

## **NEW CONTROLS ON EMERGING TECHNOLOGIES RELEASED, WHILE U.S. COMMERCE DEPARTMENT COMES UNDER FIRE FOR DELAY**

To Our Clients and Friends:

On Monday, October 5, 2020 the U.S. Department of Commerce's Bureau of Industry and Security ("BIS") published long-awaited controls on six categories of "emerging technologies."<sup>[1]</sup> These new controls come nearly two years after BIS first solicited public comments on the types of items that should be covered and the types of controls that should be implemented to fulfill the requirements of the Export Control Reform Act ("ECRA"). This announcement suggests that this long delay may have been due in part to BIS's successful efforts to ensure that these controls were adopted by multilateral export control organizations of which the U.S. and many of its allies are members.

These new multilateral controls will have significant implications for companies operating in certain high technology sectors, such as biotechnology, artificial intelligence, and advanced materials. Companies will now almost always require authorization from BIS in order to provide certain items to most jurisdictions outside the United States or even to share important technical knowledge about those items with foreign national employees (under BIS's "deemed exports" controls). Companies operating in these sectors—particularly those that participate directly or indirectly in semiconductor manufacturing or production—should also be prepared for additional controls to be implemented in the near term. Finally, foreign investors in U.S. businesses will want to be mindful of the ways in which these new controls will affect the ability of the Committee on Foreign Investment in the United States ("CFIUS") to review, block, or impose mitigation measures upon their investments in U.S. businesses that deal in these newly controlled technologies.

### **Key Takeaways**

- BIS recently began announcing controls on emerging and foundational technologies, and companies operating in certain high technology sectors—particularly those that participate directly or indirectly in semiconductor manufacturing or production—should be prepared for additional controls in the near term.
- Thus far BIS has prioritized multilateral implementation over speed of imposition. Congressional pressure may speed imposition somewhat, but we still expect BIS to work with international partners given the benefits of multilateral adoption and ECRA requirements.
- BIS determinations regarding what constitutes emerging and foundational technologies impact both the scope of CFIUS mandatory jurisdiction and criteria for its application. Any technologies

BIS controls as emerging or foundational will be considered “critical technologies.” Certain non-passive foreign investment in U.S. companies dealing with critical technologies must receive CFIUS review and approval.

## Background

On August 13, 2018, President Trump signed the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (“FY 2019 NDAA”), an omnibus bill to authorize defense spending that like many other annual NDAA bills also includes amendments unrelated to defense spending. In 2018 those amendments included significant updates to both CFIUS and the U.S. export controls regime.<sup>[2]</sup> In addition to placing the U.S. export controls regime on firmer statutory footing for the first time in decades, ECRA significantly expanded the President’s authority to regulate and enforce export controls by requiring the Secretary of Commerce to establish controls on the export, re-export, or in-country transfer of “emerging or foundational technologies.”<sup>[3]</sup>

ECRA was passed alongside the Foreign Investment Risk Review Modernization Act (“FIRRMA”), which reformed the CFIUS review process for inbound foreign investment in an effort to enhance the tools used to address the threats posed by foreign investment in U.S. critical technology companies, among other risks.<sup>[4]</sup> As FIRRMA was negotiated, a proposed mechanism to regulate outbound investments—such as joint ventures or licensing agreements—through the CFIUS process was ultimately replaced by ECRA, which instead granted BIS the authority to identify and regulate the transfer of these emerging and foundational technologies via U.S. export controls.<sup>[5]</sup>

ECRA did not offer a precise definition of the “emerging technologies” to be controlled by BIS. Instead, it included criteria for BIS to consider when determining what technologies will fall within this area of BIS control. It was initially thought that these controls might focus strictly on “technology,” which under the EAR does not include end-items, commodities, or software. Instead, “technology” refers to the information, in tangible or intangible form, necessary for the development, production, or use of such goods or software.<sup>[6]</sup> Technology may include written or oral communications, blueprints, schematics, photographs, formulae, models, or information gained through mere visual inspection.<sup>[7]</sup> However, as discussed further below, BIS opted for a broader reading of this term to reach goods, software, *and* technical know-how.

