



The Supply Chain Costs of the FCC's 2026 Covered List Regime

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Executive Summary

Between December 2025 and August 2026, the Federal Communications Commission (FCC) and broader federal government built a regime that conditions access to the U.S. market for routers, drones, power inverters, and robots on where those products are manufactured. Four of the major steps creating this regime were Executive Branch national security determinations implemented through the FCC's Covered List, none of which has received an official cost estimate for public review from the FCC or any other federal agency that we could identify. The FCC's only published cost analysis covers the rules it adopted itself on July 22, 2026. The FCC estimates those costs at \$489 million over five years, and the estimate was released five days before power inverters and advanced robotic devices were added to the list.¹

As we found no published official cost estimate or cost-benefit analysis covering the four production-location determinations, we produced this study to address that gap and more thoroughly estimate the costs, and the benefits the government would have to demonstrate, of the FCC's relevant adopted and proposed rules from 2026.

Our estimate is built in three modules, as the 2026 actions are three separate policy packages with different legal status.

- **Module A:** The FCC modeled the costs of only its adopted rules (referred to as Module A in this study) and estimated the costs at \$489 million over five years; by contrast, we estimate the adopted rules will **cost \$814 million over five years**.
- **Module B:** The FCC did not estimate the costs of the production-location determinations for the Covered List (referred to as Module B in this study); we estimate the production-location determinations **cost \$4,446 million over five years**, and we estimate that **the cost would be about \$4.3 billion lower over five years if the domestic-only design of the production-location determinations was replaced by a design allowing for non-adversary jurisdiction production**.
- **Module C:** The FCC did not estimate the costs of the proposals in the third FNPRM including HBOM/SBOM, sector-wide certification, 30-day updates, and SDoC registration (referred to as Module C in this study); we estimate the third FNPRM proposals **cost \$2,441 million over five years**.
- **Module A + B + C total cost** as a package: **\$7,701 million over 5 years**

¹ FCC-26-50, Third Report and Order and Third Further Notice of Proposed Rulemaking, ET Docket No. 21-232 (adopted July 22, 2026; released July 23, 2026), paras. 106–107 and n.247, <https://docs.fcc.gov/public/attachments/FCC-26-50A1.pdf>. Power inverters and advanced robotic devices were added to the Covered List by National Security Determinations dated July 27, 2026 (Public Notice DA 26-786, July 28, 2026, <https://docs.fcc.gov/public/attachments/DA-26-786A1.pdf>); the current Covered List and each determination are at <https://www.fcc.gov/supplychain/coveredlist>.

Policy Module	Policy Status	Cost Estimate: Five-year present value (\$M)
Compare against FCC published cost estimate on adopted rules only (Covers Module A only)		489
A. FCC-26-50 rules adopted July 22, 2026 (logic-bearing component prohibition; marketplace FCC ID display)	Adopted; effective dates pending Federal Register publication	814
B. Production-location Covered List determinations (routers, UAS, inverters, advanced robotics)	In force	4,446
Current actions (A + B)		5,260
C. Third FNPRM proposals (HBOM/SBOM, sector-wide certification, 30-day updates, SDoC registration)	Proposed; earliest effective date 2028	2,441
Package exposure (A + B + C)	Scenario	7,701

Central values, constant 2025 dollars, discounted at 3 percent with annuity-due timing, which reproduces the timing implicit in the Commission's own \$489 million figure.

Our analysis leads to three primary findings:

- 1.) **The government has not estimated the biggest cost driver, supply chain impacts, and the government's cost estimate for the rules it did analyze is likely too low.**
 - a.) The production-location determinations cost regulated firms roughly \$4.4 billion over five years in the central case, against \$814 million for the rules the Commission adopted and \$489 million for the Commission's own cost estimate of those adopted rules.
 - b.) The rules for which the FCC chose to estimate costs account for about sixteen percent of our modeled cost of what is already adopted or in force, and the FCC's own cost estimate is about nine percent of that total.
 - c.) The remainder (e.g., the onshoring premium on displaced imports, the Conditional Approval application burden) has never been quantified by any agency. Policy determinations of this magnitude should not be issued without an official cost-benefit analysis.
- 2.) **Almost all of that cost is avoidable without relaxing the security objective.**
 - a.) The regulated products come overwhelmingly from non-adversary economies.
 - b.) In 2025, 98.9 percent of imports in the customs line containing consumer routers originated outside the jurisdictions designated as foreign adversaries at 15 C.F.R. § 791.4 (formerly § 7.4); China ranked tenth at 1.1 percent, behind Vietnam, Mexico, Thailand, Taiwan, India, and Malaysia.²
 - c.) A standard that bars production in adversary jurisdictions and retains every existing producer-based exclusion would cost approximately \$0.1 billion over five years on the location-based calculation, against \$4.4 billion for the

² USITC DataWeb, imports for consumption at customs value, HTS 8517.62.00.20, 2025, <https://dataweb.usitc.gov/>. Foreign adversary jurisdictions are those designated at 15 C.F.R. § 791.4 (China including Hong Kong and Macau, Cuba, Iran, North Korea, Russia, and the Maduro regime in Venezuela), <https://www.law.cornell.edu/cfr/text/15/791.4>. Part 7 was redesignated as Part 791 in July 2024, 89 Fed. Reg. 58261, <https://www.govinfo.gov/content/pkg/FR-2024-07-18/html/2024-15258.htm>.

domestic-production standard as issued. That’s a cost increase of \$4.3 billion over five years based on the decision to require only domestic production rather than just prohibiting adversary country production.

- d.) Almost all of the modeled cost arises from the choice to require domestic rather than non-adversary production, and it is not clear what incremental security that choice buys, if any.
 - e.) The government has the legal and policy architecture available to pursue the less costly option that may deliver comparable security benefits and whose security tradeoff the government has never quantified: the Defense Federal Acquisition Regulation Supplement credits allied content alongside domestic content in the section adjacent to the Buy American provision the determinations chose to invoke, and no document in the record explains why the domestic-only version was selected. CCIA asks the Executive Branch and the Commission to adopt the foreign-adversary standard, the same geographic distinction the Commission itself floated for its certification proposal at paragraph 154 of the Further Notice.
- 3.) **The schedule requires a domestic supply expansion the record does not show to be achievable.**
- a.) Replacing 2025 matched imports of communications equipment would require additional production equal to 3.3 to 4.8 times current domestic supply to the U.S. market, implying final domestic supply of roughly 4.3 to 5.8 times today’s level.³
 - b.) For inverters, the government’s own record describes the constraint: the determination quotes the Department of Energy that the application-specific integrated circuits and semiconductor power components are “almost entirely produced” abroad, and Wood Mackenzie’s optimistic view of more than 100 gigawatts of announced U.S. capacity “by the end of 2027” arrives at the January 1, 2028 Conditional Approval deadline, with no margin.⁴ Meanwhile the Office of Engineering and Technology has been issuing hardware-change waivers to AT&T, NCTA, and Sercomm expressly to address “unavoidable supply-chain shortages.”
 - c.) CCIA asks for transition periods of no less than twelve to twenty-four months, prospective-only application, and infrastructure milestones before any new obligation attaches.

