AUTONOMOUS VEHICLE INDUSTRY ASSOCIATION

Elizabeth L.D. Cannon
Executive Director
Office of Information and Communications Technology and Services
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

October 28, 2024

Re: Docket No. BIS–2024–0005, "Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles"

Dear Director Cannon,

The Autonomous Vehicle Industry Association ("AVIA") writes in response to the Department of Commerce's Bureau of Industry and Security's ("BIS") Notice of Proposed Rulemaking ("NPRM") titled "Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles."[1] In the NPRM, BIS proposes a new regulatory regime for information and communications technology and services ("ICTS") transactions related to connected vehicles ("CVs"), including the regulation of "vehicle connectivity systems" ("VCS") and automated driving system ("ADS") software, along with VCS hardware. AVIA appreciates the opportunity to provide feedback on the proposed rule, including its potential effects on the autonomous vehicle ("AV") industry.

AVIA is committed to bringing the tremendous safety and mobility benefits of AVs—otherwise known as SAE Levels 4- and 5-capable vehicles[2]—to consumers in a safe, responsible, and expeditious manner. AVIA's membership is comprised of the world's leading technology, automotive, ridesharing, trucking, and transportation companies.[3] Vehicles operated by AVIA members have driven nearly 70 million autonomous miles on U.S. public roads, a distance roughly equivalent to 293 round trips to the Moon or driving across Route 66 over 29,000 times.[4] Given AVIA's mission and our members' significant experience developing emerging automotive technologies, AVIA welcomes the opportunity to work with BIS and address some of the questions presented in the NPRM.

In the NPRM, BIS states that it has identified undue or unacceptable risks to U.S. national security posed by certain CV systems designed, developed, manufactured, or supplied by persons

[1] Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles, 89 Fed. Reg. 79088 (Sept. 26, 2024) [hereinafter CV NPRM].

[2] *See* SAE INTERNATIONAL, TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J2016_202104 (2021) [hereinafter SAE J3016].

[3] Our members include Aurora, Bot Auto, Cavnue, Cruise, Ford, Gatik, J.D. Power, Kodiak, Lyft, Motional, Nuro, Stack, Torc Robotics, Uber, UPS, Volkswagen Group of America, Volvo Cars, Volvo Autonomous Solutions, Waabi, Waymo, and Zoox. *See Our Mission and Members*, AUTONOMOUS VEHICLE INDUS. ASS'N, https://theavindustry.org/ (last visited Oct. 28, 2024).

[4] *Autonomous Vehicle Industry Association Releases First-Ever "State of AV" Report*, AUTONOMOUS VEHICLE INDUS. ASS'N (Apr. 10, 2024), https://theavindustry.org/newsroom/press-releases/first-ever-state-of-av-report.

owned by, controlled by, or subject to the jurisdiction or direction of the People's Republic of China ("PRC") or Russia.[5] AVIA appreciates BIS's concerns over the security of CVs and AVs, and AVIA members take great care to prioritize cybersecurity in the design of their systems and operations to protect their vehicles and vehicle data from unauthorized intrusions, as further described in our April 30, 2024 comments on BIS's Advanced Notice of Proposed Rulemaking ("ANPRM") in this proceeding.[6] As we noted in those comments, the United States is currently the global leader in AV development, though other countries are eager to supplant that lead.[7] To preserve U.S. leadership in a market potentially worth multiple trillions of dollars,[8] any final rule from BIS should provide a means, subject to BIS's national security concerns and oversight, for entities across the transportation ecosystem to obtain the highest quality products available on the market—including some manufactured by foreign entities when there is no reasonable alternative—to meet key performance and safety requirements.

It is particularly important to allow AVs to meet key performance and safety requirements as AVs are poised to significantly improve roadway safety. AVs do not speed, they do not text, and they do not drive while impaired by alcohol or drugs or when fatigued. Tragically, human drivers do all those things, contributing to 40,990 road deaths in 2023 alone.[9] Studies continue to confirm that human behavior, including intoxication and distracted driving, is overwhelmingly the most common factor in fatal accidents on our roads.[10] AVs are positioned to combat this trend of unsafe driving that has persisted for years on U.S. roads, thanks in part to the technologies that would be regulated under the proposed rule.

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[5] CV NPRM at 79089.

[6] *See* Autonomous Vehicle Indus. Ass'n, *Comment Letter on Advanced Notice of Proposed Rulemaking on Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles* (Apr. 30, 2024), https://www.regulations.gov/comment/BIS-2024-0005-0039.

[7] *See* Anjani Trivedi, *China Sets the Rules of the Road*, BLOOMBERG (Oct. 11, 2022, 5:00 PM), https://www.bloomberg.com/opinion/articles/2022-10-11/china-is-setting-the-rules-for-driverless-cars.

