September 25, 2025

2025 draft List of Critical Minerals,
MS-913, U.S. Geological Survey,
12201 Sunrise Valley Dr., Reston, VA 20192

Submitted electronically via regulations.gov, Docket No. USGS-2025-0039

Dear Ms. Ryker,

Thank you for the opportunity to comment on the United States Geological Survey's (USGS) draft List of Critical Minerals (LCM or list).[1] Please accept these comments on behalf of the undersigned nongovernmental organizations representing voices directly impacted by mining and the policy decisions flowing from listing a particular commodity on the LCM. These comments first share our views on USGS's methodology. The second section focuses on specific commodities.

Section 1: USGS's Methodology is Faulty

We appreciate the need for objective methods to determine mineral criticality in order to create more responsible and secure mineral supply chains. For that reason, Congress passed section 7002 of the Energy Act of 2020, which requires the Secretary, acting through USGS, to publish a draft methodology and draft list of critical minerals for public comment and then issue a final methodology and final list after reviewing comments.[2] We acknowledge many of the minerals listed belong there, even as methods for listing them change. Others do not.

A. USGS's Economic Assessment Model Assumes Only a Worst Case Scenario

The 2025 draft LCM methodology models the decline in gross domestic product (GDP) from only one supply disruption scenario.[3] In the model's scenario, one country instantly imposes a complete export ban of a given commodity to the United States. In addition, the restricting country applies the ban beyond its jurisdiction, prohibiting importing countries from

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[1] *See* 90 Fed. Reg. 41591 (Aug. 26, 2025) (2025 Draft List of Critical Minerals)
[2] *See* 30 U.S.C. §1606 (Energy Act of 2020, §7002(c)).
[3] *See* U.S. Geological Survey, N.T. Nassar et al., *Methodology and Technical Input for the 2025 U.S. List of Critical Minerals—Assessing the Potential Effects of Mineral Commodity Supply Chain Disruptions on the U.S. Economy,* Open-File Report 2025–1047, 32 (2025)*, available at* https://doi.org/ 10.3133/ ofr20251047 (last visited Sept. 18, 2025).

later exporting that commodity to the United States. USGS ran this one scenario more than 1,200 times for each producing (export banning) country and each commodity.

These assumptions reflect the most extreme trade disruption a single producing country could possibly impose: an instantaneous, total ban including re-export prohibitions upon every other non-producing country to the United States. To be sure, there is utility in estimating the economic effects of a major mineral supply chain disruption. And, the Energy Act requires USGS to consider disruptions "including restrictions associated with foreign political risk, abrupt demand growth, military conflict, violent unrest, anti-competitive or protectionist behaviors, and other risks throughout the supply chain."[4] Out of the restrictions listed, USGS modeled only the most anti-competitive or protectionist one, namely: a total export ban. Among those "restrictions," USGS selected to model only the most "anti-competitive or protectionist": a total export ban.

Even where governments have imposed export bans for specific minerals, extra-territorial bans pose practical implementation challenges. Far more often, countries imposing trade barriers choose far less restrictive policies, like export taxes.[5] For some commodities (except gold and mined copper), USGS's choice to model only a ban tends to result in larger GDP declines that skew the mineral designations toward criticality, including refined copper, silver, and potash as described further in section 2.

B. USGS's Use of Machine-Learning to Determine the Probability of Worst Case Scenario is Flawed

USGS used machine-learning, a subset of Artificial Intelligence (AI), to make an imperfect prediction. As mentioned above, USGS modeled only a complete ban on various materials. The resultant drop in GDP from a total shutoff is then multiplied by the likelihood that a country would implement such a ban. USGS calculated this probability by "using an ensemble of several machine learning classifiers, each of which produced a probability estimate for each mineral commodity–country scenario. Exogenous variables such as prior trade barrier implementation (specifically, trade prohibition, quota, or licensing requirements) and global export dominance or dependence were used to train each classifier and inform its probability estimates)."[6] USGS fed the machines data spanning 30 years (1993-2023) from varying kinds of trade disputes (e.g., tariffs, quotas, licensing requirements, trade prohibitions, etc.) to "learn" the

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[4] 30 U.S.C. §1606(c)(4)(A)(ii).

[5] *See* J. Ryter & N.T. Nassar, *Estimating the Probability of Export Restrictions to Inform Mineral Criticality* 3 (SSRN, Aug. 18, 2025), *available at* https://dx.doi.org/10.2139/ssrn.5388963 ("Although prior work has shown limited effects of trade barriers on trade flows generally (Korinek & Kim, 2010; Li & Beghin, 2012), export taxes are the most common type of mineral commodity export restriction (Korinek & Kim, 2010; Kowalski & Legendre, 2023).").

[6] *See* U.S. Geological Survey, *Methodology and Technical Input (2025)*, atpage 8.

probability of each producing country imposing an instantaneous, total, extra-territorial, mineral export ban to the United States.

Putting aside that no data from the President's "Liberation Day" tariffs were available for USGS's machines to "learn" from, they nevertheless delivered absurd results. For instance, the machines calculate an 11% chance Canada imposes the worst case scenario (including Canada prohibiting every other non-producing country from exporting Canadian minerals to the United States). Additionally, the machines give 4% odds Chile completely cuts off the United States from refined copper, despite the fact the countries share a free trade agreement. And finally, the machines place the same 4% odds on a South African mineral export ban as well as a silver ban from Mexico.[7]

Neither USGS nor the machines ever calculate the drop in the restricting country's GDP resulting from that country's commodities losing access to the United States market. The amount of money a restricting country stands to lose can factor into the probability it might impose a total ban, some lesser trade barrier, or none at all. For example, the Chinese government's decision to restrict, rather than ban, graphite exports to the United States was due, in part, to the Chinese economy's own dependence on graphite exports.

Even where the machines accurately determine the probability of a supply chain disruption, USGS should subject those results to human experience. For instance, in the 2021 methodology, USGS measured supply chain disruption potential relying, in part, on mining executives' self-reported data about exporting countries' abilities and willingness to supply the United States.[8] Humans have also learned to predict mineral supply chain disruption potential and USGS should still consider their data valuable. According to the annual Fraser Institute survey of mining executives upon whom USGS's last methodology relied, Canada and Chile still remain among the friendliest jurisdictions for mining investments due, in part, to their favorable trade policies with the United States.[9]

C. USGS's Threshold of Just $2 Million Annual GDP Decline Does Not Represent "significant consequences" to U.S. "economic or national security"

After USGS assumes a worst case GDP disruption scenario, and then multiplies that by the probability that scenario will occur, then USGS recommends listing every commodity with

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[7] *See* U.S. Geological Survey, *Methodology and Technical Input (2025)*, tbl.1 at 13-14 1.
[8] *See* U.S. Geological Survey, N.T. Nassar & S.M. Fortier, *Methodology and Technical Input for the 2021 Review and Revision of the U.S. Critical Minerals List*, Open-File Report 2021–1045, 31 (2021), *available at* https://doi.org/10.3133/ofr20211045
[9] *See* Fraser Institute, Julio Mejía & Elmira Aliakbari, *Annual Survey of Mining Companies, 2024,* Fraser Institute, 2025, *available at* https://www.fraserinstitute.org/sites/default/files/annual-survey-of-mining-companies-2024.pdf

disruptions costing $2 million annual GDP or higher (USGS rounds up to the nearest million dollars). This is an unreasonably low threshold.

After running the scenarios, USGS's statistical model categorizes disruption risks as either "high," "elevated," "moderate," "limited," "negligible," or "negative" (the latter indicating where a country's total export ban to the United States actually results in GDP growth, as with gold and mined copper). "Moderate" disruptions range from $2 million-$22 million in annual GDP decline.

The law instructs USGS to only designate as critical those minerals "the absence of which would have *significant consequences* for the economic or national security of the United States."[10] "Moderate" GDP declines are not "significant consequences." U.S. "economic or national security" does not suffer "significant consequences" from a "moderate" $2 million GDP disruption in a year. Put another way, compared to the $29 trillion total annual U.S. GDP, $2 million is insignificant.[11] For these reasons, in order to comply with the Energy Act's mandate, USGS should not select an unreasonably low threshold for listing.

D. Government Subsidies May Reduce Mineral Criticality

Government subsidies should also be considered when determining whether a mineral should be listed as critical. In sum, USGS modeled a sudden stoppage in mineral imports, multiplied by its probability, and listed each commodity with (or exceeding) $2 million annual net GDP decline. The statistical optimizations and other model constraints help reduce outlier data. Even so, it is notable that 16 listed minerals fall within USGS's "moderate" supply disruption range between $2 million and $22 million annual GDP decline. This suggests that relatively small changes in their "moderate" disruption risk for commodities like lithium or refined nickel might result in their removal from subsequent lists.