The Further Notice would add roughly \$2.4 billion in additional costs over five years if adopted as proposed, principally through hardware and software bill-of-materials filings, modeled conservatively on the 26,545 annual original grants (\$151 million a year, or \$265 million at the Commission’s own cost anchors; an application-level reading would raise the figure by roughly 85 percent), a thirty-day rolling update obligation modeled across the accumulating stock of

³ U.S. Census Bureau, Annual Survey of Manufactures Benchmark, Table AM2231GS1 (vintage 2022), NAICS 334220 and 3342, <https://data.census.gov/> (search table ID AM2231GS1); USITC DataWeb matched imports, 2021 and 2025, <https://dataweb.usitc.gov/>.

⁴ National Security Determination, Power Inverters (July 27, 2026), quoting U.S. Department of Energy supply-chain assessment, <https://www.fcc.gov/sites/default/files/power-inverter-fcc-determination.pdf>; Wood Mackenzie, “US manufacturing poised to meet new inverter demand following FCC ban on foreign power inverters” (Aug. 2026), <https://www.woodmac.com/press-releases/us-manufacturing-poised-to-meet-new-inverter-demand-following-fcc-ban-on-foreign-power-inverters/>.



authorizations with filings on file (\$320 million a year at the central case), and mandatory certification for devices that today self-declare (\$400 million a year). The Commission provides an aggregate cost estimate for exactly one of the proposals examined here.

In addition to these increased costs are the impacts on the relative competitiveness of U.S. companies subject to these requirements vis-a-vis their non-U.S. competitors, who will continue to avail themselves of the cost advantages of sourcing from non-U.S. suppliers when selling in markets outside the United States. In areas where the government wishes to establish a competitive American manufacturing sector, this will have unintended consequences.

There are ways to reduce the costs. For example, extending the proposed codification of the software and firmware permissive-change waiver to the four production-location sectors, which the proposal as drafted at section 2.932(b)(4) excludes, is worth about \$22 million a year in avoided certification cost, before even accounting for the security value of shipping a patch in days rather than the four to twelve weeks a new certification takes.

The policy determinations were made by the Executive Branch and can be revised by it. It has already done so twice: removing toy drones from the UAS entry in June, and on August 20 adding section 45X eligibility as an alternative to case-by-case review of inverters, twenty-three days after the inverter entry was created. This study takes the threat as given. The question it puts to the record is what a domestic-production requirement buys that a non-adversary requirement does not, and whether that increment is worth \$4.3 billion.

1. What the Government Did

Five actions in eight months significantly expanded the Covered List, which historically focused on specifically identified producers and providers, to add production-location restrictions for four product categories.

Date	Action	Effect
Dec. 21, 2025	UAS National Security Determination	Unmanned aircraft systems and eight categories of critical components “produced in a foreign country” added to the Covered List; two temporary exemptions (Blue UAS Cleared List; domestic end product) expire January 1, 2028
Mar. 20, 2026	Routers National Security Determination (DA 26-278)	Consumer-grade routers covered where any major stage of manufacturing, assembly, design, or development occurs abroad; no component-cost threshold
July 22, 2026	FCC-26-50 Third Report and Order and Third FNPRM	Prohibits authorization of devices with logic-bearing components from Covered List entities; requires online marketplaces to display and verify FCC IDs; proposes HBOM/SBOM filings, sector-wide certification, 40-unit import cap, and more
July 27, 2026	Power Inverter and Advanced Robotics National Security Determinations	“Foreign-produced” defined as not a “domestic end product” under 48 C.F.R. § 25.101(a): U.S. manufacture plus domestic component cost above 65 percent, rising to 75 percent in 2029

Date	Action	Effect
Aug. 20, 2026	Inverter entry amended (DA 26-870)	Coverage narrowed to utility-interactive inverters; section 45X-eligible inverters removed from the list entirely

The four sectors are governed by three different production tests, and this matters for cost estimates. The router test reaches any product where a single major stage, including design, occurs abroad, which in strict application requires relocating the whole value chain substantially. The inverter and robotics test imports the Buy American domestic end product definition, which requires U.S. manufacture plus a domestic component-cost threshold that steps from 65 to 75 percent in 2029. The UAS entry leaves “produced in a foreign country” undefined after both exemptions expire. Reshoring a major production stage and reshoring 65 to 75 percent of component cost are different economic problems with different costs, and this study prices them separately.

The Commission’s published cost analysis was adopted on July 22 and released on July 23, five days before inverters and robotics were added. Two of the four production-location sectors therefore receive no cost treatment anywhere in the record, and the other two receive none because the Commission scoped its estimate at paragraph 106 to “the actions adopted today” (what this study refers to as Module A). We also have not been able to identify any cost estimates or cost-benefit analysis from any other Executive Branch body associated with the determinations. That narrow scoping is why the \$489 million figure could not be read as the cost of the regime, even if it weren’t a likely underestimate of the costs of Module A.

2. What the Production-Location Regime Costs

The core cost estimate driver is a three-step calculation applied to each sector and year. Imports at the relevant customs line are multiplied by an in-scope share, giving the value of the regulated product within that line. That value is multiplied by the fraction that must actually relocate to comply, which differs by legal test. The U.S. production unit-cost premium is then applied to the relocated value, phased by each sector’s transition schedule and discounted. Separating the relocation share from the premium keeps the legal-scope judgment visible as its own number rather than buried inside a cost figure.