[8] SONIA ABHAY, ALLIED MARKET RESEARCH, AUTONOMOUS VEHICLE MARKET BY LEVEL OF AUTOMATION (LEVEL 1, LEVEL 2, LEVEL 3, LEVEL 4, AND LEVEL 5), APPLICATION (CIVIL, DEFENSE, TRANSPORTATION & LOGISTICS, AND CONSTRUCTION), DRIVE TYPE (SEMI-AUTONOMOUS AND FULLY AUTONOMOUS), AND VEHICLE TYPE (PASSENGER CAR AND COMMERCIAL VEHICLE): GLOBAL OPPORTUNITY ANALYSIS AND INDUSTRY FORECAST, 2021-2030 (2022), https://www.alliedmarketresearch.com/autonomous-vehicle-market; TECONOMY PARTNERS, FOREFRONT: SECURING PITTSBURGH'S BREAK-OUT POSITION IN AUTONOMOUS MOBILE SYSTEMS ES-1-2 (2021), https://web.archive.org/web/20221108223648/https://ridc.org/wp-content/uploads/2021/10/PGH-Autonomy-Report-Executive-Summary.pdf.

[9] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 561, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES IN 2023, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813561.

[10] *See* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 399, ALCOHOL AND DRUG PREVALENCE AMONG SERIOUSLY OR FATALLY INJURED ROAD USERS, 2 (2022), https://rosap.ntl.bts.gov/view/dot/65623/dot_65623_DS1.pdf; NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 184C, DRIVER ELECTRONIC DEVICE USE IN 2020, 1 (2021), https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813184.pdf; *Distracted driving*, IIHS, https://www.iihs.org/topics/distracted-driving (last visited Oct. 28, 2024); NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 298, EARLY ESTIMATES OF MOTOR VEHICLE TRAFFIC FATALITIES AND FATALITY RATE BY SUB-CATEGORIES IN 2021, 1 (2022), https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities.

To help avoid unintended negative consequences from a final rule in this proceeding, we first encourage BIS to clarify the technologies and equipment regulated by this proposed rule, as detailed below. We also recommend ensuring that the proposed compliance processes do not unduly burden start-ups and smaller businesses that may have fewer resources compared to more established businesses.[11] In response to the NPRM, AVIA offers the following recommendations for regulatory provisions and provides additional detail in the sections below:

- Provide greater context and clarity on the scope of the proposed rule by amending the definitions for key terms, including *Completed Connected Vehicle*, *Covered Software*, *Vehicle Connectivity System*, and *VCS Hardware*, among others.
- Ensure that the regulatory structure of the proposed rule is clear and consistent and includes strong protections for confidential business information ("CBI") to preserve American leadership in AV technology and the wider automotive industry.
- Refine the proposed compliance and enforcement mechanisms and enactment timelines to streamline the due diligence process, clarify ambiguous compliance requirements and provide a path toward self-certification.

I. Provide Greater Clarity on Key Definitions

In the NPRM, BIS suggests that, with few exceptions, all new vehicles sold in the U.S. will fall within the proposed rule's definition of "connected vehicle."[12] As entities that, depending on the structure of their operations, could fall under the proposed rule's definitions of "completed connected vehicle manufacturer" or "VCS hardware importer," AVIA members urge BIS to refine elements of the proposed rule to ensure the rule addresses national security concerns while protecting American competitiveness.

Given the large-scale impact of the proposed regulation, the rule's definitions should be as clear and direct as possible. Especially when the cost of noncompliance can include fines and possible criminal penalties, clarifying the scope of the rule will help ensure regulated parties are able to comply. We provide detailed recommendations below.

a. Automated Driving System

AVIA first advises modifying the proposed rule's definition of ADS to match the definition included in the SAE J3016 standard that is widely used by industry and regulators to provide a common reference point for vehicle automation.[13] The new definition would be as follows:

> *Automated Driving System* means the hardware and software that are collectively capable of performing the entire dynamic driving task (DDT) on a sustained basis, regardless of

[11] *See Explainer: US Must Maintain Global Leadership on AVs*, AUTONOMOUS VEHICLE INDUS. ASS'N, https://theavindustry.org/resources/testimony/explainer (last visited Oct. 28, 2024).
[12] CV NPRM at 79091.
[13] *See* SAE J3016, *supra* note 2.

whether it is limited to a specific operational design domain (ODD); this term is used specifically to describe a Level 3, 4, or 5 driving automation system.

This change would bring the ADS definition into accord with industry standards that are also used by regulators across the U.S. and internationally.

b. Completed Connected Vehicle

In the preamble to the proposed rule, BIS states:

> BIS proposes to define "completed connected vehicle" to mean a connected vehicle that requires no further manufacturing operations to perform its intended function. This definition is consistent with definitions issued by NHTSA. Additionally, for the purposes of this proposed definition, the integration of an ADS into a connected vehicle constitutes a manufacturing operation for a Completed Connected Vehicle. *BIS intends this caveat to clarify that a person owned by, controlled by, or subject to the jurisdiction or direction of the PRC or Russia, whose sole manufacturing or assembly operation is integrating ADS into an otherwise Completed Connected Vehicle, would be subject to the prohibitions in the rule and would need to obtain a Specific Authorization before importing or Selling that completed connected vehicle in the United States*.[14] [emphasis added]

BIS should clarify how such persons are subject to the prohibitions in the rule. For instance, the definition of 'connected vehicle manufacturer' does not include a person whose sole manufacturing and assembly operation is integrating ADS into an otherwise completed connected vehicle. In stating here that these persons "would be subject to the prohibitions in the rule," does BIS intend to clarify only that CV manufacturers owned by, controlled by, or subject to the direction of the PRC or Russia are prohibited from importing or selling completed connected vehicles with ADS software notwithstanding the fact that they did not design, manufacturer, assemble or integrate the ADS into the completed connected vehicle? That would be consistent with the BIS preamble statement that "this prohibition applies even if connected vehicle manufacturers who are owned by, controlled by, or subject to the jurisdiction or direction of the PRC or Russia were not involved in the design or development of the VCS Hardware and Covered Software."

c. Covered Software

In the NPRM, BIS defines "covered software" as:

> [T]he software-based components, in which there is a foreign interest, executed by the primary processing unit of the respective systems that are part of an item that supports the function of VCS or ADS at the vehicle level. Covered software does not include firmware, which is characterized as software specifically programmed for a hardware device with a

[14] CV NPRM at 79102.