In July 2025, the President signed into law nearly $13 billion in Department of Defense (DoD) and Department of Energy (DOE) critical minerals direct funding and $350 billion more in critical minerals financing in the One Big Beautiful Bill Act.[12] While many of the undersigned opposed those and other provisions of that law, the potential net GDP effect of these funds could have "significant consequences" for certain listed minerals, including de-listing.

Tellurium illustrates how easily a government subsidy can lead to de-listing, especially for byproduct metals. USGS removed tellurium from this year's list because Rio Tinto equipped their existing Kennecott copper mine in Utah with a new $300 million circuit, furnished largely

[10] *See* 30 U.S.C. §1606(c)4(A)(iii) (emphasis added).
[11] *See* The World Bank, *GDP (current US$) for the United States,* World Development Indicators, *available at* https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US
[12] *See* Pub. L. No. 119-21, 139 Stat. 72 (July 4, 2025), §§ 20004(a)(40), 20004(b)–(d), 30004, 50403.3.

from Defense Production Act financial assistance. The new circuit captures enough tellurium as a copper byproduct to meet domestic supply needs. That is, one government grant, to a single operating mine, led USGS to de-list a mineral. In light of this practical experience, USGS's methodology should consider the probability and net GDP effect of a massive government subsidy to ease supply chain disruption risks.

Section 2: Commodity-Specific Comments

A. Copper

The Energy Act of 2020 requires that a critical mineral be not only essential to economic or national security, but also that its supply chain be vulnerable to disruption, such that its absence would cause "significant consequences[13]." . Our analysis demonstrates that copper does not meet this statutory standard. USGS's own data confirms that copper supply is stable, diversified, and supported by robust secondary production. The 2025 Methodology Report shows that copper's disruption risk is minimal—an expected GDP loss of only $56 million, driven by refined imports from Chile—100 times smaller than the multi-billion-dollar risks modeled for rare earths and gallium. Moreover, mined copper shows no disruption risk at all.[14]

Listing copper would misallocate federal resources by unlocking Section 48C tax credits for mining and refining projects that are unnecessary to secure supply. At the same time, it would exacerbate disproportionate harms to Indigenous communities, 89% of whose surrounding lands are within 35 miles of copper deposits yet outside their jurisdictional control. Case studies such as Resolution Copper, Rosemont/Copper World, Back Forty, and NewRange demonstrate the severe cultural, environmental, and health consequences of subsidizing additional copper mining.

For these reasons, we respectfully request that USGS and the Department of the Interior (DOI) exclude copper from the 2025 Final List of Critical Minerals**.**

I. Copper is Not a "Critical Mineral"

USGS has consistently concluded that copper does not qualify as a critical mineral because there is sufficient supply from domestic producers and reliable trade partners.[15]

USGS, under the Energy Act, designates a list of "critical minerals" that:

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[13] *See* 30 U.S.C. § 1606(c)(4)(A) (Energy Act of 2020).
[14] *See* U.S. Geological Survey, *Methodology and Technical Input (2025),* at 13.
[15] *See* 2022 Final List of Critical Minerals, 87 Fed. Reg. 10381, 10382 (Feb. 24, 2022) ("USGS 2022 List"); *see also* 2021 Draft List of Critical Minerals, 86 Fed. Reg. 62199, 62202 (Nov. 9, 2021) ("USGS 2021 List").

1. are essential to the economic or national security of the United States;
2. the supply chain of which is vulnerable to disruption (including restrictions associated with foreign political risk, abrupt demand growth, military conflict, violent unrest, anti-competitive or protectionist behaviors, and other risks throughout the supply chain); and
3. serve an essential function in the manufacturing of a product (including energy technology-, defense-, currency-, agriculture-, consumer electronics-, and health care- related applications), the absence of which would have significant consequences for the economic or national security of the United States.[16]

In 2022, several senators requested that USGS add copper to the critical minerals list, but USGS rejected those requests, citing a stable copper supply and low vulnerability to disruption.[17] The Department of Energy's (DOE) 2023 Critical Materials Assessment described copper as "near critical" in the medium term (2025–2035), but even DOE acknowledged copper's "low supply risk thanks to diverse producing countries and to its being a major metal."[18] That statement underscores that copper does not satisfy the Energy Act's requirement of a vulnerable supply chain, and thus must be excluded from the list.[19]

The Mineral Commodity Summaries 2023 shows that U.S. net import reliance decreased from 44% in 2021 to 41% in 2022, with diversified sources of supply.[20] USGS has also published a global assessment identifying 236 areas of undiscovered copper resources across 11 regions, demonstrating long-term supply security.[21]

Additionally, secondary production strengthens supply security. Approximately one-third of U.S. copper consumption in 2022 came from recycled copper, which is identical in

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[16] 30 U.S.C. § 1606(c)(4)(A) (Energy Act of 2020, § 7002(c)(4)(A)).
[17] *See e.g.*, Letter from David Applegate, Director, U.S. Geological Survey, to the Hon. Kyrsten Sinema, U.S. Senator (Apr. 13, 2023), *available at* https://www.mining.com/wp-content/uploads/2023/05/usgs-letter-to-sinema.pdf
[18] *See* U.S. Dep't of Energy, *Critical Materials Assessment* 106 (July 2023), *available at* https://www.energy.gov/sites/default/files/2023-07/doe-critical-material-assessment_07312023.pdf
[19] As applied to copper and other commodities that are not vulnerable to a supply disruption, USGS's 2025 methodology evades the Energy Act's direction that critical minerals meet all three criteria in 30 U.S.C. § 1606(c)(4)(A). The statute's use of the conjunctive "and" does not allow USGS to avoid applying all three criteria, nor does it allow bootstrapping copper onto a decision to include refined copper.
[20] *See* U.S. Geological Survey, *Mineral Commodity Summaries 2023* 2 (Jan. 31, 2023), *available at* https://doi.org/10.3133/mcs2023
[21] *See* J.M. Hammarstrom, M.L. Zientek, H.L. Parks, C.L. Dicken & U.S. Geological Survey Global Copper Mineral Resource Assessment Team, *Assessment of Undiscovered Copper Resources of the World, 2015* (ver. 1.2, Dec. 2021), U.S. Geological Survey Scientific Investigations Report 2018–5160, at 8–10, *available at* https://doi.org/10.3133/sir20185160.See Hammarstrom, J.M., Zientek, M.L., Parks, H.L., Dicken, C.L., and the U.S. Geological Survey Global Copper Mineral Resource Assessment Team, 2019, Assessment of undiscovered copper resources of the world, 2015 (ver. 1.2, December 2021): U.S. Geological Survey Scientific Investigations Report 2018–5160, 619 p. (including 3 chap., 3 app., glossary, and atlas of 236 page-size pls.), https://doi.org/10.3133/sir20185160. at 8-10.

quality to primary copper, requires less energy, and reduces carbon emissions.[22] Importantly, copper is one of the few materials that can be recycled repeatedly without any loss of performance. There is also no difference in the quality of recycled copper (secondary production) and mined copper (primary production); thus, they can be used interchangeably. The recycling of copper requires less energy than primary production and reduces CO^2 emissions. Yet, because of the regulatory environment, the U.S. recycles far less copper than other countries. The recyclability of copper is another reason why copper should not be deemed a critical mineral.[23]

II. The Methodology Report Does Not Support Copper's Inclusion

USGS's 2025 methodology report estimates that refined copper disruptions would result in an expected GDP loss of only $56 million.[24] Copper's $56 million expected impact is about 100 times smaller than the multi-billion-dollar risks modeled for rare earths and gallium. Importantly, mined copper itself produced GDP growth (a negative probability-weighted GDP impact), reflecting the fact that the United States is a net exporter of copper ores and concentrates.[25] Copper's inclusion comes entirely from refined copper imports, driven by a single-scenario vulnerability to Chile with a median disruption probability of only about 4%.[26]

As mentioned above, USGS applied a uniform cutoff of $2 million to recommend additions.[27] Because refined copper's $56 million exceeded that threshold, copper was recommended. But the Energy Act requires a showing that the absence of the mineral would have "significant consequences."[28] . USGS itself acknowledges that agencies may apply a higher cutoff, such as $100 million, to better align with the statute.[29] Applying that more appropriate threshold, copper would not qualify. Moreover, the 2025 USGS methodology report identifies a second criterion for inclusion on the List of Critical Minerals (LCM): where there is only a single domestic producer of a mineral commodity.[30] The U.S. already has twenty-five operating copper mines, with ten located in Arizona alone.[31] These existing U.S. mines produced 1.3 million tons