The premium is sourced. Routers, robotic devices, and drones carry an economy-wide range of 10 to 50 percent from the Reshoring Initiative’s 2024 Annual Report, used as an external scenario anchor. Power inverters carry a separate 15 to 60 percent range, because Wood Mackenzie has published directly on this action: domestic inverters will cost more than imports on account of labor and manufacturing costs, prices should moderate as domestic manufacturing scales, and the section 45X phase-out from 2030 will add renewed upward pressure.⁵ For inverters and robotics, the structure of the relocation share is anchored to the incorporated FAR domestic end product test: U.S. manufacture plus, for items not qualifying for the commercially-available-off-the-shelf waiver, the incremental domestic content needed to clear the threshold. The numerical range, roughly 37 to 90 percent through 2028 and 40 to 98

⁵ Reshoring Initiative, 2024 Annual Report Including 1Q2025 Insights (June 2025) (reporting U.S. manufacturing costs 10 to 50 percent above offshore for most products), https://reshorennow.org/content/pdf/2024_1Q2025_RI_DATA_Report.pdf; Wood Mackenzie press release cited in note 4. Thunder Said Energy analysis placing Chinese inverters 30 to 50 percent below Western equivalents implies a wider gap.

percent from 2029, combines those regulatory thresholds with stated scenario assumptions about the manufacturing-stage share of value, existing domestic content, and whether the COTS waiver applies outside procurement.

Module B line	Low Cost Scenario (\$M)	Central Cost Scenario (\$M)	High Cost Scenario (\$M)
B1. Consumer routers, 2030 steady state (annual)	107	755	2,706
B1. Utility-interactive power inverters, 2030 steady state (annual)	50	299	1,098
B1. Advanced robotic devices (proxy), 2030 steady state (annual)	34	254	824
B1. UAS and critical components, 2030 steady state (annual)	11	74	192
B1. Onshoring premium, phased five-year present value	518	4,089	16,006
B2. Conditional Approval burden, present value	2	17	236
B3. Channel and inbound inventory exposure, present value	14	339	2,863
Module B five-year present value	533	4,446	19,105

Millions of dollars. Installed equipment carries no stranded value in any case, because section 2.939(e) limits importation and marketing and leaves continued operation untouched; only unsold channel inventory and inbound goods are exposed, salvage recovery is modeled, and the loss is treated as a dated 2028 event.

The router figure is derived from the record: The consumer share of the \$30.8 billion switching and routing customs line is built bottom-up from the two populations the Conditional Approval record names: retail brands (Netgear, eero, Gryphon, Miri) and carrier-supplied gateways (Arcadyan for T-Mobile, AT&T, and Verizon; Sagemcom, Hitron, Vantiva, Askey, Humax, Nokia, Calix, Adtran, Alpha Networks). Two independent estimates put the 2025 U.S. wireless router market at \$3.8 to \$4.3 billion at retail⁶; carrier gateways are estimated from broadband subscriptions and a replacement cycle. Together they imply about \$4.2 billion of consumer routers at customs value, or 13.6 percent of the line. The remaining six-sevenths of the line is a much broader switching and routing universe of enterprise, data-center, infrastructure, and additional consumer equipment, portions of which a broadened definition could reach, which is why CCIA has asked the Commission to keep the router definition confined to consumer-grade devices.

The costs are back-loaded, and 2028 is a cliff: The determinations apply prospectively and Conditional Approvals hold the requirement off the currently authorized base. But the router approvals granted between April and July expire between October 2027 and February 2028; Conditional Approval applications for inverters and robotics are due January 1, 2028; and both UAS exemptions expire the same day. The 2029 step reflects the domestic content threshold rising from 65 to 75 percent.

⁶ market.us and Mark Spark Solutions, U.S. wireless router market estimates for 2025 (\$3.8 billion and \$4.34 billion, the latter with about 28.6 million units); central case is the midpoint. Carrier gateway value is derived from an estimated 120 million fixed broadband connections on a five-year replacement cycle at an estimated \$90 customs value per unit; the customs-to-retail ratio (0.5), cycle length, and value per gateway are analyst estimates.

Year	Module A (\$M)	Module B (\$M)	Module C (\$M)	Package (\$M)
2026	250	49	0	299
2027	285	464	0	749
2028	105	1,542	889	2,536
2029	105	1,382	889	2,376
2030	105	1,382	889	2,376
Five-year present value	814	4,446	2,441	7,701
Annualized equivalent	173	942	518	1,633

Central values, millions of dollars. Annual figures are in constant 2025 dollars; the final two rows are discounted. The router Conditional Approval grants run seventeen to eighteen months; UAS grants terminate December 31, 2026. That is the maximum transition window the government set; it is **not** an engineering estimate of relocation time.

The Conditional Approval process is itself a cost, and a risk: The guidance annexes request eighteen discrete elements across three sections: corporate structure including beneficial owners above five percent and any foreign government influence; a supply-chain disclosure comprising a detailed bill of materials, country of origin for all components and for design, software, and firmware, a quantitative assessment of supply-chain concentration by country, and identification of sole-source suppliers with contingency plans; and a time-bound U.S. manufacturing plan with named accountable personnel, quarterly reporting, one-to-five-year capital expenditure, hiring targets, and facility expansion in square feet.⁷ Two provisions are not priced in this study and should be read as risk rather than cost. An applicant that materially misrepresents information is “precluded from applying again,” a permanent foreclosure of the individualized Conditional Approval pathway on a filing demanding component-level origin across supply chains the applicant does not control. And “all decisions are final and can only be adjusted at the discretion” of the reviewing departments, with no stated review mechanism. For robotics, the Department of War reviews alone, there is no categorical safe harbor comparable to the Blue UAS Cleared List, and missing the January 1, 2028 application deadline forecloses the individualized pathway altogether.

3. Why It Costs That Much: Two Facts About the Supply Chain

The rule reaches non-adversary production

Selected customs proxy (2025)	Total imports (\$M)	From adversary jurisdiction (\$M)	Adversary share
Switching and routing apparatus (8517.62.00.20)	30,834	350	1.1%
Inverters, static converters (8504.40.95.70)	3,309	240	7.3%
Robot-vacuum proxy (8508.11)	2,817	339	12.0%

⁷ Conditional Approval Guidance Annexes to the Power Inverter and Advanced Robotics National Security Determinations (July 27, 2026), linked from <https://www.fcc.gov/supplychain/coveredlist>. Both annexes are structurally identical.