On November 19, 2018, BIS published a request for the public’s assistance in identifying “emerging technologies” essential for U.S. national security that should be subject to new export restrictions.<sup>[8]</sup> For a longer discussion of the advance notice of proposed rulemaking (“ANPRM”), see our previous alert, *New Export Controls on Emerging Technologies – 30-Day Public Comment Period Begins*. The ANPRM broadly described emerging technologies as “those technologies essential to the national security of the United States that are not already subject to export controls under the Export Administration Regulations (“EAR”) or the International Traffic in Arms Regulations (“ITAR”).”<sup>[9]</sup> The ANPRM suggested that technologies would be considered “essential to the national security of the United States” if 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.”<sup>[10]</sup>

In narrowing down which of these technologies would be subject to new export controls, BIS also considered the development of emerging technologies abroad, the effect of unilateral export restrictions on U.S. technological development, and the ability of export controls to limit the spread of these emerging technologies in foreign countries. In making this assessment and further narrowing the category of affected technologies, BIS was also to consider information from a variety of interagency sources, as well as public information drawn from comments submitted in response to the ANPRM.

While the ANPRM did not provide concrete examples of “emerging technologies,” BIS did provide a list of technologies currently subject to limited controls that could be considered “emerging” and subject to new, broader controls. These include the following: (1) biotechnology; (2) artificial intelligence and machine learning; (3) position, navigation, and timing (“PNT”) technology; (4) microprocessor technology; (5) advanced computing technology; (6) data analytics technology; (7) quantum information and sensing technology; (8) logistics technology; (9) additive manufacturing; (10) robotics; (11) brain-computer interfaces; (12) hypersonics; (13) advanced materials; and (14) advanced surveillance technologies.

As the regulated community waited to see what technologies would be considered “emerging” and what types of controls would be imposed, there was also some uncertainty regarding the way in which these new controls would be implemented. ECRA required BIS to coordinate with U.S. allies and international export control regimes to encourage widespread adoption of similar controls on the items it determined were “emerging technologies.” Ensuring such international coordination would protect against the development of a fragmented regulatory environment that could promote the offshoring of “emerging technology” development and production from the U.S. to other jurisdictions by companies seeking to avoid U.S. export controls. Unilateral U.S. controls might also encourage and enable non-U.S. companies to rush in and backfill the effective void created once U.S. companies could no longer freely export their technology to jurisdictions where they might otherwise compete.<sup>[11]</sup> In several similar areas, the United States had recently adopted a “control-now-cooperate-later” approach, taking unilateral action to amend its trade controls, foreign direct investment, and procurement regulations in ways that might encourage other countries to take similar steps but not waiting for other countries to agree the controls are necessary. However, in this case BIS officials gave early indications that they planned to present the new controls for adoption by multilateral export control bodies before implementing the controls in the United States.

## **Emerging Technologies**

Consistent with the approach to multilateralize such controls as a first step, and with one notable exception discussed below, the initial round of “emerging technology”—adopted earlier this year—were implemented following their adoption by the Australia Group, a multilateral forum that maintains export controls on a list of chemicals, biological agents, and related equipment and technology. On June 17, 2020, BIS designated the first emerging technologies, adding certain chemical weapons precursors and biological equipment to the Commerce Control List (“CCL”) for increased export controls.<sup>[12]</sup> In its announcement of the new controls, BIS indicated that the agency had not only completed the ECRA-described interagency process to determine that the newly controlled items were “emerging

technologies” but had also secured multilateral adoption of these controls at the Australia Group’s Intersessional Implementation Meeting in February 2020.

The newly controlled items include the following:

1. Twenty-four precursor chemicals, including chemical mixtures where at least one of the controlled chemicals constitutes 30 percent or more of the mixture;
2. Single-use cultivation chambers with rigid walls and related technology; and
3. Middle East respiratory syndrome-related coronavirus (MERS-related coronavirus) due to its homology with severe acute respiratory syndrome-related coronavirus (SARS-related coronavirus) and its potential use in biological weapons activities.

These items, which were not previously subject to licensing requirements for export to most jurisdictions, now require authorization for export to most destinations. However, licenses are still not required for exports of the precursor chemicals or cultivation chambers to Australia Group member states.[13]

In addition, the final rule announced on October 5 added six new previously unregulated emerging technologies to the CCL for increased export controls. This second round of emerging technology controls focused primarily on items used in semiconductor manufacturing and development, along with surveillance equipment and certain spacecraft. Like the initial round of “emerging technologies,” these items were added to the CCL to implement changes agreed to by a multilateral organization that oversees international development of controls on dual-use items. Specifically, these new controls implemented a decision taken by the governments participating in the Wassenaar Arrangement at the group’s December 2019 Plenary meeting.[14] BIS, together with its interagency partners, had also concluded that these six technologies are recently developed or developing technologies that are essential to U.S. national security and therefore warranted treatment as “emerging technologies.”