> primary purpose of controlling, configuring, and communicating with that hardware device.[15]

In this definition, BIS does not clearly explain what constitutes "an item that supports the function of VCS or ADS at the vehicle level."[16] Given the complex technical architecture of modern motor vehicles, the use of the word "supports" could extend the rule's application to a wide array of devices and equipment, which would complicate compliance efforts. To clarify what component software is intended to be "covered software," BIS should tie this definition directly to the specific hardware regulated under the proposed rule's definition of "VCS hardware" to allow regulated entities to focus compliance efforts on specific devices. Specifically, rather than using the term "an item that supports the function of VCS," BIS should consider revising the first sentence of the "covered software" definition as follows:

> *Covered software* means the software-based components, in which there is a foreign interest, executed by the primary processing unit of the respective systems that are part of an item that ~~supports~~ directly enables the function of Vehicle Connectivity Systems hardware or Automated Driving Systems at the vehicle level.

Marrying the definitions of "VCS hardware" and "covered software" in this way would provide clarity to AV developers and other automotive industry actors while retaining BIS's stated goal of targeting "two integral ICTS systems," i.e., VCS and ADS,[17] and no other vehicle equipment or technologies. This clear and concise definition for covered software will better serve BIS's national security goals while providing greater certainty for regulated entities seeking to comply with the proposed rule's requirements.

For additional precision, BIS could limit the definition of "VCS software" to application-level software, further illuminating what is and is not regulated under the proposed rule's software prohibitions. The definition appropriately excludes firmware from being considered "covered software" though there remain potential "edge cases" that could benefit from more specificity. This includes the potential application of the rule to "middleware" —software that enables communication between operating systems, applications, and components.[18] Given the proposed rule's focus on communications technologies that use radio frequencies to broadcast to and from a vehicle, it would be sensible to explicitly exclude middleware software, which works only to preserve internal connections, from the definition of "covered software." While this is but one example, it underscores the need for greater specificity on precisely which software BIS intends to regulate.

[15] *Id.* at 79115.
[16] *Id.*
[17] *Id.* at 79094.
[18] *What is middleware?*, IBM (July 31, 2024), https://www.ibm.com/topics/middleware.

AUTONOMOUS VEHICLE INDUSTRY ASSOCIATION

BIS should also clarify that the exclusion of open-source software in the definition of "covered software" is consistent with BIS's stated intent to regulate only those software modifications that have a nexus to the PRC or Russia.[19] BIS could do so with the following edit:

> Covered software also does not include open-source software that can be freely used, modified, and distributed by anyone, with both access to the source code and the ability to contribute to the software's development and improvement unless that open-source software has been modified by someone owned by, controlled by, or subject to the jurisdiction or direction of the PRC or Russia for proprietary purposes and not redistributed or shared.

This would align BIS's stated goals and provide concrete direction to CV manufacturers, including AV developers. To further reconcile BIS's intent to regulate the addition of ADS software into completed CVs by entities with a nexus to China or Russia[20] with the agency's indication that the integration of ADS software to a completed CV by domestic or other non-prohibited entities would not fall within the proposed rule's purview,[21] AVIA recommends adding the following language to the end of the "covered software" definition:

> For the purposes of this subpart, the addition to a completed connected vehicle of ADS software that is not designed, developed, manufactured, or supplied by persons owned, controlled, or subject to the jurisdiction or direction of the PRC or Russia is not considered a manufacturing operation for a completed connected vehicle.

d. Designed, Developed, Manufactured, or Supplied by…

The proposed rule's hardware and software prohibitions both rely on the phrase "designed, developed, manufactured, or supplied by persons controlled by, or subject to the jurisdiction of the PRC or Russia."[22] BIS should provide clarification and/or additional examples (in the regulation or through guidance) to explain how these designing, developing, manufacturing, and supplying apply to hardware and software development in a complicated global automotive supply chain where multiple entities may play a role in the design, development, or production of a vehicle from initial conception to final sale or import. Such clarification could include definitions or examples to explain the difference between "design" and "develop" in relation to regulated hardware.

e. Foreign Interest

The proposed rule would require completed CV manufacturers to file Declarations of Conformity that attest to all "foreign interests" in any covered software incorporated into vehicles they import or sell in the United States.[23] Foreign interest is defined as "any interest in property of any nature whatsoever, whether direct or indirect, by a non-U.S. person," which is an expansive definition that would require CV manufacturers to collect significant amounts of information on

[19] CV NPRM at 79102.
[20] *Id.*
[21] *Id.* at 79109.
[22] *See id.* at 79117.
[23] *Id.* at 79118.

their software supply chains. To streamline this process for both regulated entities and BIS, the agency should narrow the definition of foreign interest to provide an exemption for foreign companies based in trusted nations. For consistency, BIS could reference the agency's own Country Group A list included in the Export Administration Regulations as follows:[24]

> *Foreign Interest* for the purposes of this subpart, means any interest in property of any nature whatsoever, whether direct or indirect, by a non-U.S. person, not including persons of an allied country as identified in Group A of Supplement No. 1 to 15 C.F.R. Part 740.