Selected customs proxy (2025)	Total imports (\$M)	From adversary jurisdiction (\$M)	Adversary share
Unmanned aircraft (8806)	191	32	16.8%

Imports for consumption, customs value, millions of dollars. For the router line the leading sources were Vietnam (38.4 percent), Mexico (16.0), Thailand (14.0), Taiwan (9.3), India (6.2), and Malaysia (5.4). For inverters the order was Thailand, Japan, Italy, and India, with China fifth. Weighted by in-scope value across the four sectors, 5.0 percent of in-scope import value originates in adversary jurisdictions.

The direction of the pattern is robust: a production-location restriction reaches substantial non-adversary jurisdiction supply as well as non-zero adversary jurisdiction supply. Many of the largest sources are non-adversary jurisdictions that are neither treaty allies nor free trade agreement partners.

Production location is a poor proxy for producer identity or control: Customs data record where goods are made and are silent on who owns the maker. The Equipment Authorization System records applicant domicile, and the share of original grants going to applicants domiciled in China, Hong Kong, or Macau was 68 percent in 2025, against adversary-origin production of 1 to 17 percent by customs line.⁸ Wood Mackenzie reports the same divergence for inverters: China-headquartered manufacturers held close to half of U.S. market share in 2024 and 2025 while shipping mostly from Southeast Asian plants, not Chinese plants. Two things follow. For entities already subject to producer-based Covered List entries, manufacture in a partner country does not remove the existing prohibition, and the public data do not reveal what share of partner-country production comes from those entities. But corporate control and production location diverge sharply in both data sets, which strengthens the case for retaining an *entity-based* prong rather than treating location as a substitute for it. What a location rule adds, at the margin, is reach over producers no one has named: the plants across Vietnam, Mexico, Thailand, Taiwan, and the other non-adversary origins that together supply 99 percent of the router line. That is where much of the \$4.3 billion in incremental cost lands.

Measured domestic supply is small relative to what would be displaced

Sector and industry (2021)	Shipments	Exports	Imports	Import penetration	Domestic share of U.S. market
Broadcasting and wireless communications equipment (NAICS 334220)	27,507	5,555	42,147	65.8%	34.2%
Communications equipment (NAICS 3342)	35,240	5,555	42,147	58.7%	41.3%
Power conversion (NAICS 335999)	14,306	2,560	12,517	51.6%	48.4%

⁸ FCC Equipment Authorization System, Authorization Search, original equipment grants by applicant country, 2022–2025, retrieved September 1, 2026, <https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm>. Applicant domicile is the certificate holder's address, a jurisdiction proxy rather than an ownership determination.

Millions of dollars, 2021 (Annual Survey of Manufactures Benchmark, 2022 vintage), the most recent year in which the manufacturing and trade series align. The switching and routing customs line spans NAICS 334210 and 334220, so the matched trade series is shown against both communications equipment rows. American communications equipment manufacturers export about a fifth of their output, so domestic supply reaching American buyers is materially smaller than domestic shipments.

Matched imports in network equipment doubled from \$42.1 billion in 2021 to \$84.5 billion in 2025 while domestic shipments were flat through 2021. Replacing 2025 import volumes would require additional production of 3.3 to 4.8 times current domestic supply to the U.S. market, depending on the industry classification used (2025 imports over 2021 shipments net of 2025 exports; the figures are nominal and mix a 2021 domestic base with 2025 trade). Shipment value measures realized output rather than engineering capacity, so these data cannot show that domestic production could not grow. What they show is that the volume to be replaced is a multiple of everything the domestic industry currently sells at home.

For inverters the constraint is timing, as the government's own record says: Wood Mackenzie reports announced plans for more than 100 gigawatts of U.S. inverter and power-conversion capacity by the end of 2027. That capacity is announced and contingent, and it arrives at the January 1, 2028 application deadline rather than ahead of it, with the content threshold stepping to 75 percent a year later. And the determination itself quotes the Department of Energy that inverters “can be designed and assembled in the United States” but that the application-specific integrated circuits and semiconductor power-handling components “are almost entirely produced” abroad, so that reducing foreign-interference risk will be difficult “unless the embedded electronic components are also produced in the United States.” The document that creates the requirement concedes that domestic assembly, however much of it is built, does not achieve the requirement’s stated objective on the requirement’s schedule.

The most direct evidence of present constraint is the government’s own waiver record. Since May 2026 the Office of Engineering and Technology has granted hardware-change waivers to AT&T, NCTA, and Sercomm expressly to address “unavoidable supply-chain shortages and the public interest need to prevent disruptions in the availability of broadband for customers,” and has extended software and firmware permissive-change waivers in all four sectors to January 1, 2029. The shortages themselves were market-wide component shortages rather than a product of the regime. The point is what the regime does with them: it bars ordinary hardware permissive changes, so routine supply-chain volatility now requires case-by-case waivers from a single office, and OET has had to grant three in two months. Those waivers fall short of a national capacity study, but they show the rigidity the regime imposes on a supply chain that changes constantly.

The regime may not be finished expanding. Reuters reported on August 4, 2026 that the Commission is drafting a Covered List restriction on new models of optical transceivers, the modules that carry data over fiber inside AI data centers, to be published and take effect before the end of the year, reportedly structured as a broad restriction on new transceiver models followed by exemptions for suppliers outside China, which is the same design used for routers, inverters, and robots.⁹ No determination or draft text has been published, so this study

⁹ Alexandra Alper, “Exclusive: Trump administration drafting ban on Chinese data center devices, sources say”, Reuters (Aug. 4, 2026)

does not cost it, but the supply base looks like the four sectors already covered: China accounts for more than half of global optical module manufacturing, the leading supplier alone holds about 27 percent of the data center market, and the U.S. producers named as alternatives are reported to lack the scale to replace that volume, so a production-location determination here would likely carry similar onshoring premium and transition-timing costs as the entries already in force.¹⁰

4. The Same Objective at a Fraction of the Cost

The determinations regime as issued bars foreign production regardless of the producer's nationality, admitting only domestic production or a Conditional Approval. An alternate regime based on a non-adversary production standard combines two prongs: production in an adversary jurisdiction is barred, and entities subject to adversary jurisdiction or direction remain excluded under the producer-based rules that already exist, wherever they produce. The 5.0 percent of in-scope import value originating in adversary jurisdictions is what both regimes must relocate. The remaining 95 percent is what the domestic-only regime relocates, and to the highest-cost location among the alternatives.