The six categories of controlled items include the following:

1. Hybrid additive manufacturing (“AM”)/computer numerically controlled (“CNC”) tools;

The first control on additive manufacturing and computer numerically controlled tools was added as Note 4 to ECCN 2B001 in response to machine tool manufacturers adding multiple capabilities to their machines. Items captured under this control will now require an export license to most countries for national security (“NS”) reasons but will also be eligible for the Strategic Trade Authorization (“STA”) license exception,[15] as well as any other applicable transaction-based exceptions.

2. Certain computational lithography software designed for the fabrication of extreme ultraviolet masks (“EUV”);

The second modification updates ECCN 3D003 to control electronic design automation (“EDA”) or computational lithography software developed for extreme ultraviolet masks. Software captured under this control will require an export license to most countries for NS and anti-terrorism (“AT”) reasons but

will also be eligible for the Technology and Software Under Restriction (“TSR”) license exception,[16] STA, and other transaction-based license exceptions.

### 3. Technology for finishing wafers for 5nm production;

The third addition creates ECCN 3E004 to control technology for the production of substrates for high-end integrated circuits. Technology captured under this control will require an export license to certain countries for NS reasons and AT reason but will be eligible for TSR, STA, and other transaction-based license exceptions.

### 4. Forensics tools that circumvent authentication or authorization controls on a computer or communications device and extract raw data;

The fourth control adds ECCN paragraph 5A004.b to control digital forensics and investigative tools that circumvent authentication or authorization mechanisms and extract raw data from a computer or communications device. This control was added because BIS determined that items previously used primarily for law enforcement tools were increasingly being used by militaries to extract time-critical information from devices found on the battlefield. This control does not capture items that extract unprotected data, or items that extract simple user data. Tools captured under this control will require an export license to most countries for NS and AT reasons, and an encryption item license requirement applies. These tools will be eligible for Limited Value Shipment (“LVS”)[17] and Encryption Commodities, Software, and Technology (“ENC”)[18] license exceptions.

### 5. Software for monitoring and analysis of communications and metadata acquired from a telecommunications service provider via a handover interface; and

The fifth control adds ECCN paragraph 5D001.e to control software specially designed or modified for use by law enforcement to analyze the content of communications acquired from a handover interface—a tool allowing law enforcement to request and receive intercepted communications from communications service providers. According to BIS, such software can be used by international actors in ways that are contrary to U.S. national security. BIS has clarified that this new control does not apply to network management tools or banking software. Software captured under this control will require an export license to most countries for NS and AT reasons, and is eligible for TSR for Country Group A:5 countries and STA license exceptions.

### 6. Sub-orbital aircraft.

The sixth control adds “sub-orbital craft” to paragraph 9A004.h. This does not include “spacecraft,” which is limited to satellites and space probes. Items captured under this control will require an export license for NS, AT, and regional stability (“RS”), and anti-terrorism reasons, and will be eligible for STA and may be eligible for LVS at \$1,500.

## **The Notable Exception - 0Y521 Controls on Geospatial Imagery Artificial Intelligence**

What BIS has chosen *not* to target multilaterally is just as interesting as what it has.

With one notable exception, BIS has previously avoided imposing emerging technology controls on artificial intelligence (“AI”) broadly, suggesting that BIS took seriously arguments from many sectors that broad controls on U.S. AI technology might be too late or unworkable for several reasons.

However, almost as soon as BIS learned of a specific emerging AI technology with significant national security implications, BIS took unilateral action using another export control authority to control its export from the United States. On January 3, 2020, BIS announced that it would be imposing new export controls on certain types of artificial intelligence software specially designed to automate the analysis of geospatial imagery in response to emergent national security concerns related to the newly covered software. Covered software includes products that employ artificial intelligence to analyze satellite imagery and identify user-selected objects. As a result of the new controls, a license from BIS is now required to export the geospatial imagery software to all countries, except Canada, or to transfer the software to foreign nationals. The only exception to this license requirement is for software transferred by or to a department or agency of the U.S. Government.

BIS deployed a rarely used tool for temporarily controlling the export of emerging technologies—the 0Y521 Export Controls Classification Number (“ECCN”). This special ECCN category allows BIS to impose export restrictions on previously uncontrolled items that have “significant military or intelligence advantage” or when there are “foreign policy reasons” supporting restrictions on its export. Although these controls would only last one year, items subjected to these controls can be moved to a more permanent ECCN before the expiration of the classification.

BIS’ use of the 0Y521 control for this technology demonstrates that BIS can and will impose unilateral controls when the export of emerging technologies from the United States poses an imminent threat to U.S. national security or foreign policy interests.