As an alternative to the list Group A nations, BIS could instead reference the Committee on Foreign Investment in the United States's Excepted Foreign States,[25] or another U.S. government generated list of trusted nations. The creation of such a list would help streamline the proposed rule's reporting requirements while remaining focused on potentially problematic foreign interests that could raise national security concerns, rather than transactions involving trusted international partners.

f. Vehicle Connectivity System and VCS Hardware

Given that VCS software and hardware are a central focus of the proposed rule, it is critical that the definitions of "vehicle connectivity system" and "VCS hardware" be as precise as possible.

i. Vehicle Connectivity System

While the NPRM indicates BIS's intent is to encompass technologies that "enable [CVs] to access external data sources, facilitate vehicle-to-vehicle communication, and provide enhanced services to users through seamless connectivity options,"[26] the open-ended reference to devices operating above 450 megahertz in the definition of "VCS" could unintentionally encompass sensor technologies that operate at the higher ranges of the electromagnetic spectrum, including lidar and radar. AVIA deeply appreciates BIS's excluding lidar systems from the proposed rule due to such systems lacking the ability to transmit data from a vehicle or exert control over a vehicle.[27] AVIA would encourage BIS to codify the exclusion of lidar in the text of the proposed rule, and we recommend that other sensor technologies that likewise do not transmit data out of a vehicle be included within that exemption. To do so, AVIA proposes the following changes to the proposed rule's definition of VCS:

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[24] *See* 15 C.F.R. § 740, Supplement No. 1 to Part 740.
[25] *See CFIUS Excepted Foreign States*, U.S. DEP'T OF TREASURY, https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius/cfius-excepted-foreign-states (last visited Oct. 24, 2024).
[26] CV NPRM at 79094.
[27] *Id.* at 79092.

Vehicle Connectivity System (VCS) means a hardware or software item for a completed connected vehicle that has:

> (1) the function of enabling the transmission, receipt, conversion, or processing of radio frequency communications at a frequency over 450 megahertz; and
>
> (2) the function to communicate to-and-from external sources.

These changes would better focus the definition of VCS on software and technology that is directly tied to communication to and from a vehicle, exempting lidar, radar, and other sensor systems, along with technologies such as global positioning system units. These changes would underscore the proposed rule's focus on two-way communications technologies, and not just any device using the electromagnetic spectrum.

ii. VCS Hardware

We also recommend additional specificity related to the definition of "VCS hardware." As written, the definition includes a list of particular components and subcomponents, and it excludes "component parts that do not contribute to the communication function of VCS hardware (*e.g.,* brackets, fasteners, plastics, and passive electronics)."[28] However, this exclusion does not provide enough guidance to regulated entities on the depth to which they will need to analyze their supply chains, as required by the proposed rule. Without a firm delineation of what constitutes a component part that does or does not contribute to the communication function of VCS hardware, companies could be required to inspect components in fine detail, adding considerable time, effort, and expense to compliance efforts.

To provide clarity and ease potential supply chain complications, BIS should specify that the definition of VCS hardware applies to completed versions of the specific components and subcomponents listed in the VCS hardware definition by modifying the definition as follows:

VCS hardware means the following software-enabled or programmable components and subcomponents that directly enable ~~support~~ the function of Vehicle Connectivity Systems ~~or are part of an item that supports the function of Vehicle Connectivity Systems~~: microcontroller, microcomputers or modules, systems on a chip, networking or telematics units, cellular modem/modules, Wi-Fi microcontrollers or modules, Bluetooth microcontrollers or modules, ~~satellite navigation systems,~~ satellite communication systems, other wireless communication microcontrollers or modules, and external antennas. VCS hardware does not include other component parts that are not listed above ~~do not contribute to the communication function of VCS hardware (*e.g.,* brackets, fasteners, plastics, and passive electronics)~~.

This revised definition would be consistent with BIS's stated interest in capturing OEMs and Tier 1 and Tier 2 suppliers in the definition of "VCS hardware importer," without implicating parties further down the supply chain.[29] Further, as satellite navigation systems do not transmit

[28] *Id.*
[29] *Id.* at 79104.

information and simply receive information not directly used to control a vehicle, their removal from the list of regulated components brings the definition in line with the revised two-way communication focused VCS definition detailed above.[30] By adopting the edit suggested above, BIS can clarify that the proposed rule is targeted at the key listed components and subcomponents, rather than any broader definition of components that "support" the VCS. These proposed edits also avoid confusion over what would constitute component parts that "do not contribute to the communication function of the VCS hardware."

