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**Pingry affirms**

**America’s plan to eliminate Russian uranium imports by 2028 is causing uranium shortages**

**McFall ‘25** [Caitlin McFall (Caitlin McFall is a Reporter at Fox Business), 3-8-2025, “US eyes dangerous gap in nuclear fuel supplies in major threat to energy, national security”, Fox Business, <https://www.foxbusiness.com/energy/us-eyes-dangerous-gap-nuclear-fuel-supplies-major-threat-energy-national-security> DOA 3/27/25] // SH

The U.S. is facing a dangerous gap in its ability to access nuclear fuel and stares down a potential supply chain shortage in enriched uranium — which is vital for America's energy and national security. The U.S. relies almost entirely on foreign exports, including from Russia, for its nuclear fuel needs — **a factor that has put the U.S. in even greater jeopardy after Washington agreed to cut all uranium imports from Russia by 2028.**  But there’s a glaring problem with this move — **there is not enough enriched uranium in the world to make up for the amount of exports the U.S. relies on from Russia**, as well as the import cuts made by the European Union following Russia's invasion of Ukraine. "The whole world is dependent on Russia," Dan Leistikow, Vice President of Corporate Communications with American nuclear power company Centrus, told FOX Business. Leistikow explained that even under the most aggressive timetable to reboot U.S. production of its nuclear energy, it is estimated to take between six and seven years to replace what is imported from Russia — potentially leaving up to a four-year gap where there could be major nuclear fuel shortages. Enriched uranium is used in various vital sectors in the U.S., including as a fuel source for advanced reactors, energy security, providing fuel for the Navy's nuclear needs, as well as maintaining the U.S.' nuclear deterrence. While there are three major producers operating commercial enrichment plants in France, Germany, the Netherlands, the U.K., the U.S., and Russia, **the U.S. only supplies 5% of its domestic needs**, according to the World Nuclear Association. As of 2022, **Russia accounted for** nearly half of the world’s global enrichment capacity, including **20% of the U.S. market**, according to information shared by Centrus with FOX Business.

**Trump’s tariffs on Canada only exacerbate this. Domestic mining will never be enough to make up for these losses**

**Baskaran ‘25** [Gracelin Baskaran (Gracelin Baskaran is director of the Critical Minerals Security Program at the Center for Strategic and International Studies (CSIS). Dr. Baskaran holds a doctorate from the University of Cambridge), 2-5-2025, “Fueling the Future: Recommendations for Strengthening U.S. Uranium Security”, Center for Strategic and International Studies, “Fueling the Future: Recommendations for Strengthening U.S. Uranium Security”, <https://www.csis.org/analysis/fueling-future-recommendations-strengthening-us-uranium-security#:~:text=U.S.%20domestic%20uranium%20mining%20will,uranium%20reserves%20and%20production%20capacity>. DOA 3/27/25] // SH

Tariffs are a bedrock of President Trump’s economic diplomacy tool kit. At a time when China and Russia already account for 62.6 percent of the world’s enrichment capacity, it is particularly important to foster collaborative policies with uranium-rich allies. Not only is **Canada** the second-largest producer and exporter of uranium in the world, behind only Kazakhstan, it **is the single largest supplier of uranium to the United States, providing** about **25 percent of its domestic consumption.** Canada does not enrich its own uranium, but it **provides critical feedstock for the United States** as it builds its own enrichment capabilities. President **Trump’s** announcement that he would impose a **25 percent tariff on** all **Canadian imports will have significant consequences for the United States’ uranium supply. The imposition of tariffs on this uranium** and/or the volatile tariff policies more generally have the potential to **displace Canadian uranium exports to other countries, exacerbating an existing uranium shortage in the United States.** Rather than imposing the proposed tariffs, the United States should enact a preferential supplier trade regime in the nuclear sector with key allies. Preferential trade status for nuclear suppliers in countries like Australia, Canada, France, Japan, and the United Kingdom can strengthen uranium security through trade, rather than weaken supply chains with tariffs. Enhance partnerships with key allies Canada and Australia through a Joint Uranium Supply Chain Partnership Initiative. **U.S. domestic uranium mining will not be enough—the United States sits on a mere 1 percent of the world’s** known **uranium resources.** Canada and Australia are two of the United States’ closest allies, from both economic and defense standpoints, with significant uranium reserves and production capacity. The next administration should deepen cooperation among these allies to advance the development of uranium supply chains for both civilian and defense purposes. A precedent of trade and defense agreements and partnerships already exists among these three nations; take, for example, the Canada-Australia Partnership on Emerging Missile Defence Research, the Quadrilateral Security Dialogue linking the United States and Australia, and the AUKUS agreement linking the United States and Canada. A multilateral joint partnership for uranium production and nuclear capabilities between these three governments and their private industry counterparts holds the potential to strengthen uranium supply chains for allies.