Module B line (five-year PV, \$M)	Regime as issued: domestic-only	Alternate Regime: non-adversary	Savings from Alternate non-adversary regime
Onshoring premium, phased	4,089	67	4,022
Conditional Approval burden	17	3	14
Inventory exposure	339	41	299
Five-year present value	4,446	111	4,335
Annualized	942	24	919

Central case. Because customs data record production location rather than producer identity, they cannot measure how much non-adversary-location supply comes from entities already subject to producer-based determinations; the alternate regime (non-adversary) figure is the location-based estimate and a lower bound.

An allied-content architecture existed and was not used

The inverter and robotics determinations define “foreign-produced” by reference to the Buy American standard at 48 C.F.R. § 25.101(a), which credits domestic components only. The Defense Federal Acquisition Regulation Supplement counterpart at 48 C.F.R. § 225.101 credits components sourced from qualifying treaty partners alongside domestic content. The

<https://www.reuters.com/world/trump-administration-drafting-ban-chinese-data-center-devices-sources-say-2026-08-04/>. See also Mondaq, Arnold & Porter (Sarah Belmont, Deborah Curtis, and Peter J. Schildkraut), “The FCC’s Next Move on Supply Chain Security” (Sept. 2, 2026)

<https://www.mondaq.com/unitedstates/terrorism-homeland-security-defence/1838086/the-fccs-next-move-on-supply-chain-security-what-manufacturers-need-to-know>

¹⁰ See Trendforce, “China Accounts for 56% of Global Optical Module Manufacturing; Short-Term Supply Chain Decoupling Unlikely Under Potential U.S. Restrictions, Says TrendForce” (August 5, 2026)

<https://www.trendforce.com/presscenter/news/20260805-13169.html>. See also Alexandra Alper, “Exclusive: Trump administration drafting ban on Chinese data center devices, sources say,” Reuters (Aug. 4, 2026)

<https://www.reuters.com/world/trump-administration-drafting-ban-chinese-data-center-devices-sources-say-2026-08-04/>.

determinations incorporate the first and not the second. Section 225.101 itself still requires U.S. manufacture; qualifying-country content counts toward the threshold, and the separate qualifying-country end product pathway at section 225.103 permits qualifying-country manufacture. The point is therefore that the adjacent Defense regime already contains an administrable architecture for treating trusted-country production differently, and that the Department which administers it is the same Department that reviews these applications. The public record does not address that obvious adjacent alternative. An unexplained choice between two adjacent standards is a serious unexamined-alternative problem.¹¹

The Executive Branch has also twice demonstrated that it will narrow these determinations when the fit is poor. It removed toy drones from the UAS entry in June. And on August 20 it adopted section 45X eligibility as an alternative compliance route for inverters, displacing case-by-case Conditional Approval for everything that qualifies. That was a substitution of an existing federal standard for individualized review, made twenty-three days after the entry was created. Section 45X is a domestic-production credit rather than an allied standard, so the precedent lies in the mechanism rather than the substance. The mechanism matters: an existing federal designation can be plugged into a Covered List entry by public notice.

The Further Notice itself shows that the operative origin test remains unsettled. The proposed definition of “produced in a foreign country” at section 2.902, as published, pairs the domestic end product test with a separate foreign design or development prong, while paragraph 198 tentatively adopts the FAR test alone and then asks separately whether design and development should count. Before location-based obligations of this magnitude attach, the Commission should specify one coherent trigger, and this study’s alternate regime (non-adversary) is a candidate for it.

Which standard to name

A friend-shoring proposal has to specify a standard, and the two obvious procurement candidates both fail against the actual supply base.

2025 imports, customs value (\$M)	Total	DFARS qualifying countries	Share	Non-adversary (15 C.F.R. § 791.4)	Share
Switching and routing apparatus	30,834	1,919	6.2%	30,484	98.9%
Inverters, static converters	3,309	1,426	43.1%	3,069	92.7%
Robot-vacuum proxy	2,817	84	3.0%	2,478	88.0%

The DFARS qualifying-country list at 48 C.F.R. § 225.003 contains twenty-eight countries, none of which is Vietnam, Mexico, Thailand, Taiwan, India, Malaysia, South Korea, the Philippines, or Indonesia, which together make up the overwhelming majority of the supply base for these products. A standard built on it would cover 6 percent of router imports, barely distinguishable in effect from the domestic-production rule it would replace. The Trade Agreements Act

¹¹ Compare 48 C.F.R. § 25.101(a), <https://www.acquisition.gov/far/25.101>, with 48 C.F.R. §§ 225.101 and 225.003 (qualifying countries), <https://www.acquisition.gov/dfars/225.101> and <https://www.acquisition.gov/dfars/225.003>. See *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (agency must consider important aspects of the problem and reasonable alternatives), <https://supreme.justia.com/cases/federal/us/463/29/>.

designation reaches Mexico and Taiwan but still excludes Vietnam, Thailand, India, and Malaysia, which together supply 64 percent of the line.

The operative standard should be the foreign-adversary designation at 15 C.F.R. § 791.4 (formerly § 7.4), which leaves 98.9 percent of router imports on the permitted side and is already the list the Commerce Department uses to define adversary ICT supply chains. The Defense Supplement shows that an allied-content architecture exists and is administrable, but its country list doesn't solve the supply chain problems at hand.

A Domestic-Only Regime Massively Increases Costs Relative to a Non-Adversary Jurisdiction Regime, and the Government Has Not Demonstrated Any Offsetting Benefits

While it is possible that a domestic-only regime could deliver some incremental security benefit relative to a non-adversary jurisdiction regime, the government has not made this case or quantified it in any material way. The determinations identify reliance on foreign production itself as part of the risk rationale, including production outside adversary jurisdictions. How much security effectiveness a non-adversary design would retain relative to the domestic-only design is the key question. What the model can do is state what the domestic design would have to be worth for its added cost to be justified. If the non-adversary design retains a share e of the domestic design's security benefit, domestic production dominates only when the total security benefit of the domestic design exceeds the cost difference divided by $(1 - e)$.