In the NPRM, BIS also states that the definition of VCS hardware includes "aftermarket devices not contained in a completed connected vehicle at sale but that could be later integrated into or attached to the vehicle to perform VCS functions."[31] While this is not overtly stated in the text of the proposed rule, the extension to include aftermarket parts that could be "integrated or attached" to a vehicle is a potentially broad expansion of the definition to encompass any potential item that could be added to a vehicle to perform VCS functions, regardless of design intent. BIS should limit this definition to include only those items specifically designed to be integrated or attached to a vehicle as part of a vehicle connectivity system, rather than any item that "could" be integrated or attached.

By clarifying the proposed rule's definitions, BIS can better provide notice to the automotive industry on the scope of the rule and compliance obligations. This will serve BIS's stated national security goals while also simplifying the compliance burdens placed on AV developers and other automotive industry actors.

II. Ensure that the Regulatory Structure Is Clear and Consistent

AVIA recommends further refining the proposed rule to ensure that AV developers, completed CV manufacturers, and other automotive industry actors have a clear understanding of how the new regulatory system laid out in the NPRM will function. This includes providing strong protections for any CBI that is required to be submitted to BIS under the rule, consistent with other regulatory structures already imposed on the automotive industry. This will provide regulated entities with confidence that the extremely sensitive information being sought by BIS is secure. This also includes establishing set timelines for BIS to act on requests and establishing detailed appeals and penalty processes that give industry the ability to rectify errors made in good faith before they become costly fines.

a. Ensure Protection for Confidential Business Information

BIS should establish robust protections for CBI for information provided to BIS under the proposed rule and provide more information on how the agency will identify and redact CBI in published advisory opinions.[32] The amount of information that BIS is proposing to collect in the Declarations of Conformity is extensive and could have the unintended consequence of creating a

[30] This edit would make the treatment of satellite navigation systems consistent with the treatment of lidar as laid out in the NPRM. *See* CV NPRM at 79092.
[31] CV NPRM at 79105.
[32] *Id.* at 79111.

one-stop-shop for industrial espionage. AVIA recommends that BIS adopt a version of the National Highway Traffic Safety Administration's ("NHTSA") regulations on handling CBI at 49 C.F.R. § 512. That regulation has been applied in similar contexts and provides clear guidance on how to identify sensitive materials for agency review.

b. Establish a Clear Appeals Process

The proposed rule provides limited details on how the appeals process for BIS actions under the rule would be structured. AVIA requests BIS establish a clear process for review for appeals, including what a "reasonable time" would be for appeal decisions.[33]

c. Create a Set Timeline for Advisory Opinions

The proposed rule provides an option for VCS hardware importers and CV manufacturers to request an advisory opinion from BIS on whether a potential transaction would be prohibited under the new regulation. This would be a useful tool to provide additional guidance to regulated entities. However, as written, the proposed rule does not include any timeline for action on advisory opinion requests. Given the complexity of automotive supply chains and the length of vehicle design processes, the ability to obtain advisory opinions in a swift manner will be vital to ensuring their utility. If companies must wait months to learn whether a proposed transaction is or is not permitted, the usefulness of those opinions will diminish. BIS should establish a clear timeline for the processing and publication of advisory opinions.

d. Clarify How BIS Will Assess Civil and Criminal Penalties and Establish an Ability to Rectify Errors

While the proposed rule provides a mechanism for notifying entities of alleged noncompliance, the proposed rule does not describe how the agency will decide if a civil or criminal penalty will be imposed. Given the high stakes associated with large fines or criminal penalties, BIS should provide greater clarity on how it will determine when to impose criminal and civil penalties. The agency should further provide a means for entities that receive a finding of violation to rectify perceived or identified errors before a penalty is incurred. This will allow good actors within the automotive industry to correct any good-faith errors, while preserving BIS's ability to identify and rectify violations of the proposed rule in a swift manner.

III. Deploy Compliance and Enforcement Methods that Preserve American Automotive Leadership

To ensure that AV developers, completed CV manufacturers, and other automotive industry actors can properly transition covered software and VCS hardware supply chains without disrupting lengthy vehicle development timelines, BIS needs to consider altering the timeline for the proposed VCS hardware and covered software prohibitions and/or providing additional alternative methods of compliance to allow for a phase-out of prohibited software and hardware, to allow regulated entities more time to adapt their supply chains. Such a move would be especially

[33] *Id.* at 79121.

important for developers of vehicles that will be deep into development at the time the final rule goes into place. These vehicles could see significant development delays and supply chain disruptions if the proposed rule forces manufacturers to scramble to map out supply chains, source new parts, and strip and replace software from vehicles intended to be on the road in only a few years. The agency should also consider revisions to the requirements for, and content of, the Declarations of Conformity and Bills of Materials that importers and manufacturers would be required to provide to the agency, along with other details related to the proposed compliance procedures. These changes will allow industry further flexibility as it moves to meet BIS's vision of a more secure CV supply chain.