**Thus, because it is impossible for the US to expand nuclear energy through uranium mining, integral fast reactors are the most likely implementation of the resolution. IFR doesn’t require uranium as it recycles nuclear waste from nuclear weapons but requires federal support in order to expand**

**Blees ND** [Tom Blees; ND; president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, considered Russia's equivalent of the Nobel Prize for energy research, and a consultant and advisor on energy technologies on the local, state, national, and international levels; SCGI, “Retaking the Global Lead in Nuclear Technology,” https://www.thesciencecouncil.com/advisors/active-advisers/tom-blees-president/348-retaking-the-global-lead-in-nuclear-technology-2]

By 1994, this team had accomplished what they’d set out to do. The pride in their accomplishment was palpable, for they’d literally solved humanity’s energy problem. The **integral fast reactor (IFR) technology** they’d developed would be able to use **unwanted nuclear weapons** material, **spent** nuclear **fuel** (deplorably tagged with the misnomer “nuclear waste”), and even the vast stockpiles of depleted uranium for fuel, and leave **no long-lived** radioactive byproducts to bedevil future generation. So much potential fuel was already out of the ground that such reactors could power the planet with carbon-free energy for a **thousand years without** any **further mining** or enrichment. It seemed almost too good to be true. Alas, it seems that it was, but not through any fault of the technology. **Pure** misguided **politics killed** and essentially buried the project just as it was in its final demonstration phase, and it languished virtually unknown for over a decade. Russia still had a fast reactor running reliably (as it does to this day), but it lacked the key features that made the IFR so economical and fail-safe. After that brutal disappointment in 1994, groundbreaking nuclear development at the national labs pretty much ground to a halt. But the **need** for **nuclear power** was only **increased**, a realization that dawned on countless millions of people concerned about both climate change and global development. **France** and **Sweden** had demonstrated that entire countries could **convert** their generating systems to nuclear in a mere decade, and soon young nuclear engineering graduates and some of those who’d worked on the older and very promising projects began forming startup companies and creating reactor designs that built upon previous work to create nuclear power plants that promised to be walk-away safe and economical. Unfortunately, by this time the regulatory regime that had developed at the **N**uclear **R**egulatory **C**ommission had morphed into a virtually insurmountable obstacle to evolutionary development. Long-established companies like Westinghouse and GE found themselves having to spend upwards of a billion dollars and waiting a decade or more just to get approval to build reactors that were merely evolutionary modifications of existing light-water reactor concepts. Those (including GE) that wanted to build different types of reactors like the fast reactor patterned after the IFR faced hurdles even greater than that, for such designs had never been approved and it’s doubtful that the NRC even has sufficient qualified personnel to adequately put them through the certification process. Since the national labs are no longer developing new designs and a lot of startups are taking on that role, the **actual building** and deployment is essentially **moribund**. How can a small startup face a billion dollar (or more) hurdle in hopes of selling a product that’s never been built and tested yet? The license and certification system requires approval before anybody can even turn a wrench. The new reactor designs have to be built on paper and in computers. In the old days, at the national labs that gave birth to the nuclear power era, the system could be described as **test-then-license**. Today, that’s been **turned** on its **head**, to a **license-then-test** system. Unless we can turn this system around and return to a