning, deepfakes) • AI cloud technologies, or • AI chipsets
Position, Navigation, and Timing (PNT) technology	None provided
Microprocessor technology	<ul style="list-style-type: none"> • Systems-on-Chip (SoC), or • Stacked Memory on Chip
Advanced computing technology	<ul style="list-style-type: none"> • Memory-centric logic
Data analytics technology	<ul style="list-style-type: none"> • Visualization • Automated analysis algorithms, or • Context-aware computing
Quantum information and sensing technology	<ul style="list-style-type: none"> • Quantum computing • Quantum encryption, or • Quantum sensing
Logistics technology	<ul style="list-style-type: none"> • Mobile electric power • Modeling and simulation • Total asset visibility, or • Distribution-based Logistics Systems (DBLS)
Additive manufacturing	<ul style="list-style-type: none"> • 3D printing
Robotics	<ul style="list-style-type: none"> • Micro-drone and micro-robotic systems • Swarming technology • Self-assembling robots • Molecular robotics • Robot compilers,⁴ or • Smart Dust
Brain-computer interfaces	<ul style="list-style-type: none"> • Neural-controlled interfaces • Mind-machine interfaces • Direct neural interfaces, or • Brain-machine interfaces
Hypersonics	<ul style="list-style-type: none"> • Flight control algorithms • Propulsion technologies • Thermal protection systems, or • Specialized materials (for structures, sensors, etc.)
Advanced Materials	<ul style="list-style-type: none"> • Adaptive camouflage • Functional textiles (e.g., advanced fiber and fabric technology), or • Biomaterials
Advanced surveillance technologies	<ul style="list-style-type: none"> • Faceprint and voiceprint technologies

⁴ As written in the *Federal Register*, however, we understand it was intended to describe “Robot compilers.”

Conclusion

Interested members of the public may submit comments to BIS on how to develop these criteria for defining and identifying emerging technologies, and BIS (or other agencies, if applicable) will use them in drafting any subsequently proposed rules.

If proposed rules are issued as a result of the ANPRM, DOC/BIS (or other agencies, if applicable) would have to go through the rulemaking process specified under the Administrative Procedure Act (APA). This means, among other things, publication of a Notice of Proposed Rulemaking (NPRM) in the FR, another round of public comments, and possibly a public hearing.

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