In the NPRM, BIS establishes prohibitions on the import and sale of completed CVs that incorporate covered software, along with VCS hardware "designed, developed, manufactured, or supplied by persons owned by, controlled by, or subject to the jurisdiction or direction of the PRC or Russia."[34] BIS also acknowledges the expansive nature of the proposed regulation, noting that it believes that all new vehicles sold in the U.S. would likely be subject to the rule if enacted.[35] Given this scale, BIS should consider the potential supply chain disruptions that could arise from these prohibitions if they are not carefully introduced and managed. As noted above, modern motor vehicles involve years of design and are built from components sourced from across the globe. This includes some components currently sourced from the PRC, making the disentanglement of that country's products, even from only a subset of the full automotive industry, a significant task. Fortunately, ADS software is already largely developed domestically, limiting the potential size of the AV supply chain to be mapped. AVIA also appreciates the proposed rule's inclusion of General Authorizations for completed CV manufacturers that produce less than 1,000 units a year—this provides important relief to start ups and smaller entities looking to establish themselves.[36] However, the proposed rule's VCS hardware and software prohibitions and reporting requirements still raise challenges for both AV developers and other automotive industry actors. Accurately mapping and potentially shifting the supply chain for VCS hardware and software will take time and require CV manufacturers to have a deep understanding of their own supply chains. To that end, AVIA recommends that any final rule address the concerns below.

a. VCS Hardware Prohibition

BIS proposes a prohibition on the import of VCS hardware designed, developed, manufactured, or supplied by persons owned by, controlled by, or subject to the jurisdiction or direction of the PRC or Russia.[37] This prohibition would go into effect starting with VCS hardware associated with model year 2030 vehicles, and on January 1, 2029, for hardware not associated with a model year, leaving a roughly five-year window for CV manufacturers and VCS hardware importers to complete any and all shifts they must make to their hardware supply chains. This could conflict with the lengthy development periods for motor vehicles, which can stretch, on

[34] *Id.* at 70117.
[35] *Id.* at 79091.
[36] *Id.* at 79118-19.
[37] *Id.* at 79117.

average, six years or longer.[38] As a result of these long lead times, many model year 2030 vehicles are already currently deep into design and development, complicating efforts to alter designs and source components from new suppliers.

The AV industry's supply chain is diverse. AVs contain a combination of domestic equipment and software designed and purpose-built by AV developers, motor vehicles designed and built both domestically and abroad, and component technologies and software sourced globally. When sourcing equipment, AVIA members must balance technical demands, performance requirements, costs, and production and deployment timelines. Suppliers may produce components of designs that vary by company, which can lock AV developers into sole source relationships as they design vehicle systems around availability. For many domestic AV developers, for parts sourced from the PRC, no other vendors provide components that meet performance requirements and commercially viable prices. To ensure safety, developers must have access to the best technologies available on the market, whether produced domestically or sourced internationally.

Sourcing new components is also a time-consuming endeavor. Provided that a component is available from a non-prohibited source, manufacturers would still likely need around 12 months to source the product, another approximately 12 months to conduct internal research and development to ensure the new component is fully compatible with their existing vehicle design and technical infrastructure, and an additional six-to-12 months of validation and verification before being ready to release a vehicle using that new part. That roughly three-year process would further need to be repeated for any additional parts that need to be replaced. If the sourcing of a new component would require a supplier to create an item from scratch, the time to design, prototype, build, and manufacture the new hardware component with appropriate reliability for safety-critical use in the automotive supply chain could take anywhere from five to seven years. For AV developers, these timelines are further complicated by the often-limited number of suppliers who produce products that meet the AV industry's rigorous safety requirements, a situation that contributes to the use of sole-source providers until the supplier ecosystem matures.

b. VCS and ADS Software Prohibitions

The proposed rule's prohibition on covered software, which is intended to apply to vehicles starting with model year 2027, creates similar supply chain complications, but on an even more compressed timeline. As many AV developers create their ADS software in-house within the U.S., the burden of supply chain mapping and the proposed rule's prohibitions may be less, yet there remains the potential for complicated and difficult supply chain mapping for those entities that develop even limited pieces of ADS software outside the U.S. However, for VCS software developed outside the U.S., ensuring compliance with the proposed rule's requirements in roughly a two-year window presents a greater challenge. Automotive software development is a global industry and tracing the source of each piece of VCS software code to identify any potential

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[38] *Automotive Product Development Cycles and the Need for Balance with the Regulatory Environment*, CTR. FOR AUTO. RSCH. (Sept. 20, 2017), https://www.cargroup.org/automotive-product-development-cycles-and-the-need-for-balance-with-the-regulatory-environment/.

"foreign interests" would be a complicated and time-consuming task. For AV developers subject to the proposed rule, this could require extremely detailed and time-consuming mapping of VCS software supply chains, tracing contractors and subcontractors dispersed across the planet. Only after undertaking a full mapping of the software supply chain for each VCS component could an AV developer then work to remove and replace software with prohibited foreign interests.

The combination of the VCS hardware and ADS and VCS software prohibitions, and the interplay between their different timelines, could further complicate compliance efforts, as AV developers must work quickly to remove and replace covered software in a short window while also attempting to source and replace soon-to-be prohibited pieces of VCS hardware that may be in their vehicles. Rather than focusing on the further development of their technologies, AV developers could find themselves spending critical time and effort ensuring compliant software is running on hardware they may soon have to replace.

c. Augment BIS's Proposed Compliance Methods

To prevent supply chain disruptions and ensure an orderly transition for the AV industry, BIS has several options. The agency could synchronize the exemption timelines for VCS hardware and software, giving CV manufacturers and VCS hardware importers additional time to ensure compliance. Such an extension would also align the prohibitions more closely with the automotive development cycle, and thus minimize any unintended disruption to the AV industry. This could mean setting both implementation dates to model year 2030 or later. Moving back the effective date of the proposed rule's prohibitions—even by one or two years past 2030—would give affected entities in the AV industry time to reorient their supply chains as needed and establish compliance structures within their companies to provide ongoing supply chain tracking.