Assumed retained effectiveness (e)	Required total security benefit (five-year PV, \$M)	Benefit claimed in the record (five-year PV, \$M)
50 percent	8,670	2,689 to 11,793
60 percent	10,837	2,689 to 11,793
70 percent	14,449	2,689 to 11,793
80 percent	21,674	2,689 to 11,793
90 percent	43,348	2,689 to 11,793
100 percent	No finite threshold	n/a

The right-hand column capitalizes the Commission's only quantitative benefit construct usable for this calculation, preventing one percent of malicious cyber activity, across the two loss estimates it cites: \$57 to \$109 billion a year (Council of Economic Advisers) and \$100 to \$250 billion a year (congressional estimate), over five years at 3 percent discount rate. The Commission also claims qualitative benefits it does not quantify; its own table reports the quantified benefit as "N/A."

Under an illustrative 70 percent retained-effectiveness assumption the domestic design would need \$14.4 billion in security benefit, and even the high end of the Commission's own (and unsupported) one-percent-prevention construct, \$11.8 billion, falls short of it. The Commission supplies no estimate of e . The parameter needed to justify the expensive design is absent from the government's analysis. The Commission has itself raised the narrower design: paragraph 154 asks whether the certification proposal "should only apply to Covered List sector equipment produced in foreign adversary countries," and invites comment on

carve-outs for firms using suppliers “in the United States or in allied countries.” The question is on the table. It has not been answered with a number, except here.

The same relationship can be read in reverse, which is the more useful form for a decision maker. For any benefit figure in the record, the largest value of e at which the domestic design still breaks even is $e^* = 1 - \Delta C / B$, where ΔC is the cost difference between the two designs and B is the total security benefit attributed to the domestic design. The table below applies that formula to each benefit basis the Commission cites and to the low, central, and high cost difference from the model.

Benefit basis (five-year PV)	Low ΔC (\$521M)	Central ΔC (\$4,335M)	High ΔC (\$18,012M)
CEA low: 1 percent of \$57 billion a year (\$2,689M)	$e \leq 81$ percent	Never: ΔC exceeds the benefit	Never
Congressional low: 1 percent of \$100 billion a year (\$4,717M)	$e \leq 89$ percent	$e \leq 8$ percent	Never
CEA high: 1 percent of \$109 billion a year (\$5,142M)	$e \leq 90$ percent	$e \leq 16$ percent	Never
Congressional high: 1 percent of \$250 billion a year (\$11,793M)	$e \leq 96$ percent	$e \leq 63$ percent	Never

Each cell is the maximum retained effectiveness of the non-adversary design at which the domestic design still breaks even. “Never” means the cost difference exceeds the entire benefit attributed to the domestic design, so the domestic design fails even if the non-adversary design delivered no security at all.

Read this way, the conclusion no longer depends on choosing a value for e . On the central cost, the domestic design is justified only if the non-adversary design captures less than two-thirds of its security value at the highest loss estimate in the record, less than one-sixth at the top of the Council of Economic Advisers range, and at no level at the bottom of it. On the high cost, no benefit figure in the record justifies it at any e . Only on the low cost does the domestic design survive across the range, and there it requires the non-adversary design to be materially worse than the domestic one by a margin the record nowhere estimates. The two designs differ in exactly one respect, the exclusion of non-adversary-country plants operated by producers no one has named, so e is the share of the domestic design’s security value that survives when those plants are permitted. The threats the determinations themselves cite, state coercion of manufacturers inside adversary jurisdictions and adversary-controlled producers wherever they manufacture, are addressed identically by both designs. The increment the domestic design buys is confined to the compromise of a non-adversary plant by insider, third-country supplier, or interdiction, and the record does not estimate how much of the posited benefit that channel accounts for.

Even the one-percent prevention rate the Commission posits for its adopted rules, which this study extends to the determinations because the record offers nothing else, is unsupported. Nowhere is evidence provided by the FCC to support this assumption. The number could be much smaller, as no quantification of malicious cyber incidents demonstrably connected to devices or components in devices covered by the FCC Covered List was ever published, and malicious cyber incidents do not require any hardware issue to exist. For illustrative example, if

empirical analysis showed that only 0.05% of malicious cyber activity could be expected to be prevented by the rule, one twentieth the rate asserted without evidence by the FCC, then the potential benefit of action would be so small that it would be dwarfed by the supply chain costs of compliance, and the correct course of action would be to do nothing rather than a domestic-only design. Module B's central cost of \$4.4 billion is 7.5 times the \$590 million benefit ceiling in the scenario where only 0.05% of malicious cyber security incidents were prevented (\$125 million in annual benefits assuming the highest Congressional estimate of cyber security incident costs, summed over 5 years after being discounted at a three percent annual rate), so the production-location determinations as issued with a domestic-only design would not pass a cost-benefit test against doing nothing.

In addition to these measurable increased costs, there are the downstream impacts on the competitiveness of U.S. companies subject to these requirements, which stands in stark contrast to the government's objective of establishing a robust, globally-competitive American manufacturing base. While non-U.S. competitors will continue to avail themselves of the cost advantages of sourcing from non-U.S. suppliers when selling in markets outside the United States, U.S. companies will be at a distinct cost disadvantage. In areas where the government wishes to establish a competitive American manufacturing sector (e.g., the establishment of American drone dominance) this will have the opposite effect at precisely the time these are getting established.

5. The Rules For Which the Commission Did Estimate Costs

Because the FCC only provided cost estimates for a narrow slice of the government's actions, the like-for-like comparison is this study's Module A cost estimate against the Commission's \$489 million. In the central case the adopted rules cost approximately \$814 million over five years, about 1.7 times the Commission's figure, with a range from 0.68 to 6.9 times.

Line (\$M)	Low	Central	High
A1. Component prohibition: redesign and requalification (annual)	8	63	432
A2. Seller listing compliance, affected annual flow	5	41	224
A3. Platform verification, affected annual flow	0	1	11
A4. Platform build, spread 2026–27	287	431	861
Five-year present value, effective dates applied	330	814	3,347
FCC benchmark	n/a	489	n/a
Ratio	0.68x	1.67x	6.85x

The central gap is driven by two items the Commission did not quantify. Paragraph 107 expressly declines to estimate component redesign and requalification, which is the entire cost of the logic-bearing component prohibition for any firm whose bill of materials contains a covered part. And footnote 247 assigns the same \$191,333 implementation cost to the largest online marketplace and the fifteen-hundredth, regardless of catalog size. Two arithmetic notes

for reproducibility: the stated inputs at footnote 248 (426,420 sellers, ten listings, ten minutes, \$51.58 per hour) produce \$36.66 million rather than the \$37.39 million stated, a small discrepancy; and the Commission’s own cited source reports 4.2 listings per seller in electronics and that 77 percent of sellers list fewer than ten products.¹²

Distinct listing populations appear in this study and they measure different things. The seller-compliance line runs on the Commission’s own 426,420 high-volume sellers. The platform-verification line runs on the reconciled universe of U.S. listings bearing an FCC identifier, about 202 million, within a range of 84 to 451 million. The larger figure in circulation (eBay’s 2.6 billion live listings plus a third-party estimate of roughly 600 million products on Amazon, about 3.2 billion) is global and all-category, demonstrating the infeasibility of manual verification of listings across a marketplace.