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[22] *See supra* note 19.
[23] *See* Int'l Copper Assoc., *Copper Recycling* (2021), *available at* https://internationalcopper.org/wp-content/uploads/2022/02/ICA-RecyclingBrief-202201-A4-R2.pdf
[24] *See* U.S. Geological Survey, *Methodology and Technical Input (2025)*, tbl.3 at 24.
[25] *Id.* a tbl.4 at 29. In fact, based on the following sources, the U.S. is one of the copper exporting countries. *See also* Observatory of Economic Complexity, *United States: Copper Articles Trade Profile*, *available at* https://oec.world/en/profile/bilateral-product/copper-articles/reporter/usa; *see also* U.S. Trade Numbers, *Copper Ores and Concentrates: U.S. Export Data*, U.S. Trade Numbers, *available at* https://ustradenumbers.com/export/copper-ores-and-concentrates/
[26] *See* U.S. Geological Survey, *Methodology and Technical Input (2025)* at 13.
[27] *Id.* at 6.
[28] 30 U.S.C. § 1606(c)(4)(A) (Energy Act 2020).
[29] *See* Nassar et al., *Methodology and Technical Input for the 2025 U.S. List of Critical Minerals—Assessing the Potential Effects of Mineral Commodity Supply Chain Disruptions on the U.S. Economy*, U.S. Geological Survey Open-File Report 2025–1047, at 17–22 (2025), *available at* https://doi.org/10.3133/ofr20251047
[30] *Id* at 12.
[31] *See* USGS, Mineral Commodity Summaries 2023, at 62-63.

of copper in 2022, and many have additional output capacity to meet demand without the need to subsidize more mines.[32] This criterion does not apply to copper.

III. Including Copper Will Accelerate Adverse Effects on Indigenous Communities

Listing copper will expand eligibility for federal subsidies, including Section 48C tax credits for mining and processing projects. Incentivizing additional copper mining is unnecessary given a stable supply, and it would disproportionately harm Indigenous Peoples. Eighty-nine percent of U.S. copper deposits are located within 35 miles of Native American reservations, but most are outside trust or reservation boundaries. Indigenous communities, therefore, face disproportionate impacts without legal authority to prevent harm to sacred and cultural landscapes.

IRS guidance for the Section 48C tax credit specifies that projects including "the processing of raw ore, brines, mine tailings, end-of-life products, waste streams, and other source materials into critical materials" will be eligible for the credit.[33] Copper mining traditionally involves extracting raw ore, crushing the ore, processing it through leaching, solvent extraction, and then smelting — steps that meet the definition of the process.[34] Copper ore products are often further refined into copper cathodes.[35]

While the IRS specifies that refining critical materials into "derivative products, including . . . anode and cathode materials production," is not eligible under the Critical Materials category for the 48C tax credit, it notes that such activities "may be eligible under the Clean Energy Manufacturing and Recycling Projects category."[36] For example, facilities producing anode, cables, and electrical panel components used for electric vehicles and charging stations would qualify.[37] Many major mining companies conduct end-to-end production of copper, owning and operating mines, smelters, and refineries. This means that if USGS includes copper as a critical mineral, the DOE will use it as a benchmark for critical material, which would unlock the mining companies' eligibility for significant tax credits on most components of copper mining projects.

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[32] *Id.*
[33] *See* Internal Revenue Serv., Additional Guidance for the Qualifying Advanced Energy Project Credit Allocation Program under Section 48C(e), Notice 2023-44, App. A, at 8 (2023), *available at* https://www.irs.gov/pub/irs-drop/n-23-44.pdf
[34] *See* Univ. of Ariz. Superfund Rsch. Ctr., *Copper Mining and Processing: Processing Copper Ores* 8 *available at* https://superfund.arizona.edu/resources/learning-modules-english/copper-mining-and-processing/processing-copper-ores
[35] *Id.*
[36] IRS, Notice 2023-44, App. A, at 8.
[37] *Id.* at App. A, 4.

Incentivizing copper mining is unnecessary because of its stable supply of copper and its likelihood of disproportionately harming Native communities. There are numerous examples of copper mining projects that threaten or have threatened Traditional Cultural Properties, Landscapes, or other places important to Indigenous communities. We will highlight four to demonstrate the potential impacts: 1) Resolution Copper Project (AZ), 2) Rosemont Copper Project (AZ), 3) Back 40 Mine (MI/WI), 4) PolyMet Mine (MN).

1. Resolution Copper (AZ).

The Resolution Copper project is a proposed copper mine by two foreign-owned mining companies: Rio Tinto and BHP.[38] The proposed mine would be located near Superior, Arizona, and would create a crater approximately 1.8 miles wide and up to 1,115 feet deep. The mine would destroy an area known as Chich'il Bildagoteel (or Oak Flat) that has long been sacred to the Western Apache, including the San Carlos Apache Tribe. The area is listed on the National Register of Historic Places as a Traditional Cultural Property and is used for Apache ceremonies and resource gathering. The San Carlos Apache Tribe and several other groups sued to stop the project.[39] The United States Forest Service then voluntarily withdrew the final Environmental Impact Statement (EIS) for the project to reconsider tribal concerns, among other issues.[40] In June, the Forest Service reissued the final EIS.[41] The mine has been subject to various lawsuits.[42]

2. Rosemont Copper Project/Copper World (Arizona).

The Rosemont Copper World Project is a proposed open-pit copper mine located in the Santa Rita Mountains of Pima County, Arizona.[43] The project would dump 2.4 billion tons of toxic mining waste on 3,500 acres of National Forest lands that house important Indigenous cultural resources. The Santa Rita Mountains are a Traditional Cultural Landscape. For the Tohono O'odham Nation, the area is known as Ce:wi Duag and includes ancestral remains, archaeological sites, and cultural sites that would be destroyed by the project. The mine would

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[38] *See* "About Us," Resolution Copper Company, *available at* https://resolutioncopper.com/about-us/
[39] *See* Berglan, et al., *supra* note 38, at 291-92; *see also* Michael C. Blumm & Lizzy Pennock, "Tribal Consultation: Toward Meaningful Collaboration with the Federal Government," 33 Colo. Envt'l L.J. 1, 45 (2022) *available at* https://scholar.law.colorado.edu/cgi/viewcontent.cgi?article=1042&context=celj
[40] *See* Berglan, et al., *supra* note 38, at 292.
[41] *See Environmental Impact Statements; Notice of Availability*, 90 Fed. Reg. 26287 (June 20, 2025).
[42] *See generally Apache Stronghold v. U.S.*, 519 F. Supp. 3d 591 (D. Ariz. 2021), *aff'd,* 38 F.4th 742 (9th Cir. 2022), *reh'g en banc granted, opinion vacated*, 56 F.4th 636 (9th Cir. 2022), and *on reh'g en banc*, 95 F.4th 608 (9th Cir. 2024), and *aff'd*, 95 F.4th 608 (9th Cir. 2024), and *aff'd*, 101 F.4th 1036 (9th Cir. 2024); *Apache Stronghold v. U.S.*, 145 S. Ct. 1480 (2025); *San Carlos Apache Tribe v. State,* 254 Ariz. 179, 520 P.3d 670 (Ct. App. 2022), vacated in part, 257 Ariz. 490, 550 P.3d 1096, cert. denied, 145 S. Ct. 444 (2024); *San Carlos Apache Tribe v. U.S. Forest Serv.*, No. CV-21-00068-PHX-DWL, 2025 WL 1618410 (D. Ariz. June 9, 2025); *Ctr. for Biological Diversity v. U.S. Forest Serv.*, No. 23-CV-00928 (DLF), 2025 WL 947472 (D.D.C. Mar. 28, 2025).
[43] *See Rosemont Copper Project, Arizona*, NS Energy (March 31, 2019) *available at*, https://www.nsenergybusiness.com/projects/rosemont-copper-project-arizona/

also threaten the ancestral lands of the Hopi Tribe and the Pascua Yaqui tribe.[44] After several tribes sued the Forest Service, the court ultimately overturned the Forest Service's approval of the project.[45] However, the company behind the halted Rosemont project is now engaged in mining activity on the opposite side of the Santa Rita Mountains on private land as part of its expanded "Copper World Project," and the Traditional Cultural Landscape is being adversely impacted.[46]

3. Back 40 Mine (Michigan & Wisconsin).

The Back Forty Mine poses an existential threat to the Menominee Tribe's cultural landscape along the banks of its namesake river, located at the border between Michigan and Wisconsin. Gold Resource Corporation seeks to dig an 80-acre open pit immediately adjacent to the river, in Michigan's rural Upper Peninsula, to extract copper, zinc, gold, and silver. The waters of the Menominee River have long been a draw for boating and sport fishing — yet the river faces a grave threat from the Back Forty project. An Administrative Law Judge denied the mine's wetlands permit, but the company plans to refile.