As another alternative, BIS could modify the proposed rule's timeline to allow for a phase out of prohibited VCS software over the period between model year 2026 and model year 2030. Subject to appropriate CBI considerations, CV manufacturers seeking to use this phase-out period could provide BIS with details of their progress in removing prohibited software as part of the Declarations of Conformity they would be required to file with the agency. This would balance BIS's interests in ending the use of VCS software developed in the PRC and Russia while also providing manufacturers with added time to map, disentangle, and rebuild software and hardware supply chains if needed. A longer window for compliance would thus avoid both upturning projects already in development and excessive supply chain costs for the AV industry due to the cost of compliance for CV manufacturers, especially smaller companies that may otherwise struggle to source and replace software and components in time to meet the proposed rule's deadlines. This phase out program would exist in parallel with the proposed Specific Authorization process but apply only to vehicles in active development as of the final rule's date of publication. This would provide relief to both BIS and manufacturers by not requiring Specific Authorizations for vehicles currently under development, while preserving the existing proposed regulatory structure for vehicles that begin development after the final rule is in place. Such a structure would preserve the intent of BIS's proposed rule while providing flexibility for those vehicles whose development could otherwise be severely disrupted by the proposed rule's timeline.

Finally, as noted above in our comments on the definition of "foreign interest," BIS should consider establishing a pre-approved list of allied nations that would be excluded from the definition of foreign interest and allow covered software developed in those countries to be used in vehicles imported into or sold in the U.S. without having to file a Declaration of Conformity. Such a list could be based on country groups laid out in the Export Administration Regulations Group A of Supplement No. 1 to 15 C.F.R. Part 740 or the Committee on Foreign Investment in the United States's Excepted Foreign States.[39] Such a list would be an efficient modification to the proposed rule's reporting requirements that remains focused on potentially problematic foreign interests that could raise national security concerns, while exempting transactions involving trusted international partners.

As drafted, the prohibitions laid out in the proposed rule risk creating significant and unnecessary supply chain disruptions and production delays for the AV industry. Within the structure of the proposed rule, BIS has the opportunity to shift compliance deadlines or, at minimum, support a gradual phase-out of otherwise prohibited materials from those vehicles already deep enough into development that redesign and replacement becomes too difficult or too expensive, especially for smaller entities that may not be well positioned to quickly shift supply chains.

d. Declarations of Conformity

BIS proposes the submission of Declarations of Conformity as a key compliance tool, which would require CV manufacturers and VCS hardware importers to provide BIS with a significant amount of information on hardware and software supply chains and infrastructure. Given the importance of these Declarations to industry's compliance with the proposed regulation, the sensitive nature of the information requested, and the potentially significant effort regulated entities will be required to undertake to synthesize that information, a final rule must be abundantly clear on the information that needs to be provided and how BIS will use it. There are additionally several changes BIS should consider making to the proposed Declaration of Conformity system to limit the burdens that would be imposed on both BIS and the regulated entities, while preserving the goals of the NPRM.

i. Adopt a Self-Certification Model

AVIA recommends that BIS adopt a self-certification process similar to the one used by NHTSA for the Federal Motor Vehicle Safety Standards.[40] Such a process would allow VCS hardware importers and CV manufacturers to produce and retain their Declarations of Conformity, while only providing them to BIS on an as-needed basis. This process has proven successful for the automotive industry for decades, balancing the federal government's need for uniformity with efficiency. Alternatively, BIS could adopt other attestation or self-certification programs used by federal agencies, such as U.S. Customs and Board Protection's Certifications of Origin template

[39] *See* 15 C.F.R. § 740, Supplement No. 1 to Part 740; U.S. DEP'T OF TREASURY, *CFIUS Excepted Foreign States*, https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius/cfius-excepted-foreign-states (last visited Oct. 24, 2024).
[40] *See* 49 U.S.C. § 30115.

or Food and Drug Administration's Importation of Electronic Products declaration.[41] The adoption of a streamlined self-certification compliance process would ease production burdens on regulated entities and allow BIS to focus on monitoring for prohibited transactions, rather than processing and maintaining a substantial amount of information through Declarations of Conformity that may not provide meaningful data.

ii. Rectify Conflicting Signals on Due Diligence

BIS states that is it not proposing specific due diligence requirements on the Declarations of Conformity to give regulated entities flexibility to "provide evidence of compliance efforts tailored to their unique operations[,]" and BIS notes that "[s]uch efforts could include using third-party researchers or independently conducting supply chain diligence."[42] This potentially conflicts with BIS's proposal to require Software and Hardware Bills of Material ("SBOM" and "HBOM"), along with Declaration of Conformity requirements for items including a list of third-party external endpoints (and their locations and service provider locations), which would require regulated entities to provide significant details about their products.[43] The text of the proposed rule appears to require within the Declaration of Conformity the use of independent or hired third-party research.[44] BIS also sets a "knowingly" standard for violations of the proposed rule that allows for knowledge to be "inferred from a person's willful avoidance of facts."[45] Taken together, these elements could set a high burden on regulated entities to examine every facet of their supply chains.