6. What the Further Notice Would Add

The Further Notice proposes a second layer. The Commission provides an aggregate annual cost estimate for exactly one of the proposals examined here (“under \$50 million” for the software and firmware prohibition at paragraph 152) and unit-cost or population anchors for some others without converting them into a cost. This study fills the gap using the Commission’s own anchors wherever it supplied them.

Line (\$M)	Low	Central	High
C1. HBOM and SBOM preparation (annual, once effective)	25	151	710
C2. Certification of devices newly swept in (annual)	30	400	3,200
C3. Rolling HBOM/SBOM updates on a 30-day clock (annual)	7	320	5,400
C4. SDoC registration and unique public identifiers (annual)	1	18	480
Five-year present value, no cost before 2028	171	2,441	26,886

Millions of dollars. Ten-year term limits are proposed “with prospective effect” (para. 208) and therefore carry no cost inside the five-year window; they are discussed below rather than tabulated.

Bills of materials: Paragraphs 143 through 145 estimate under \$5,000 per software program and up to \$10,000 per hardware device, and assume about half of applicants already comply. Applied literally to the 26,545 original grants the Equipment Authorization System recorded in 2025, those anchors yield roughly \$265 million a year; the \$151 million central estimate, which carries a programs-per-device parameter and prices internal labor separately at a BLS-derived wage, is conservative relative to the Commission’s own ceilings. The thirty-day rolling update obligation is priced separately and at the central case costs about twice the initial preparation, because it attaches to every material change across the accumulating stock of authorizations rather than once per application. The Conditional Approval annexes already demand “a detailed bill of materials” and “country of origin for all components” of the several dozen firms seeking exemptions; the Further Notice would extend an analogous requirement to every applicant. CCIA’s position is that manufacturers should maintain a current internal SBOM and produce it on request, that any submission requirement be limited to Covered List sectors

¹² FCC-26-50, paras. 106–110 and nn.247–248, <https://docs.fcc.gov/public/attachments/FCC-26-50A1.pdf>.

and security-relevant components, and that submitted material receive automatic confidential treatment.

Certification for devices that today self-declare: Paragraph 156 asks whether the affected population is 10,000 or 100,000 devices; those bracket the range, and the central case applies an \$8,000 certification cost to an analyst midpoint of 50,000 devices. Paragraph 154 proposes certification for Covered List sector devices even where they would otherwise use a Supplier’s Declaration of Conformity, be exempt, or rely on a certified module, so historical grant volumes do not bound the population. This is the proposal for which the non-adversary standard is the direct answer: limited to foreign-adversary production, it reaches roughly one percent of the router supply base.

Term limits: Paragraph 208 seeks comment on ten-year expirations “with prospective effect,” which places the first renewals around 2038 and carries no cost inside the window. Applied instead to the roughly 233,000 authorizations still in commercial life on the model’s central fifteen-year life assumption, a ten-year term would cost about \$47 million a year, which is the stress case CCIA cites for why any term must be prospective only.

The importation cap, as a threshold rather than an estimate

The Further Notice would cut the per-model allowance for imported testing and evaluation units from 4,000 to 40. No public data record how many units firms import under that exception, so this study inverts the question. The Equipment Authorization System recorded 26,545 original grants in 2025 from 10,440 distinct applicants. Each grant is used here as a proxy for a development program, and programs that never reached authorization are additional, so the count is a floor. Under the central assumptions, the annual cost of the cap exceeds \$100 million if roughly 1,200 development programs nationwide, about one in twenty, are constrained by the 40-unit limit.

If the annual cost of the cap is...	...then at most this share of development programs can need more than 40 units
\$10 million	0.5%
\$50 million	2.3%
\$100 million	4.6%
\$500 million	23.1%

The proposed rule contains an escape valve: section 2.1204(c)(2) permits more than 40 units where “the Chief of the Office of Engineering and Technology grants written approval.” That relocates the cost rather than removing it. The proposal states no standard for approval, no timeline, and no presumption, converting a routine development activity that today requires no permission into a case-by-case application to a single office across 26,545 grants a year. The Commission set the allowance at 4,000 and proposes 40 without stating what changed or how many programs the lower figure would constrain.

The permissive-change codification excludes the sectors that use it

Permissive changes are barred for Covered List equipment absent a waiver, so without one a routine software or firmware update to covered equipment requires a new certification. The Office of Engineering and Technology waived that restriction in all four sectors, extended the waiver to January 1, 2029, and the Further Notice proposes to codify it. But proposed section 2.932(b)(4) conditions the codification on the device being “equipment in a producer/provider-based Covered List entry, rather than a production location-based Covered List entry.” Routers, drones, inverters, and robots are all location-based entries, so for the four sectors where the waiver is actually used the codification as published delivers nothing, while proposed section 2.1043(m), addressing the same subject, contains no such limit. Extending the codification to location-based entries is worth about \$22 million a year in avoided certification cost, or \$105 million over five years. The dollar figure understates the effect: a new certification runs four to twelve weeks, and that is the delay the waiver keeps off routine security patches.

Enforcement exposure and the case for a safe harbor

The adopted rules create liability for online marketplaces without a safe harbor, without a scienter requirement, and without stating what counts as a single violation. Three specifications are available on the current record and they differ by two and a half orders of magnitude: one continuing violation at \$188,491; a per-model calculation at the ceiling, which produced \$34.9 million in a 285-model case at 2014 maximums and would produce about \$53.7 million at today’s; or a per-listing calculation at the \$7,000 guideline base.¹³ The Commission has said it may change its methodology to a per-unit-marketed basis; then-Commissioner, now Chairman, Carr wrote that he was open to that change “in the context of an appropriate Commission proceeding,” meaning a rulemaking rather than a footnote to an enforcement notice.