4. NewRange Copper Nickel Project (Minnesota).

Formerly known as the PolyMet mine, or PolyMet Mining's NorthMet project, the NewRange Copper Nickel project is a copper and nickel open-pit mine located in Northeastern Minnesota.[47] The project would fill 7,000 acres of wetlands and have significant adverse downstream effects on water quality in the St. Louis River and the Fond du Lac Band of Lake Superior Chippewa's reservation.[48]

As the Fond du Lac Band reported, and the EPA agreed, the project's discharges would result in increased levels of the neurotoxin methylmercury in rivers that are direct tributaries of the St. Louis River, affecting fish and wildlife in the river.[49] Increased sulfates from the sulfide minerals mined, such as copper, will damage or destroy wild rice, a critical food and treaty

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[44] *See* Berglan et al., *supra* note 38, at 292-293.
[45] *See Ctr. for Biological Diversity v. U.S. Fish and Wildlife Serv.,* 33 F. 4th 1202 (9th Cir. 2022).
[46] *See* David Abbott, "Hudbay ramps up excavation for Copper World Complex as local resistance continues and expands"*, Arizona Mirror* (Jan. 6, 2023), *available at* https://azmirror.com/2023/01/06/hudbay-ramps-up-excavation-for-copper-world-complex-as-local-resistance-continues-and-expands/; *see also* "Hudbay's US properties are the Copper World Project, located in Arizona, and the Mason project, located in Nevada," Hudbay Minerals, Inc., *available at*, https://hudbayminerals.com/united-states/default.aspx
[47] *See* "Babbit PolyMet NorthMet project*,"* Minnesota Pollution Control Agency (August 24, 2022) *available at*, https://www.pca.state.mn.us/local-sites-and-projects/babbitt-polymet-northmet-project
[48] *See* Fond du Lac Band of Lake Superior Chippewa, *Clean Water Act Section 401(a)(2) "Will Affect" Analysis for PolyMet Mining, Inc.'s NorthMet Mine Project* (Aug. 3, 2021), *available at* https://www.epa.gov/system/files/documents/2022-05/2021-08-03%20FDL%20401a2%20Notification%20Objection%20and%20Analysis%20to%20PolyMet%20Mine.pdf
[49] *Id.*

resource for Fond du Lac and other area bands.[50] Seasonal flooding would further spread contaminated discharges into streams on the Fond du Lac Reservation.[51] The U.S. Army Corps of Engineers approved a wetlands permit for the site in 2019 but suspended it in 2021 after the Fond du Lac Band raised these issues.[52] After EPA's objections and a hearing on the matter, the U.S. Army Corps of Engineers revoked its wetlands permit for the mine on June 6, 2023, based upon the fact that the evidence demonstrated the mine will cause or contribute to violations of Fond du Lac's water quality standards for mercury and sulfates and will adversely affect treaty resources throughout the area.[53] NewRange Copper Nickel could still request a new wetlands permit or challenge the decision, placing Fond du Lac's resources at risk again.[54]

The Resolution, Rosemont/Copper World, Back 40, and NewRange Copper mines demonstrate some of the effects that copper mining has on Indigenous communities without federal government subsidies. Copper mines threaten cultural resources, destroy ancestral lands, and pollute waters that serve essential purposes for tribes. Given the proximity of most copper deposits to Native American reservations, Indigenous communities are likely to face disproportionate impacts from future copper mining. DOI and USGS should consider these impacts in their decision to include copper as a critical material subject to tax breaks for mining.

B. Silver

Silver does not meet the statutory standard to be included in the critical mineral list. USGS's own data confirms that silver supply, like that of copper, is stable, diversified, and supported by robust secondary production. The 2025 Methodology Report shows that silver's disruption risk is minimal—with a potential GDP loss of only $36 million—largely due to a scenario in which Mexico stops silver exports to the United States, described as a "low probability (4%) event."[55]

Like copper, listing silver would misallocate federal resources by unlocking Section 48C tax credits for mining and refining projects that are unnecessary to secure supply. We respectfully request that USGS and DOI exclude silver from the 2025 Final List of Critical

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[50] *Id.*at 30.
[51] *Id.* at 4.
[52] *See* Jennifer Bjorhus, *Two new lawsuits say PolyMet permits violate federal laws,* Minnesota Star Tribune (Sept. 11, 2019), *available at* https://www.startribune.com/two-new-lawsuits-say-polymet-permits-violate-federal-laws/559987622/
[53] *See* U.S. Army Corps of Engineers, St. Paul District, *PolyMet Section 404 Permit Application*, *available at* https://www.mvp.usace.army.mil/Missions/Regulatory/PolyMet/
[54] *See* Dan Kraker, "U.S. Army Corps revokes key NorthMet copper nickel mining permit," MPR News (Jun. 6, 2023), *available at* https://www.mprnews.org/story/2023/06/06/us-army-corps-revokes-key-northmet-copper-nickel-mining-permit
[55] *See* U.S. Geological Survey, Methodology and Technical Input (2025), at 13.

Minerals**.**

I. Silver is Not a "Critical Mineral"

Silver is not a "critical material" as defined by the Energy Act of 2020 and should not be included on the "critical mineral" list. As previously described, critical minerals are defined as non-fuel minerals that are vital to the U.S. economy and security but are at risk of supply disruptions. Silver is not at risk of supply disruptions. Indeed, the USGS has consistently concluded that silver does not qualify as a critical mineral because it is predominantly recovered as a byproduct, there is no single point of failure, the supply chain vulnerability is mitigated by domestic production, there is a lack of import dependence, and there exists diverse, secure sources of supply.[56]

1. Silver is abundant

Global silver resources and production are large and geographically diversified. USGS data show large global silver resources and mine output across multiple countries (e.g., Mexico, Peru, China, Poland, Russia), with global production in the tens of thousands of tonnes.[57] Silver production increased by six percent since 2024 compared to 2023, along with an increase in its value (up by 24% mainly because of higher market prices).[58]

Silver mine reserves and resources are found in more than a hundred countries around the world. Some of the largest deposits yet discovered have been in the United States, with Mexico and Canada also holding vast reserves and resources. Silver was mined in at least 76 countries as of 2023.[59] Economically mineable silver reserves were equivalent to more than 23 years of production at current rates as of 2022, according to USGS data.[60]

2. Silver is overwhelmingly produced as a by-product or co-product.

The majority of silver is produced as a byproduct or co-product of other metals, such as gold, copper, lead, and zinc. That said, silver-only mines do exist.

a. In 2022, silver was produced at four silver-only mines in the U.S. — the majority, however, was produced from 31 other mines where it was a byproduct or co-product of mining gold, copper, lead, or zinc. Some examples of mines where

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[56] *See* 2022 Final List of Critical Minerals, 87 Fed. Reg. 10381, 10382 (Feb. 24, 2022) ("USGS 2022 List"); *see also* 2021 Draft List of Critical Minerals, 86 Fed. Reg. 62199, 62202 (Nov. 9, 2021) ("USGS 2021 List").
[57] *See* U.S. Geological Survey, Mineral Commodity Summaries 2025 (ver. 1.2, Mar. 3, 2025), *available at* https://doi.org/10.3133/mcs2025
[58] *Id.*
[59] *See* CPM Group, "Silver's Strength Is That It Is Neither Strategic Nor Critical" (Mar. 14, 2024) at 2, *available at* https://cpmgroup.com/silvers-strength-is-that-it-is-neither-strategic-nor-critical/
[60] *Id.*

silver was a byproduct include four of the top producing silver mines in the United States.[61]

1) Red Dog Operations is one of the world's largest zinc mines, located in northwest Alaska, near Kotzebue. In addition to producing zinc along with copper, cadmium and other metals, Red Dog mine produced an estimated 6.29 million ounces of silver in 2023.

2) The Coeur Rochester mine is an open pit, heap leach silver-gold operation, located in Nevada. It produced an estimated 4 million ounces of silver in 2023.

3) Lucky Friday is a deep underground silver, lead, and zinc mine located in the Coeur d'Alene Mining District in northern Idaho. The mine produced an estimated 3.09 million ounces of silver in 2023.