test-then-license development model, countries like China and Russia will be the future leaders of nuclear innovation. Those command economies make a test-then-license development model possible, and the advantages to leading the world in this important field are obvious. As they and other nations pass the USA in advanced reactor development, they’ll also be the leading voices when it comes to international oversight regimes that will apply to the dozens of countries where they’ll be selling their reactors. But there is a way to turn the situation around in the USA, and it could happen quickly. It would take very little legislative change, if any. Mostly it requires a different vision, and a recognition that trusting our eminently qualified national laboratories is as critical today as it was at the dawn of the nuclear age. Let’s illustrate such a vision with a hypothetical case. We’ll take a reactor designer called Newclear as an example, though it could be any of a number of reactor startups. Newclear wants to build 100MWe small modular reactors to be clustered as required, with a 10-unit (1000MWe) configuration being most frequently mentioned. How might that be done with a new developmental policy? In this scenario, instead of submitting their design to the NRC for review, Newclear submits it to a **national laboratory**. Idaho National Laboratory is the logical candidate, both for its variety of experts but also for its remoteness and large area, characteristics that led to it being chosen in the first place for nuclear reactor development. Newclear ponies up a certain amount to cover the initial costs to INL, say five million dollars. Their plan is to build a full-scale 100MWe reactor module. INL establishes a**n oversight group (OSG**) that will monitor the project from start to finish. The group brings in nuclear engineers, fuel specialists, chemists, materials scientists, and other needed specialists from outside if there aren’t suitable experts already at INL who are available to lend their talents to the OSG. The group would also include at least one person from the NRC, so that when the design is eventually submitted for licensing they will have been there since Day One and will have a greater understanding of both the reactor design and the process that led to its construction. The first duty of the OSG, which will work closely with Newclear’s people for the duration of the project, is to evaluate the design in detail to determine, primarily, its safety qualifications. The economics of Newclear’s reactor is beside the point as far as INL is concerned. If the prototype reactor can be built and started up safely in the estimation of the OSG, they get a green light. Now the site for the prototype is determined. It will be built along the perimeter of the INL property, within the security zone, but close to the edge since later on it will be excised from the lab’s property if the project is successful (more on that later). Alternatively, a sufficiently large annex just outside INL’s land can be chosen and temporarily incorporated into the lab’s security perimeter for the duration of the project. At this point Newclear gets to work. Access roads are built if necessary, and construction commences, all at the expense of Newclear. The OSG monitors all aspects of the project and evaluates and approves the construction in phases as it progresses. Newclear and the OSG will have already settled upon a stepwise process for construction, each step being approved by the OSG before the next is started. This process continues until the reactor is fully built and ready for pre-fission testing. Such testing and the subsequent fuel loading and stepwise fission testing of the reactor mirrors the development process that served perfectly well through the entire development phase from the dawn of nuclear power until the last major project, the aforementioned Integral Fast Reactor (**IFR**), was terminated in 1994. During all those years of impressive developments, our nation trusted the judgement of its national lab scientists and engineers. The logic of this new approach is to copy and **renew** that **old approach**.