## **Looking Ahead, BIS Controls on Foundational Technologies**

On August 27, 2020, BIS published an ANPRM seeking public comment on criteria for identifying these “foundational technologies.”<sup>[19]</sup> The comment period will close on October 26, 2020. Like emerging technologies, ECRA also did not offer a precise definition of the “foundational technologies” to be controlled by BIS. Unlike emerging technologies, however, those determined to be “foundational” may already be restricted with an ECCN on the CCL.

In contrast to the ANPRM for emerging technologies, the foundational technologies ANPRM did not provide a list or categories of specific items that BIS is considering for export controls. However, like it has for emerging technology controls, BIS has clarified that the term foundational technologies includes not only “technology” but also “commodities” and “software,” as those terms are defined in the EAR. While the ANPRM did not provide a list of specific items or categories of items on which it requested comment, it did provide examples of types of technologies that would be subject to additional controls as foundational technologies, including:

1. Semiconductor manufacturing equipment and associated software, tools, lasers, sensors and underwater systems that can be tied to indigenous military innovation efforts in China, Russia, or Venezuela;



2. Items designated as EAR99 or controlled only for AT reasons that are utilized or required for innovation in developing weapons, enabling foreign intelligence collection activities, or have weapons of mass destruction applications; and
3. Technologies that have been the subject of illicit procurement attempts which may demonstrate some level of dependency on U.S. technologies to further foreign military or intelligence capabilities in countries of concern or development of weapons of mass destruction.

In response to criticism levied in public comments on the ANPRM for emerging technologies, BIS introduced a way in this ANPRM to allow private sector companies and other organizations to submit private information that can be redacted in published versions of their comments. We think that this will invite additional comments from companies who would like to better inform BIS rulemaking but also not risk the loss of business competitive information.

## **CFIUS Consequences**

Importantly, any technologies that BIS has controlled or will control as emerging or foundational through these rulemaking processes will be also considered “critical technologies” with respect to a CFIUS national security review, including the determination of whether a mandatory CFIUS filing requirement applies.<sup>[20]</sup> FIRRMA now requires that certain non-passive foreign investment in U.S. companies dealing with critical technologies receive CFIUS review and approval. Under CFIUS’s new regulations implemented this year, CFIUS must receive advance notice of certain types of non-passive foreign investment in U.S. companies that design, test, manufacture, fabricate, or develop critical technologies—including emerging and foundational technologies identified by BIS—if a license would be required to export those technologies to the foreign investor or certain of its parent entities. In this regard, BIS’s final determination regarding what constitutes emerging and foundational technologies impacts not only the scope of CFIUS’s new mandatory jurisdiction but also the criteria for its application.

Displeased with the pace with which BIS is implementing the new emerging and foundational technology controls, some in Congress are pushing to grant CFIUS even more jurisdiction over these items. In September, the House of Representatives Republican-led China Task Force published a report arguing that the absence of a complete control list is impeding both the implementation of the ECRA and the operation of CFIUS’s expanded jurisdiction.<sup>[21]</sup> Additionally, on August 6, 2020, Senators Tillis (R-NC), Rubio (R-FL), and Cornyn (R-TX, who previously sponsored FIRRMA) introduced legislation to expand CFIUS’s jurisdiction to review foreign investments in emerging and foundational technology in the United States<sup>[22]</sup> Rather than waiting for BIS rulemaking to complete its identification of emerging and foundational technologies, this bill would allow the CFIUS chair and one other member of CFIUS to designate technologies as emerging or foundational. This bill does not yet have bipartisan support, nor has a companion bill been introduced in the House of Representatives. While this bill may never become law, it is illustrative of the feeling among some Congressional Republicans that BIS is taking too long to identify foundational and emerging technologies and could result in more designations of “emerging technologies” and a faster timeline for the implementation of the “foundational technology” controls.

## Conclusion

The first two rounds of “emerging technology” controls described here are not likely to be the last. Consistent with BIS’s own suggestions and with the increased Congressional pressure it is receiving, we expect that BIS will continue to intermittently release lists of new emerging technologies for addition to the CCL.

However, the first rounds of controls do offer some indication of how future controls are likely to be implemented. BIS has made clear that it is not only targeting “technology,” as defined in the EAR, but is more broadly looking to control goods and software as well. Rather than creating entirely new categories of controls for these items, BIS has also shown a preference for amending existing controls to add newly covered items. Additionally, in both rounds, BIS has prioritized multilateral implementation over speed of imposition. Congressional pressure could threaten this method, but given the significant benefits of multilateral adoption (especially in the wake of China’s own newly-adopted export control law) and the requirements of ECRA, we would still expect BIS to work with its international partners to help standardize implementation of the new controls on both emerging and foundational technologies. Finally, the new emerging technology controls and the foundational technology ANPRM suggest that BIS is particularly focused on semiconductor manufacturing equipment and associated software tools. This is consistent with other recent BIS actions aimed primarily at limiting China’s access to the cutting-edge tools and technology required to produce these critical computing components.