4) Owned by Rio Tinto, the Kennecott Copper Project is a surface and underground integrated copper mine located in Utah. It produced an estimated 1.62 million ounces of silver in 2023.

b. Globally, only ~25–30% of silver comes from primary silver mines; the majority comes from other metals' supply chains.[62]

c. Measured and indicated resources totaled 3.2 million ounces of gold, 196.3 million ounces of silver, 1,517 million pounds of zinc and 768.7 million pounds of lead, reflecting year-over-year increases for all metals driven by additions at Palmarejo, Rochester, Wharf and Silvertip mines. [63] At the Coeur Rochester mine alone, reserves in 2023 were ~ 192.9 million ounces of silver and 1.2 million ounces of gold.[64]

d. Coeur Mining reported for full-year 2024 production of 11.4 million ounces of silver and 341,582 ounces of gold, with Rochester's silver and gold production increasing by 34% and 63%, respectively.[65]

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[61] *See* Mining Technology, "The five largest silver mines in operation in US," (June 18, 2024), *available at* https://www.mining-technology.com/marketdata/five-largest-silver-mines-the-us/?cf-view

[62] *See* U.S. Geological Survey, Mineral Commodity Summaries 2024 (Mar. 5, 2024), *available at* https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-silver.pdf

[63] *See* Coeur Mining, Inc., Coeur Reports Year-End 2023 Mineral Reserves and Resources (Feb. 20, 2024), *available at* https://www.coeur.com/investors/news/news-details/2024/Coeur-Reports-Year-End-2023-Mineral-Reserves-and-Resources/

[64] *Id.*

[65] *See* Coeur Mining, Inc., Coeur Reports Fourth Quarter and Full-Year 2024 Results (Feb. 19, 2025), *available at* https://www.coeur.com/investors/news/news-details/2025/Coeur-Reports-Fourth-Quarter-and-Full-Year-2024-Results/

3. Gross Domestic Product (GDP) modeling should consider silver's "bonus" from gold mining.

When gold mines in Nevada, for example, grow or produce more, they also produce silver as a byproduct. USGS's calculations failed to take this into account and should. Even if USGS doesn't explicitly count silver in its economic calculations, silver benefits from the same mine infrastructure, workers, and equipment.[66] So, if imports of silver from Mexico were cut off, the U.S. would not lose all silver supply or economic value— silver would still come from domestic gold mines. That was not accounted for in USGS' calculations and thus, they are flawed.

4. Significant growth in recycling of silver reduces supply risk.

According to the Silver Institute, recycling made up about 18% of total global silver supply in 2023, which equals nearly 179 million ounces.[67] That share grew compared with 2022, largely because more silver was recovered from industrial processes, especially chemical catalysts.[68]

Almost 1/5 of the silver we use already comes from recycled sources.[69] Even if there were some disruptions in mining, a large supply cushion already exists. With silver, a large portion of supply can be met through recycling, making the market less vulnerable to shocks in mining output.[70]

Additionally, recycling is growing year after year, so the cushion is increasing, rather than decreasing.[71] In fact, the Silver Institute found that recycling of silver rose 6% in 2024, reaching 193.9 million ounces – a 12-year high.[72] The biggest gains were from industrial scrap, especially from processing spent ethylene oxide (EO) catalysts.[73] Silverware recycling also rose by 11% driven by higher silver prices.[74]

In sum, recycling acts like a safety net: even if mining slows down, the world can still access a steady flow of silver from recovered materials thus, limiting supply risk.

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[66] *See* USGS, Mineral Commodity Summaries 2025.
[67] *See* Silver Institute, Scrap Supply, *available at* https://silverinstitute.org/scrap-supply/
[68] *See* Silver Institute, World Silver Survey 2022, *available at* https://www.silverinstitute.org/wp-content/uploads/2022/04/World-Silver-Survey-2022.pdf; *see also* Silver Institute, *World Silver Survey 2023*, *available at* https://www.silverinstitute.org/wp-content/uploads/2023/04/World-Silver-Survey-2023.pdf
[69] See Silver Institute, *Scrap Supply*.
[70] *Id.*
[71] *See* Silver Institute, *World Silver Survey 2025*, *available at* https://silverinstitute.org/wp-content/uploads/2025/04/World_Silver_Survey-2025.pdf
[72] *Id.*
[73] *See* Silver Institute, *Scrap Supply*.
[74] See Silver Institute, *World Silver Survey 2023*.

5. Silver's demand depends on technology, which is changing.

A large demand for silver comes from industries like solar panels, electronics, and chemical processing.[75] But these demands aren't fixed – they change as technology changes. Thus, while silver is useful, its importance isn't locked in forever. Markets and innovation can reduce much of the silver we rely on, which means it doesn't need to be treated like a permanently "critical" mineral. According to the NREL Status Report on Emerging Photovoltaics (2023), new solar technologies are being developed that reduce the amount of silver needed per panel or replace silver altogether in parts of panels.[76] Silver demand is not fixed, and technological innovation is an important factor in limiting supply risk.

II. USGS's GDP Modeling is Flawed

As previously stated, silver is produced primarily as a byproduct of other mining products such as gold. The USGS did not recommend the inclusion of gold primarily because its model estimates that a gold supply chain disruption (from Canada) would result in GDP growth due to increased domestic gold mining. Because of this close relationship, USGS should have included a portion of gold's GDP growth in its model for silver.

For silver, USGS models the decline in annual GDP if 1) Mexico imposed an instant, total export ban to the US; 2) enforced the ban extra-territorially, so that no country importing Mexican silver could re-export silver to the United States; 3) multiplied the GDP drop by a 4% likelihood Mexico would impose the ban; and 4) then ran statistical optimizations to minimize outliers. That then equated to a $36 million annual GDP decline mostly from a Mexican silver ban. Silver's $36 million expected impact is more than 100 times smaller than the multi-billion-dollar risks modeled for rare earths and gallium. USGS, however, fails to recognize this disparity along with the extreme unlikelihood of the event. And it fails to account for the GDP of gold, of which its production is closely aligned with that of silver.

As previously mentioned, USGS applied a uniform cutoff of $2 million decline in GDP to recommend additions to the critical minerals list. Because silver's $36 million decline exceeded that threshold, silver was recommended. The Energy Act requires that the mineral supply disruption have "significant consequences to the economic or national security of the United States."[77] As stated in relation to copper, USGS itself acknowledges that agencies may apply a higher cutoff, such as $100 million, to better align with the statute. Applying that more appropriate threshold, silver would not qualify. In addition, had USGS attributed some of gold's GDP growth to silver, that may have offset a portion of silver's GDP decline.

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[75] *See* Silver Institute, *Silver Industrial Demand Reached a Record 680.5 Moz in 2024*, *available at* https://silverinstitute.org/silver-industrial-demand-reached-a-record-680-5-moz-in-2024/

[76] *See* Journal of Photonics for Energy. Vol 13, Issue 4, 042301 (December 2023) *available at* https://www.spiedigitallibrary.org/journals/journal-of-photonics-for-energy/volume-13/issue-04/042301/Status-report-on-emerging-photovoltaics/10.1117/1.JPE.13.042301.full

[77] 30 U.S.C. § 1606(c)(4)(A).

Moreover, as previously mentioned, the 2025 USGS methodology report identifies a second criterion for inclusion on the List of Critical Minerals (LCM): where there is only a single domestic producer of a mineral commodity. The U.S. already has four operating silver mines, and 31 other mines where silver is a byproduct. This criterion does not apply to silver.

Silver should be excluded from the critical minerals list. In contrast to the requirements that the supply chain be limited, unreliable or at risk of disruption, it is in fact the opposite. Silver is widely available across the globe (including the United States), a byproduct that is closely aligned with metals such as gold and copper, and is at remote risk for a supply chain disruption based on a flawed model.

C. Uranium

I. Uranium Must Be Excluded from the Final Critical Minerals List.

Designation of uranium as a "critical mineral" is not permitted by the statutory definition of that term. Under Section 7002(a)(3)(B) of the Energy Act, the term "critical mineral" does not include "fuel minerals."[78] And other federal laws and past USGS precedent confirm that uranium is a fuel mineral.

1. Congress has defined the term "mineral fuel" to include uranium, and uranium has consistently been treated as a "mineral fuel" or "fuel mineral" under other congressional enactments in the atomic era.