**There is already some governmental interest in integral fast reactors, meaning that more investment is likely under the aff**

**Argonne ‘24** Nuclear Engineering Division Of Argonne National Laboratory, 7-2-2024, "The Integral Fast Reactor (IFR)", No Publication, https://www.ne.anl.gov/About/reactors/integral-fast-reactor.shtml

**The IFR**’s history is embedded in the history of nuclear power in the United States – in its ups and downs, and in the plusses and minuses of nuclear technology itself. Its story starts sixty years ago with the first reactor that ever [produced useful electrical power](https://www.ne.anl.gov/About/reactors/frt.shtml#fragment-4). IFR development began in 1984 with the “advanced reactor development program” that was carried out for a decade at Argonne. The **program** was cancelled in 1994 for non-technical reasons. But it **continues at a low level in studies and programs of the US Department of Energy** and in programs around the world today, due to its ability to provide a truly inexhaustible energy technology for entire nations.

**With that, Contention 1 is The AI Race**

**The US is falling behind**

**Welch**, Carley. “US Falls Further behind in AI Race, Could Make Conflict with China “Unwinnable”: Report.” *Breaking Defense*, 13 June 20**24**, [breakingdefense.com/2024/06/us-falls-further-behind-in-ai-race-could-make-conflict-with-china-unwinnable-report/](http://breakingdefense.com/2024/06/us-falls-further-behind-in-ai-race-could-make-conflict-with-china-unwinnable-report/). Accessed 27 June 2024.//JZ

**The US is quickly falling behind** [**China**](https://breakingdefense.com/tag/china/) **in development of** [**artificial intelligence**](https://breakingdefense.com/tag/artificial-intelligence/)**,** according to a report released today by data analytics firm [Govini](https://breakingdefense.com/tag/govini/), making it nearly impossible for the US to win a war against the PLA if a conflict were to break out between the two global superpowers. Govini releases annual reports measuring the performance of the federal government, looking at 15 top critical national security technologies through the lens of acquisition, procurement, supply chain, foreign influence and adversarial capital and science and technology. Per this year’s report, **the US is under-investing in practical, valuable AI capabilities while also becoming stagnant in the research and development stage. When looking at AI, machine learning and natural language processing,** nine out of the 12 areas studied in the report still had **over 65 percent of their funding tied up in R&D in 2023 — making the minority of these vital programs production-ready.** “Despite the fact that artificial intelligence is an incredibly, highly visible, arguably the most transformational technology that matters in the critical tech competition, not just for the United States, but around the world, the Department of Defense is still primarily attacking this as a research and development effort,” Govini CEO Tara Murphy Dougherty said during a briefing Wednesday. “While there is more to do in R&D for artificial intelligence, it is well past time for DoD to stop treating AI like it is just a science project,” she added. Last year’s report revealed that the **US was at risk of “weakness and dependence” as it falls behind China in the technology race. Similarly, the** [**2022 report**](https://www.govini.com/insights/the-2022-national-security-scorecard-critical-technologies-edition) **found that the US wasn’t investing enough money in AI and ML to win the technological race against China. “If you add in an AI advantage that the United States doesn’t have, it potentially tips the war into unwinnable** [for the US],” Dougherty said of a potential US-China conflict. She added that the ways China can weaponize AI don’t have to be kinetic, it can look like hacking into the US’s energy grid which would have a major impact on the warfighter. While the DoD may not be moving fast enough in developments of AI and ML, Dougherty said the capabilities to do so are there. “The AI aspects of our spending being so R&D focused, it tells me that we’re not actually moving this into the weapons systems and platforms that we’re deploying today, obviously, appropriately so given that it’s artificial intelligence. But, I believe that the department has a great framework to govern that and make sure that AI is used appropriately in a military context. So let’s get going on it,” she said. The report also found that China has more patents than the US in 13 of 15 critical technology areas, further demonstrating how the US is falling behind in AI development. China sped up its patent grants over the past several years following its “14th Five Year Plan for Informatization Development,” Dougherty said. “The way to think about patents is that it’s a leading indicator of technological dominance,” she said. The DoD needs to perform in-depth patent analyses to figure out why it’s behind China in this regard because, after all, patents drive innovation, she said.

**The current grid is failing to meet AI power demands**

**Wandzilak ‘25** [Drew Wandzilak (He has worked on National and State level political campaigns, focusing on Small Business and Entrepreneurial policy. Drew holds a BS from Northwestern University in Education and Social Policy, specializing in Learning & Organizational Development. He also served as an Ambassador for Northwestern’s Farley Center for Entrepreneurship and Innovation and was recognized in Chicago Inno’s 25 under 25), 1-8-2025, “America’s Nuclear Renaissance: A $1 Trillion Opportunity in the Tech War with China”, Alumni Ventures, <https://www.av.vc/blog/americas-nuclear-renaissance-a-1-trillion-opportunity-in-the-tech-war-with-china-mike-and-drew> DOA 3/16/25] // SH

When we think about advanced technologies, especially **AI**, we don’t always consider the staggering amount of power these systems require. But **data centers are on track to consume 20% of** global **electricity by 2025, and our current grid capacity** already **falls 40% short of** the projected **AI power needs. If America wants to stay on the cutting edge of AI research and applications, we need a clean, scalable, and consistently available energy source. Solar and wind are** essential parts of the energy mix, but in many cases, they’re **not enough. One** advanced **nuclear power plant can supply the same** continuous baseload **power as dozens of** utility-scale **solar farms** — **without fluctuation** when the sun isn’t shining. In the words of Andy Jassy, Amazon’s CEO, “**Nuclear power isn’t optional for AI leadership — it’s essential.**” When you see major corporations investing heavily in next-generation nuclear startups, you know something big is happening.