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[1] Implementation of Certain New Controls on Emerging Technologies Agreed at Wassenaar Arrangement 2019 Plenary, <https://www.federalregister.gov/documents/2020/10/05/2020-18334/implementation-of-certain-new-controls-on-emerging-technologies-agreed-at-wassenaar-arrangement-2019>.

[2] Export Control Reform Act of 2018, Pub. L. No. 115-232, §§ 1751-1781 (2018).

[3] *Id.* § 1758.

[4] Foreign Investment Risk Review Modernization Act of 2018, Pub. L. No. 115-232, §§ 1701-28 (2018).

[5] Export Control Reform Act of 2018, Pub. L. No. 115-232, §§ 1758 (2018).

[6] 15 C.F.R. § 772.1.

[7] *Id.*

[8] Review of Controls for Certain Emerging Technologies, 83 Fed. Reg. 58,201 (advance notice of proposed rulemaking Nov. 19, 2018), <https://www.gpo.gov/fdsys/pkg/FR-2018-11-19/pdf/2018-25221.pdf>.



[9] Emerging Technologies ANPRM, *supra* note 1 at 58,201.

[10] *Id.*

[11] These are general observations that one can make regarding the imposition of new unilateral export controls, but not all kinds of emerging technologies are likely to be impacted such controls in the same way. Depending on a range of background conditions, such as the nature of collaboration and economies of innovation in different areas of emerging technologies, the impact of export controls on their continuing development will differ. For an in-depth discussion of these factors and a comparison of how they will impact two areas of emerging technology – hypersonics and artificial intelligence – see our recently published article in the NATO Legal Gazette. C. Timura, J.A. Lee, R. Pratt and S. Toussaint, *U.S. Export Controls: The Future of Disruptive Technologies*, NATO LEGAL GAZETTE, 41: 96-124 (Oct. 2020).

[12] Implementation of the February 2020 Australia Group Intersessional Decisions: Addition of Certain Rigid-Walled, Single-Use Cultivation Chambers and Precursor Chemicals to the Commerce Control List, <https://www.govinfo.gov/content/pkg/FR-2020-06-17/pdf/2020-11625.pdf>.

[13] The Australia Group member states are: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Iceland, India, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States. *See* Australia Group Participants, The Australia Group, <https://www.dfat.gov.au/publications/minisite/theaustraliagroupnet/site/en/participants.html>.

[14] The participating states of the Wassenaar Arrangement are: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, India, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States. *See* About Us, The Wassenaar Arrangement, <https://www.wassenaar.org/about-us/>.

[15] License Exception STA permits exports, reexports, and in-country transfers without a license that would otherwise be required for specified items on the CCL to destinations posing a low risk of unauthorized or impermissible uses.

[16] License Exception TSR permits exports and reexports of technology and software where the CCL indicates a license requirement to the ultimate destination for NS reasons only, TSR is noted in the CCL, and the software or technology is destined to Country Group B.

[17] License Exception LVS permits exports and reexports in a single shipment of eligible commodities where LVS is noted on the CCL, the net value of the commodities does not exceed the

amount specified in the LVS paragraph for the entry on the CCL, and the commodities are destined to Country Group B.

[18] License Exception ENC permits export, reexport, and in-country transfer of systems, equipment, commodities, and components classified under ECCN 5A002, 5B002, equivalent or related software and technology classified under 5D002 or 5E002, and “cryptanalytic items” and digital forensics items classified under ECCN 5A004, 5D002, or 5E002.

[19] Identification and Review of Controls for Certain Foundational Technologies, 85 Fed. Reg. 52,934 (advance notice of proposed rulemaking Aug. 27, 2020), <https://www.federalregister.gov/documents/2020/08/27/2020-18910/identification-and-review-of-controls-for-certain-foundational-technologies> [hereinafter, “Foundational Technologies ANPRM”].

[20] Foreign Investment Risk Review Modernization Act of 2018, Pub. L. No. 115-232, § 1703 (2018).

[21] China Task Force Report, <https://medium.com/@ChinaTaskForce/china-task-force-report-1dbc47d05f8f>.

[22] Tillis, Cornyn & Rubio Introduce Legislation to Protect Our Most Valuable Technology from China, <https://www.tillis.senate.gov/2020/8/tillis-cornyn-rubio-introduce-legislation-to-protect-our-most-valuable-technology-from-china>.



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