Although the Energy Act of 2020 does not list substances that qualify as "fuel minerals," other federal laws demonstrate that Congress has consistently treated uranium as a fuel mineral, at least since the civilian nuclear-power industry became established in the 1960s. The foremost example is the Mining and Minerals Policy Act of 1970, which established a national mining policy, and explicitly designated uranium as a "mineral fuel."[79]

Congress's creation of the Department of Energy also demonstrates that its use of the term "fuel mineral" includes uranium. In 1976, Congress mandated the creation of the National Energy Information System, requiring that system to contain information about, among other things, ownership, control, production, distribution, marketing, and consumption of "mineral fuels."[80] The next year, Congress established the Energy Information Administration housed within the newly created Department of Energy, and Congress assigned to the EIA all responsibility for the National Energy Information System.[81] Congress simultaneously

[78] *See* Pub. L. No. 116-260 § 7002(a)(3)(B) (Dec. 27, 2020), codified at 30 U.S.C. § 1606(a)(3)(B).
[79] *See* 30 U.S.C. § 21a.
[80] *See* Pub. L. No. 94-385 § 142 (Aug. 14, 1976) codified at 15 U.S.C. § 790a.
[81] *See* Pub. L. No. 95-91 § 205(c) (Aug. 4, 1977).

transferred responsibility for fuel supply-and-demand analysis and research and development relating to "solid fuel minerals," from the U.S. Bureau of Mines to DOE.[82]

When this reorganization happened, the Bureau of Mines removed uranium (along with other fuel minerals) from the domestic volumes of its long-running minerals yearbooks publication series,[83] and DOE (through the Energy Information Administration) began publishing data on uranium and nuclear power, confirming a common understanding that Congress's use of the terms "mineral fuels" and "fuel minerals" included uranium.[84]

True enough, a few isolated tables and references in the Bureau of Mines' reports after 1977 described uranium as a nonfuel mineral, but by 1980, those misnomers appear to have stopped or occurred rarely, and uranium references have been made predominantly in discussions about other minerals (like vanadium).[85]

It is also true that older Bureau of Mines reports do not list uranium as a fuel mineral. But that erstwhile practice—and its general abandonment—align with the historical shift in uranium's use during the twentieth century: from an almost exclusive military purpose in the 1940s and 1950s, toward the predominant use in later decades as a source of civilian power. That history also explains why older references to the term "mineral fuel" in the statutes at large cannot shed light on the meaning of that term as Congress used it in the Energy Act of 2020. The Federal Mines Safety Act of 1910, for example, allocated responsibility to the Bureau of Mines to investigate and analyze "mineral fuel substances."[86] And there's no question that Congress could not have contemplated uranium as falling within the meaning of the term "mineral fuels" in 1910, given that uranium was not sought for use as a nuclear fuel until at least the 1930s.

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[82] *See* Pub. L. No. 95-91 (Aug. 4, 1977) codified at 42 U.S.C. § 7152(d). In 1982, Congress transferred back to the DOI the responsibility for research and development relating to "solid fuel minerals," Pub. L. No. 97-257 (Sep. 10, 1982), and this responsibility was returned to the U.S. Bureau of Mines. *See* Secretarial Order. No. 3085 (Sep. 29, 1982). We have unearthed no evidence that uranium was treated any differently than other fuel minerals as a result of these transfers of authority.

[83] *Compare U.S. Geological Survey, Bureau of Mines Minerals Yearbook 1976, Vol. I: Metals, Minerals, and Fuels* (1976), *available at* https://www.usgs.gov/centers/national-minerals-information-center/bureau-mines-minerals-yearbook-1932-1993, with *U.S. Geological Survey, Bureau of Mines Minerals Yearbook 1977, Vol. I: Metals and Minerals* (1977), *available at* https://www.usgs.gov/centers/national-minerals-information-center/bureau-mines-minerals-yearbook-1932-1993

[84] *See, e.g.*, U.S. Energy Information Administration, *Annual Report to Congress: Vol. II 1977,* 194–203 (Feb. 1978), U.S. Energy Information Administration, *Annual Report to Congress: Vol. III 1977*, 112–115 (Feb. 1978).

[85] *See, e.g.*, U.S. Geological Survey, *Bureau of Mines Minerals Yearbook 1980, Vol. II, Area Reports: Domestic* (1982) 109–110, 374–75, 529, 534–36 *available at* https://www.usgs.gov/centers/national-minerals-information-center/bureau-mines-minerals-yearbook-1932-1993

[86] *See* Pub. L. No. 61-179 § 4 (May 16, 1910).

Considering that history, Congress's use of the terms "mineral fuel" and "fuel minerals" has included uranium without exception since it was adopted as a source of domestic power. And that interpretation binds the USGS here.

2. USGS precedent in the atomic era overwhelmingly characterizes uranium as a fuel mineral.

Past precedent confirms that, with few exceptions, uranium also has been characterized as a fuel mineral by USGS since the adoption of nuclear energy as a domestic power source. The most salient precedent is USGS's conclusion, just three years ago, that uranium is a "fuel mineral" under the Energy Act when USGS first developed a critical-minerals list in response to the Act's codification.[87] The next year, the Department of Energy concurred: When designating "critical materials" under the Energy Act—a statutory term that also includes "non-fuel minerals"—DOE also omitted uranium because it is a "fuel mineral," rejecting contrary arguments from commenters.[88]

USGS's major, recurring publications similarly demonstrate its long-standing practice of treating uranium as a fuel mineral. The annual mineral commodity summaries for "nonfuel" minerals, which USGS has published since 1996 after inheriting that responsibility from the defunct U.S. Bureau of Mines, do not include a discussion of uranium, an obvious signal that it is a fuel mineral.[89] Uranium is treated similarly in USGS's minerals yearbooks, consistent with the Bureau of Mines' practices after its responsibility for reporting on "fuel minerals" was eliminated in the late 1970s. USGS's metals and minerals reports covering "nonfuel minerals" do not list uranium as one of the covered minerals.[90] The domestic-area reports sometimes discuss or mention uranium deposits or uranium mining, but in nearly all cases label uranium as a fuel mineral or omit any statement about whether it is a fuel or nonfuel mineral.[91] No report appears to take the position that uranium is a nonfuel mineral.[92]

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[87] *See 2022 Final List of Critical Minerals*, 87 Fed. Reg. 10,381, 10,381–82 (Feb. 24, 2022) ("The Energy Act excludes 'fuel minerals' from the definition of critical minerals, and uranium is used as a fuel: While uranium has important non-fuel uses, it is a major fuel commodity in the United States.").
[88] *See* 88 Fed. Reg. 51,792, 51,792-93 (Aug. 4, 2023).
[89] *See, e.g.*, U.S. Geological Survey, *Mineral Commodity Summaries1996* (Jan. 1996), *available at* https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/mcs-1996ocr.pdf. All subsequent summaries (1996-present) are *available at* https://www.usgs.gov/centers/national-minerals-information-center/mineral-commodity-summaries
[90] *See, e.g.*, U.S. Geological Survey, *Minerals Yearbook – Metals and Minerals* (omitting uranium from the list of "nonfuel minerals"), *available at* https://www.usgs.gov/centers/national-minerals-information-center/minerals-yearbook-metals-and-minerals; *see also* U.S. Geological Survey, *Bureau of Mines Minerals Yearbook 1994: Statistical Summary* (omitting uranium from lists of nonfuel minerals), *available at* https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/mineral-pubs/statistical-summary/871494.pdf Subsequent statistical summaries are the same. *See* U.S. Geological Survey *Statistical Summary, available at* https://www.usgs.gov/centers/national-minerals-information-center/statistical-summary
[91] *See* U.S. Geological Survey, *Minerals Yearbook – Vol II: Domestic available at* https://www.usgs.gov/centers/national-minerals-information-center/state-minerals-statistics-and-information
[92] *Id.*

The only notable exception that we have identified in how USGS has characterized uranium is its 2018 decision to list uranium as a "critical mineral" in response to Executive Order 13,817.[93] That executive order defined the term "critical mineral" to be confined to "non-fuel minerals."[94] The USGS nonetheless listed uranium as a critical mineral, reasoning that "uranium, while primarily known as a fuel mineral, also has important non-fuel uses, and otherwise meets the criteria for inclusion."[95]

The problem with that line of reasoning is that it creates an exception that would swallow the rule. All fuel minerals have non-fuel uses that federal regulators could characterize as important. Coal is used to make steel, cement, and other commercial products.[96] Petroleum is used to make plastics.[97] Natural gas is used in fertilizers.[98]

Congress's decision to preclude the listing of "fuel minerals" as critical minerals would be meaningless if the statute is interpreted to allow uranium (or any other fuel mineral) to be listed as a critical mineral solely because it has non-fuel uses. That would run afoul of the canon against surplusage.[99] Yet under U.S. Supreme Court precedent, the Energy Act of 2020 must be given its "best reading."[100] And for the reasons set out above, the one Congress plainly legislated is that uranium is a "fuel mineral" and cannot be designated a "critical mineral."

D. Lead

I. Lead Is Not a "Critical Mineral"

Lead does not meet the critical mineral standard in the Energy Act. U.S. supply is secure and diversified: five primary mines in Missouri, along with byproduct output from zinc mines in Alaska and silver mines in Idaho, provide steady domestic production. Secondary production from recycled lead-acid batteries supplied about 70% of U.S. demand in 2024, while imports—about 420,000 tons—came mainly from allies Canada, Korea, Mexico, and Australia. As a result, net import reliance was only 28% in 2024, down from 38% in 2022 and 33% in

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[93] *See Final List of Critical Minerals 2018*, 83 Fed. Reg. 23,295 (May 18, 2018), *available at* https://www.govinfo.gov/content/pkg/FR-2018-05-18/pdf/FR-2018-05-18.pdf

[94] *See* Exec. Order No. 13817, *A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals*, 82 Fed. Reg. 60,835 § 2 (Dec. 20, 2017).