**Fortunately, there is already growing interest in nuclearizing the grid**

**Shea ‘23** [Daniel Shea (Senior Energy Policy Advisor at the City and County of Denver), 4-6-2023, “Nuclear Power and the Clean Energy Transition”, NSCL, <https://www.ncsl.org/energy/nuclear-power-and-the-clean-energy-transition> DOA 3/13/25] // SH

Nuclear power has served for decades as the backbone of carbon-free electricity in the United States. Twenty years ago, nuclear power accounted for more than 70% of carbon-free electricity, with the balance consisting largely of hydropower. In the ensuing years, state and federal policies to decarbonize electricity generation have prioritized the development of renewable wind and solar resources, bringing significant new carbon-free capacity to the grid. Nuclear power still represents nearly half of all carbon-free electricity in the U.S. Its reduced share is not solely the result of new renewable projects coming online, but also the premature closure of existing nuclear power plants and a limited amount of added nuclear capacity. However, there are signs the tide may be shifting in favor of a resurgent nuclear industry. **Decarbonization** has become a widely accepted public policy priority—one that is not only favored by a clear majority of Americans, but that **is** also **being implemented by the U.S. electric utility sector** even in the absence of policy mandates. And while public opinion on nuclear power remains complicated, there are indications that support may be growing. As states begin to chart their course to a clean energy future, a handful have started to reckon with the role—if any—that nuclear power will play in the transition. While **some states** have firmly ruled out nuclear, others **have enacted policies to support existing nuclear power plants and** establish pathways to **develop** next generation **nuclear reactors**. Still, nearly a dozen states haven’t taken a definitive stance—opting to simply open the door to clean energy technologies wide enough to accommodate nuclear and an array of other carbon-free resources that meet their policy goals. The issue is likely to find its way into state policy discussions over the coming years, with recently enacted **federal policies potentially changing the dynamics around new nuclear.** Financing new nuclear projects has been a major impediment to development, but provisions in the Inflation Reduction Act could neutralize those long-standing barriers. Ultimately, states will have a critical voice in whether new nuclear projects move forward and to what degree nuclear power will contribute to the clean energy transition.

**But federal investment is needed to spur private sector investment**

**Boushey ‘23** [Heather Boushey (Chief Economist, Investing in America Cabinet), 8-16-2023, “The Economics of Public Investment Crowding in Private Investment”, The White House, <https://bidenwhitehouse.archives.gov/briefing-room/blog/2023/08/16/the-economics-of-public-investment-crowding-in-private-investment/#:~:text=Conclusion,of%20these%20major%20government%20investments>. DOA 3/12/25] // SH