The argument concerns variance rather than level. With liability indeterminate and no safe harbor, the rational response for a marketplace is to remove any listing whose identifier cannot be cheaply verified, whether or not the product complies. In the central scenario that precautionary delisting costs about \$28 million a year, reported outside every module total because it is a behavioral response rather than a compliance cost; the high scenario reaches \$574 million. Both rest on analyst assumptions about verification failure rates and the value lost per removed listing. An unpredictable liability regime produces more of that removal than an equally strict but predictable one, at no gain in security. The remedy is a safe harbor keyed to documented process; lower penalties would address the wrong variable.

The Commission’s own enforcement record makes the parallel case for a knowledge standard on producer disclosure. In FCC 26-60, Hytera and ZTE themselves listed 60 and 15 affiliates in letter-of-inquiry responses; Commission staff, consulting Bloomberg, Dun & Bradstreet, a

¹³ 47 C.F.R. § 1.80(b), <https://www.ecfr.gov/current/title-47/section-1.80>; C.T.S. Technology Co., Notice of Apparent Liability, FCC 14-92 (June 18, 2014), *aff’d*, Forfeiture Order, FCC 16-67 (May 25, 2016), https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-67A1_Rcd.pdf; ASUSTeK Computer Inc., Notice of Apparent Liability, FCC 24-69 (2024), <https://www.fcc.gov/document/fcc-proposes-367436-fine-equipment-marketing-violations> (Commissioner Carr’s concurring statement is linked from the same page).

Chinese corporate registry, and university procurement lists, concluded that 49 and 11 “may” produce covered equipment.¹⁴ The gap was definitional rather than informational. The companies knew their affiliates; what they and the Commission disagreed about was which of them “produce covered communications equipment.” The legal obligations differ, since section 2.903(d) binds named entities disclosing their own affiliates while the proposal would bind applicants disclosing their producers, but the enforcement record illustrates the classification problem. If that boundary is indeterminate for a named entity’s own subsidiaries, an applicant cannot be held to strict liability for the same judgment across supply chains it does not control, which makes a strong case for the “any and all entities” proposal at paragraph 135 to carry a knowledge or reasonable-diligence standard.

7. What CCIA Recommends

Each recommendation follows from a number in this study.

- **Adopt the foreign-adversary standard at 15 C.F.R. § 791.4 for production-location entries**, retaining every existing producer-based exclusion. Modeled saving: up to roughly **\$4.3 billion over five years** on the location-based calculation, with the named-entity prohibitions untouched.
- **Publish a cost analysis before any further production-location determination issues**. No agency has costed the four determinations now in force. The Conditional Approval annexes already collect the supply-chain data such an analysis would need.
- **Set transition periods of no less than twelve to twenty-four months, prospective only, with infrastructure milestones**. The Commission’s own R&O allows six and nine months for the display rules; Conditional Approvals run seventeen to eighteen months; announced inverter capacity arrives at the 2028 deadline with no margin for any delay.
- **Extend the permissive-change codification to production-location entries** by conforming section 2.932(b)(4) to section 2.1043(m). Value: about \$22 million a year plus patches shipping in days rather than months.
- **Retain the 4,000-unit importation allowance**. For a 40-unit cap to cost less than \$100 million a year, fewer than one program in twenty could need more than 40 units; the OET written-approval route relocates that cost into an unstandardized queue.
- **Keep bills of materials internal and on request**, limited to Covered List sectors and security-relevant components if required at all, with automatic confidential treatment and no thirty-day rolling obligation. Avoided cost: roughly \$470 million a year at the central case.
- **Adopt a safe harbor for marketplaces keyed to documented process and a knowledge standard for producer disclosure**. The undefined unit of violation and the definitional gap in FCC 26-60 make strict liability not administrable for the parties it would bind.
- **Confine the router definition to consumer-grade devices** and limit component prohibitions to logic-bearing hardware. Six-sevenths of the switching and routing

¹⁴ Hytera Communications Corp. Ltd. and ZTE Corp., Notice of Apparent Liability for Forfeiture and Order, FCC 26-60, paras. 8–10 (Aug. 28, 2026), <https://docs.fcc.gov/public/attachments/FCC-26-60A1.pdf>.

customs line lies outside the consumer segment; the adopted logic-bearing prohibition already costs about \$63 million a year.

- **Make any authorization term limit prospective only.** A retroactive ten-year term would cost about \$47 million a year against the authorizations still in commercial life.

Methods, Limitations, and Sources

What this is: A regulated-party cost model that estimates private compliance and resource costs. It is narrower than a social cost-benefit analysis: it does not separate transfers from resource costs, model consumer or producer surplus, or estimate security benefits, which enter only as the break-even threshold in Section 4. Enforcement exposure is estimated but reported outside every module total.

Principal limitations: Whether the COTS waiver at 48 C.F.R. § 25.101(a)(2)(i) applies outside procurement is unaddressed by either determination; with the 2029 threshold step it moves the inverter and robotics relocation share across 37 to 98 percent. The robotics population is under-measured, with a robot-vacuum customs line serving as proxy. Customs data cannot see producer ownership, so the non-adversary regime's cost is a lower bound and the \$4.3 billion saving an upper bound. The production premium is sector-specific only for inverters. Module A's effective-date factors assume third-quarter 2026 publication of the Third Report and Order, which had not occurred as of September 2. Enforcement exposure rests on the Commission's own record of 290 marketing actions, which ends in 2013.

Sources: USITC DataWeb (imports for consumption at customs value, 2021–2025); Census Annual Survey of Manufactures Benchmark, Table AM2231GS1; BLS Occupational Employment and Wage Statistics, May 2025; FCC Equipment Authorization System, 2000–2025; FCC-26-50 and Public Notices DA 26-278, 26-786, 26-789, 26-850, 26-870, and 26-875; the four National Security Determinations and both Conditional Approval annexes; 91 Fed. Reg. 51139; FAR 25.101 and DFARS 225.003, 225.101, and 225.103; FCC 14-92, 16-67, 24-69, 26-7, and 26-60; Reshoring Initiative, 2024 Annual Report; Wood Mackenzie, August 2026; eBay Q2 2026 earnings call. Trade data were retrieved August 12, 2026 and the regulatory record verified through September 2, 2026.