[95] *See Final List of Critical Minerals 2018*, 83 Fed. Reg. 23,295, 23,296 (May 18, 2018).

[96] *See* U.S. Geological Survey *Coal - A Complex Natural Resource*, 7–8 (Apr. 5, 2002) *available at* https://pubs.usgs.gov/circ/c1143/c1143.pdf

[97] *See* U.S. Dep't of Energy, *U.S. Oil and Natural Gas: Providing Energy Security and Supporting Our Quality of Life*,(Sep. 2020) *available at* https://www.energy.gov/sites/prod/files/2020/10/f79/Natural%20Gas%20Benefits%20Report.pdf

[98] *Id*.

[99] *See TRW Inc. v. Andrews*, 534 U.S. 19, 31 (2001) ("It is a cardinal principle of statutory construction that a statute ought, upon the whole, to be so construed that, if it can be prevented, no clause, sentence, or word shall be superfluous, void, or insignificant.").

[100] *See Loper Bright Enterprises v. Raimondo*, 603 U.S. 369, 400 (2024) ("It … makes no sense to speak of a 'permissible' interpretation that is not the one the court, after applying all relevant interpretive tools, concludes is best. In the business of statutory interpretation, if it is not the best, it is not permissible.").

2023.[101] These conditions demonstrate that removing lead from supply would not create "significant consequences" for U.S. security, and including it on the Critical Minerals List would undermine the list's integrity.

The USGS's 2025 methodology report further confirms this conclusion. A disruption of refined lead imports would yield an expected GDP loss of only $7 million—a negligible figure compared to the multi-billion-dollar risks modeled for rare earth elements and gallium.[102] This minimal risk reflects the fact that most demand is already met domestically through recycling and that the remaining imports are diversified across reliable suppliers. As mentioned throughout this letter, although the USGS applied a uniform $2 million cutoff for recommending additions, the Energy Act requires a showing of "significant consequences." USGS itself has acknowledged that a higher threshold, such as $100 million, would better align with the statute's intent.[103] By that more appropriate standard, lead does not qualify. Listing it would also misallocate federal subsidies, such as Section 48C tax credits, toward additional mining projects. Because the United States has not operated a primary lead smelter since 2013, nearly all lead concentrates are exported for foreign refining; subsidizing new concentrate output would not improve U.S. supply security but would divert federal resources from genuinely critical minerals.

Finally, lead mining has left a legacy of disproportionate harm in Indigenous communities. The Red Dog Mine in northwest Alaska, one of the world's largest zinc-lead operations, illustrates these risks. In 2006, the U.S. District Court for Alaska found that Teck Cominco Alaska had violated the Clean Water Act (CWA) more than 600 times at Red Dog, a case brought by downstream residents of Kivalina.[104] Two years later, a federal consent decree required Teck to construct a marine outfall pipeline, provide reverse-osmosis units for Kivalina, and pay millions in penalties and fees.[105] In August 2024, the Environmental Protection Agency (EPA) further fined Teck $429,794 for hazardous waste violations at Red Dog under the Resource Conservation and Recovery Act (RCRA). These repeated enforcement actions underscore the compliance risks and community harms associated with lead mining in the United States. Far from bolstering national security, listing lead would channel federal support into projects that deepen environmental injustice and public health burdens for Indigenous Peoples.

E. Potash

I. Potash Must Be Excluded from the Final Critical-Minerals List.

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[101] *See* USGS, *Mineral Commodity Summaries 2025: Lead* 106–07.
[102] *See* U.S. Geological Survey, *Methodology and Technical Input* (2025).
[103] *Id.* at 22.
[104] *See* Inst. for Agric. & Trade Policy, *World's Largest Lead and Zinc Mine, Red Dog Mine, Found in Violation of Clean Water Act* (Nov. 4, 2006), *available at* https://www.iatp.org/news/worlds-largest-lead-and-zinc-mine-red-dog-mine-found-in-violation-of-clean-water-act
[105] *See Consent Decree*, *Adams v. Teck Cominco Alaska Inc.*, No. A:04-cv-0049 (JWS), at 4–8 (D. Alaska Oct. 23, 2008).

The term *potash* refers to mined compounds of potassium and potassium-bearing materials that are used primarily in agriculture as a component of some fertilizers.[106] Mining potash is an intensive process, one that disrupts large swaths of land and often causes significant groundwater contamination and destruction of fragile wetland ecosystems.[107] Even without a critical mineral designation, potash production in the United States has steadily grown over the last decade.[108]

Yet at the same time, there has been significant and systematic pressure from industry and congressional allies to obtain a critical mineral designation for this widely available mineral to speed development of unsustainable and destructive mining projects.[109] This pressure does not change the fact that this widely abundant mineral does not meet the definition in the Energy Act of 2020, in that it is not "vulnerable to disruption".[110] While potash may be important to the production of *some* fertilizers, none of the information presented by USGS's faulty modelling rebut the fact that it is not critical, that it does not have a single point of failure, and that it is widely abundant in the United States.

II. Potash is Domestically Abundant.

In the United States, an estimated 7 billion tons of potash are widely available, with over 400,000 tons mined each year, over a fourth of which are exported to Brazil, Pakistan, and Vietnam.[111] Most potash is produced in New Mexico, which currently produces half of the country's potash, though significant quantities of potash are found throughout the United States.[112]

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[106] *See* Stephen M. Jasinski, *Potash*, in *Mineral Commodity Summaries 2024*, U.S. Geological Survey, *available at* https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-potash.pdf

[107] *See Potash*, in *Mineral Commodity Summaries 2022*, U.S. Geological Survey, *available at* https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-potash.pdf; *see also* New Mexico Environment Department, *Environment Department Reviewing Abatement Plan to Investigate Groundwater Contamination from Potash Mine Discharges* (Oct. 20, 2022), *available at* https://www.env.nm.gov/wp-content/uploads/2022/10/2022-10-20-COMMS-Environment-Department-reviewing-abatement-plan-to-investigate-groundwater-contamination-from-potash-mine-discharges-Final.pdf

[108] *See* Chris Dyer, *US Potash Production to Double by 2022*, The Freedonia Group (June 20, 2018), *available at* https://www.freedoniagroup.com/blog/us-potash-production-to-double-by-2022

[109] *See* Congressional Letter from 42 Members of Congress to Secretary Doug Burgum, U.S. Dep't of the Interior (Apr. 3, 2025), *available at* https://www.tfi.org/wp-content/uploads/2025/04/Congressional-letter-2025.04.03-Department-of-Interior-on-Potash-and-Phosphate.pdf

[110] 30 U.S.C. 1606(4)(A)(ii).

[111] *See Jasinski, Potash*; *see also* U.S. Geological Survey, *A Review of Critical Minerals in the United States* (2018), *available at* https://pubs.usgs.gov/of/2018/1021/ofr20181021.pdf

[112] *See* Bureau of Land Management, *New Mexico: Leasable Minerals: Potash*, *available at* https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals/about/new-mexico/leasable-minerals/potash

In 2025 alone, two new potash mines were fast-tracked in Michigan and Utah, which would extract approximately 800,000 tons[113] and 300,000 tons[114] respectively, nearly tripling United States domestic potash production. In Michigan, subsequent phases of the project are expected to produce 4 million tons annually, or ten times the amount of current production.[115] One single company alone–Sage Potash–holds mineral rights for 2 billion metric tons of potash.[116] Additionally, significant, untouched deposits of potash exist in North Dakota and Montana that are in fact extensions of the potash deposits of Saskatchewan, Canada.[117] All of that to emphasize that while potash production in the United States may be eclipsed by phosphate production–another fertilizer component –it is by no means as small as USGS and this administration represent.

Furthermore, USGS failed to consider new technologies developed to recycle domestic potash and account for new sources of production. For example, recent innovations have precipitated recycling potassium-bearing salts from wastewater rich in potassium.[118] This method is shown to result in high recovery of potash from wastewater and could potentially displace mined imports while reducing environmental contamination of wastewater streams.