To streamline the due diligence process, BIS should allow regulated entities to rely on statements, attestations, or affirmations from suppliers regarding the origins of components and software, thus alleviating the need to conduct full examinations of a supplier's operations. This would avoid putting regulated entities in a position of requiring suppliers to provide supply chain information that could potentially include trade secrets or CBI.

e. Underestimated Costs of Compliance for Regulated Entities

BIS estimates the costs of compliance with the proposed rule would be an initial expense of between \$30,964 and \$38,554 per regulated entity, followed by estimated yearly costs of \$16,133 to \$80,667. These estimates likely significantly underestimate the compliance costs arising from the proposed rule for all regulated entities, and these numbers do not capture the full scale of all potential compliance activities that would be required to fulfill the requirements of the proposed rule. For example, the estimates do not reflect BIS's own suggestion that regulated entities provide evidence of due diligence "to include independent or hired third-party research"

[41] *See Certification of Origin Template*, U.S. CUSTOMS AND BOARDER PROTECTION (June 21, 2023), https://www.cbp.gov/document/guidance/certification-origin-template; *Importation of Electronic Products*, FOOD AND DRUG ADMIN., https://www.fda.gov/radiation-emitting-products/electronic-product-radiation-control-program/getting-radiation-emitting-product-market-frequently-asked-questions#:~:text=Q39)%20What%20form,form%20FDA%202877 (last visited Oct. 28, 2024).
[42] CV NPRM at 79091.
[43] *Id.* at 79117-18.
[44] *Id.*
[45] *Id.* at 79116.

to ensure hardware and software in a vehicle or piece of equipment does not have a nexus with the PRC or Russia,[46] which could be a significant expense on its own. Furthermore, ensuring compliance with the proposed rule would not just be a matter of collecting information on a regulated entity's supply chain for use in Declarations of Conformity, but would additionally require significant restructuring of supplier relationships and supply chains. These shifts will incur significant costs, as the expansive and novel prohibitions will likely require sourcing components from new suppliers—potentially at higher per unit costs than current suppliers—and possibly redesigning vehicles that are already deep within the development process, increasing development and tooling costs.

As detailed above, BIS has alternative options to reduce these costs while still addressing national security goals. This could include lengthening the implementation period for the new rule, altering the requirements or structure of the Declarations of Conformity, and implementing lists of trusted countries or suppliers that can reduce the due diligence burden on CV manufacturers and VCS hardware importers. BIS should evaluate these options to create a more functional compliance regime that will lead to more successful implementation of the rule.

IV. Conclusion

Before finalizing the proposed rule, BIS should coordinate with entities across the U.S. automotive ecosystem to advance shared goals of ensuring national security while enhancing the safety of our roadways. At a time when the United States continues to face over 40,000 road deaths a year,[47] cooperation between industry and government can ensure the safe and efficient deployment of AVs and other safety-enhancing technologies. Through partnership and collaboration with the AV industry and other stakeholders in the automotive industry, BIS has an opportunity to achieve its goals for a more secure supply chain for advanced automotive technologies while improving roadway safety.

AVIA members are actively taking steps to secure the AV supply chain and mitigate security risks, relying on existing industry standards and best practices—including guidance documents and procedures developed by U.S. government agencies—to assess, identify, and respond to cybersecurity risks to their vehicles and systems. AVIA welcomes the opportunity to discuss how our members are securing their supply chains and systems, while supporting the further development of cybersecurity strategies and tools that help address the agency's supply chain security concerns. A great deal of work has already been done to develop a strong cybersecurity ecosystem for AVs and AV supply chains, and many of the risks BIS is most concerned about are being actively mitigated today. Areas of government-industry cooperation that BIS could undertake include supporting federal funding programs aimed at building out the domestic supply chain for AV-related technologies to address concerns over ICTS transactions. Federally funded projects, like the Economic Development Administration's ("EDA") Regional

[46] *Id.* at 79091.
[47] NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., U.S. DEP'T OF TRANSP., DOT HS 813 561, EARLY ESTIMATE OF MOTOR VEHICLE TRAFFIC FATALITIES IN 2023, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813561.

Technology and Innovation Hubs ("Tech Hubs"), can bring together public, private, and academic institutions to help foster high-tech domestic industries.

AVIA supports BIS's and the Department of Commerce's goals of protecting national security and ensuring continued American leadership in emerging transportation technologies. Our members are dedicated to developing vehicles that enhance the overall safety of our transportation system, including the physical safety of road users and the security of the AV supply chain. However, greater clarity on the proposed rule's requirements and flexibility for compliance are necessary to achieve BIS's national security goals and protect American innovation.

AVIA is grateful for the opportunity to provide these comments and welcomes the opportunity to engage further with BIS on this and other matters. If there is anything further we can do to assist you or your staff, please do not hesitate to reach out.

Sincerely,

Ariel S. Wolf
General Counsel
Autonomous Vehicle Industry Association