III. Potash is Imported from Diverse Sources and Does Not Have a Single Point of Failure.

The USGS methodology has a unilateral focus on Canada as a "single point of failure" in the potash supply chain. While Canada is a significant exporter of potash, the USGS ignores that imports from diverse sources are increasing. Imports from Israel–the sixth largest producer of potash–have increased significantly over two short years, from USGS's 2022 report to its 2024 report.[119] Both Israel and Jordan recover potash from the Dead Sea and have steadily increased

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[113] *See* Permitting Council, *Fast-41 Transparency Projects: Michigan Potash*, *available at* https://www.permits.performance.gov/permitting-project/fast-41-transparency-projects/michigan-potash; *see also* Nolan Hicks, *Trump Administration Fast-Tracks Michigan Potash Project Mine*, *Detroit Free Press* (Apr. 25, 2025), *available at* https://www.freep.com/story/news/local/michigan/2025/04/25/trump-administration-fast-track-michigan-potash-project-mine/83269034007/

[114] *See* Argus Media, *Utah Potash Project Gets $14mn USDA Grant*, (Oct. 9, 2025) *available at* https://www.argusmedia.com/ja/news-and-insights/latest-market-news/2730484-utah-potash-project-gets-14mn-usda-grant

[115] *See* Argus Media, *TFI Applauds Addition of Potash as U.S. Critical Mineral*, (Mar. 21, 2025), *available at* https://www.argusmedia.com/en/news-and-insights/latest-market-news/2670630-tfi-applauds-addition-of-potash-as-us-critical-mineral

[116] *See* Sage Potash Corp., *Investor Presentation* (May 20, 2025), *available at* https://sagepotash.com/wp-content/uploads/2025/05/SagePotash_ID_2025-05-20_public.pdf

[117] *See* Sidney B. Anderson & Robert P. Swinehart, *Potash Salts in the Williston Basin, U.S.A.*, N.D. Geol. Survey Rep. of Investigation No. 68 (1979), *available at* https://www.dmr.nd.gov/ndgs/documents/Publication_List/pdf/RISeries/RI-68%20Potash.pdf

[118] *See* I. Khatri et al., *Potash Recovery from Synthetic Potassium-Rich Wastewater Using Tartaric Acid as a Recyclable Precipitant*, 10 *Heliyon* e06942 (2022).

[119] *See* U.S. Geological Survey, *Potash*, in *Mineral Commodity Summaries 2025* (Jan. 2025), *available at* https://pubs.usgs.gov/periodicals/mcs2025/mcs2025-potash.pdf; *see also* U.S. Geological Survey, *Potash*, in *Mineral Commodity Summaries 2023* (Feb. 2023), *available at* https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-potash.pdf

production to record highs in 2020.[120] And while Israel has a trade agreement with the United States, it has further committed to eliminating trade barriers between the United States in response to new tariffs.[121]

Additionally, the USGS fails to incorporate the potash minerals the United States is set to acquire per the terms of the Ukraine-United States Mineral Resource Agreement.[122] As part of the agreement, the United States has priority access related to the extraction of "Natural Resource Relevant Assets," which are defined under the agreement to include potash.[123] USGS itself has previously assessed that an estimated 4.3 billion tons of potash resources are available within Ukraine and potentially available to the United States as part of this agreement.[124] However, USGS's unilateral focus on Canada misses exactly the type of scenarios the previous methodology that excluded potash was designed to account for: the role of geo-political negotiation strategy to create significant potential imports of potash.

IV. Economic Assessment Arbitrarily Mischaracterizes the U.S. Trade with Canada.

Canada and the United States share a border and as such, have enjoyed a historically strong trade relationship.[125] However, the USGS, in reliance on its economic assessment, reports that "Canada is the only country for which all commodities receive very high probabilities of trade barrier implementation."[126] USGS sought to "quantify[] the probability of trade barriers being imposed on mineral commodities" and clarified that trade barriers meant a scenario where the "partner country were completely restricted for an entire year"[127] USGS then postulated an 11% chance that Canada imposes a worst-case scenario total export ban on minerals to the United States, even though Canada has never imposed such a condition on any mineral, material, or product exported to the United States. Even with significant and arbitrary tariffs imposed on many Canadian products, tariffs on potash were specifically reduced via executive order.[128] This is exactly why USGS has previously testified that "potash imports" are sourced from "reliable

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[120] *See* Philip A. Szczesniak, *The Mineral Industry of Israel in 2020–2021*, U.S. Geological Survey, *Minerals Yearbook*, vol. 3, Area Reports—International, Advance Release (Jan. 2025), *available at* https://pubs.usgs.gov/myb/vol3/2020-21/myb3-2020-21-israel.pdf

[121] *See* Politico, *Israel Vows to Slash Deficit, Trade Barriers with U.S.*, Apr. 7, 2025, *available at* https://www.politico.com/news/2025/04/07/israel-vows-to-slash-deficit-trade-barriers-with-us-00277256

[122] *See* Agreement between the Government of Ukraine and the Government of the United States of America on the Reconstruction of Ukraine, art. 1, May 2025, *available at* https://www.kmu.gov.ua/storage/app/uploads/public/681/33c/e8f/68133ce8f2e82842702204.pdf

[123] *Id.* at 10.

[124] *See* U.S. Geological Survey, *USGS Assesses Billions of Potential Potash Resources in Ukraine*, Aug. 3, 2017, *available at* https://www.usgs.gov/news/technical-announcement/usgs-assesses-billions-potential-potash-resources-ukraine

[125] *See* Julio Mejía & Elmira Aliakbari, *Annual Survey of Mining Companies, 2024*, Fraser Inst. (July 2025), *available at* https://www.fraserinstitute.org/sites/default/files/2025-07/annual-survey-of-mining-companies-2024_0.pdf

[126] *See* John Ryter & Nedal Nassar, *Estimating the Probability of Export Restrictions to Inform Mineral Criticality*, SSRN 38 (Aug. 8, 2025), *available at* https://doi.org/10.2139/ssrn.5388963

[127] *See* U.S. Geological Survey, *Methodology and Technical Input* (2025), at 3. See USGS 2025 draft Methodology https://pubs.usgs.gov/of/2025/1047/ofr20251047.pdf (at 3)

[128] *Id.* See Nassar et al., Methodology and Technical Input, at 3.

trading partners" including Canada, and why it has previously declined to include potash on its critical mineral list.[129]

An 11% chance of disruption is simply unjustifiable, as is a 1.1% chance of disruption that USGS predicts will accompany a loss of 42 million in GDP.[130] Nor is a $2-million GDP disruption above the "moderate" risk scenario for an industry that produces $140 billion dollars in value.[131] Ultimately, USGS argues that a 0.001% reduction in value is enough to bypass the congressional intent of the Energy Act and arbitrarily designate potash as a critical mineral. It is wrong. Potash should be excluded as a critical mineral.

Conclusion

Respectfully, the undersigned organizations representing voices directly impacted by mining and the policy decisions flowing from listing copper, silver, uranium, lead, and potash on the LCM, request that the aforementioned minerals be removed from the LCM as they do not meet the requirements of the Energy Act.

Alaska Community Action on Toxics
Alaska Wilderness League
Black Hills Clean Water Alliance
Center for Biological Diversity
Citizens for a Safe & Clean Lake Superior
Citizens to Protect Smith Valley (NV)
Colorado Citizens Against Toxic Waste (CCAT)
Concerned Citizens Retired Miners Coalition of Superior, Arizona
Earthjustice Action
Earthworks
Friends of the Kalmiopsis
Great Bear Foundation
Imperial Valley Equity and Justice
Information Network for Responsible Mining

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[129] *See* Dr. Colin Williams, *Statement of Dr. Colin Williams, Mineral Resources Program Coordinator, U.S. Geological Survey*, before the House Committee on Natural Resources Subcommittee on Energy and Mineral Resources, at the hearing considering H.R. 6395 Recognizing the Importance of Critical Minerals in Healthcare Act, H.R. 8450 Phosphate and Potash Protection Act of 2024, and H.R. 8446 to include critical materials in the definition of critical mineral (June 4, 2024), *available at* https://www.usgs.gov/congressional/statement-dr-colin-williams-mineral-resources-program-coordinator-us-geological

[130] *See* U.S. Geological Survey, *Methodology and Technical Input* (2025), at 23See USGS 2025 Critical Mineral Methodology at 23.

[131] *See* The Fertilizer Institute, *TFI Study Highlights Fertilizer Industry's $140 Billion Impact and Global Trade Ties* (Dec. 12, 2024), *available at* https://www.tfi.org/media-center/2024/12/12/tfi-study-highlights-fertilizer-industrys-140-billion-impact-and-global-trade-ties/

Lower San Pedro Watershed Alliance
Malach Consulting
Minnesota Center for Environmental Advocacy
Montana Environmental Information Center
Multicultural Alliance for a Safe Environment
National Parks Conservation Association
New Mexico Environmental Law Center
Northeastern Minnesotans for Wilderness
Norton Bay Watershed Council
Patagonia Area Resource Alliance
Sacred Kigluait
San Carlos Apache Tribe
Save Our Sky Blue Waters
Save Lake Superior Association
Save Our Domes
Save the Scenic Santa Ritas Association
The Grand Canyon Trust
The Healthy Environmental Alliance of Utah (HEAL Utah)
Trustees for Alaska
WaterLegacy
Wildflower grp