**Significant public** and private **investments are needed to support the creation of** durable, thriving domestic semiconductor and **clean energy industries** that meet our climate **and** national security goals, including in developing and **build**ing **new infrastructure.** In clean energy, for example, the International Energy Agency (IEA) and the Organization for Economic Cooperation and Development estimate that $4 trillion and $6.9 trillion, respectively of annual global investments may be needed to meet the Paris Agreement’s emissions reduction target; both organizations also conclude that public investment alone will be insufficient to reach this target. The President’s agenda has put the United States on a path to make historically large investments in these industries and the infrastructure that supports them. This represents only a fraction of the global total required to reach these goals. The IEA estimates that to globally reach Net Zero by 2050, 70 percent of global clean energy investments will likely need to come from the private sector—including from utility and energy companies, clean energy developers, and financing institutions like banks or venture capital (Figure 1). Looking at specific clean energy technologies, recent analyses show that significant investments will be necessary to ensure nascent industries become commercially viable and can help us meet President Biden’s emissions reduction goals. For advanced nuclear, clean hydrogen, carbon management, and long duration energy storage technologies, the Department of Energy’s Liftoff to Commercialization Reports provide some initial industry-informed estimates of the necessary private and public investments needed to deploy these nascent technologies. For example, the clean hydrogen report outlines that in the United States, $105–235 billion of investments are needed between now and 2030 to reach the U.S. goal of producing 10 million metric tons per year of clean hydrogen in 2030 (Figure 2). These investments will be spread along the value chain, with roughly half for midstream and end-use infrastructure. As of January 2023, already announced projects represent $21 billion in planned investment, leaving an investment gap of $85-$215 billion that are still required across the hydrogen value chain, including for midstream infrastructure (distribution and storage) and end-use applications (e.g., steel, chemicals, refining). Public Investments Can Mobilize Private Investments As outlined above, in infrastructure, clean energy, and domestic semiconductor manufacturing, there is a need for significant public and private investments to meet core U.S. economic and national security goals. Through his Investing in America agenda, President Biden has made a series of **public investments**, which are designed to **crowd in private investment in** these **critical areas.** A growing body of scholarship supports a positive role for public investments to mobilize private investments. This includes economic research that has shown empirically how public investments are effective in advancing renewable energy goals and industrial policy priorities. For example, Dina Azhgaliyeva and coauthors estimate the positive effects of government investment in renewable energy—through government R&D expenditures, feed-in tariffs, and taxes—on private investment. The economic literature suggests that targeted public investments can play an important role in coordinating complementary private investments in **industry, infrastructure, and workforce**. In addition, **public investments** can **provide** additional **certainty for the private sector and help overcome market failures** like financial frictions **that** may **impede the development of early industries.** This crowding in of private investments is more likely to occur in certain contexts, including when the economy is not at full capacity and in the presence of spillover benefits or bottlenecks that limit returns for the private sector. Crowding in may involve shifts in investment across sectors. Depending on the state of the economy, public spending could theoretically increase private investment in one sector but reduce it in another. Thus, given the scale and speed of the necessary private investments in clean energy and semiconductor industries, it is possible that public investments might cause a shift of capital from one sector to another (i.e., a reallocation of capital but a still-positive aggregate net change). This would be consistent with the first-order goal of the Investing in America agenda: to channel private investment in order to advance specific national priorities. Past examples from the biotechnology industry, the pharmaceutical industry, the information technology sector, and clean energy technologies like wind and solar illustrate how public investments can unleash private sector innovation—lowering costs, improving quality, and supporting domestic production of critical goods. Along the way, these public investments in strategic industries enabled the development and growth of companies like Tesla and Apple. As described below, the investments from the Bipartisan Infrastructure Law, CHIPS and Science Act, and Inflation Reduction Act are designed to build on lessons learned from the past and crowd in private investment in semiconductors and clean energy technologies. Incentivizing Increased Supply **When goods have strong positive externalities—such as decreasing our carbon emissions, improving supply chain resilience, or promoting national security—the market can underprovide, as private actors do not experience all of the social benefits of their production**. In these instances, **government action, such as by lowering the cost of production** for the firm**, can correct the failure of the market to provide sufficient supply** and improve overall welfare. The President’s Investing in America agenda includes numerous intersecting **investments** to **support i**ncreased supply of critical goods that the market has underprovided. For example, it includes billions for facilities that remove, use, and store carbon; **nuclear energy plants; the electrical grid**; facilities that process battery materials; and more, through the Bipartisan Infrastructure Law. Likewise, through the CHIPS and Science Act, the Department of Commerce now provides grants and other incentives to semiconductor companies to build fabrication plants and plants producing materials and equipment used in semiconductor production in the United States. The Commerce Department will prioritize providing federal funding for companies seeking to make new investments—ones that companies can reasonably demonstrate would not otherwise have occurred without government as a partner. The Investing in America agenda also includes billions of dollars for semiconductor research and development and for workforce training. Investing in early-stage research and development and workforce training also has positive spillover effects for the private sector, lowering costs for firms. Similarly, the Inflation Reduction Act includes tax credits to support investment in and deployment of clean energy, including to manufacture components for clean energy, battery components, and critical minerals that private markets had underinvested in. The Inflation Reduction Act updates and extends tax credits for clean energy production and investment to lower the costs of power generation. Starting in 2025, these credits become technology-neutral: the government sets the criteria in line with societal goals—to get the tax credit, facilities must produce energy with zero greenhouse gas emissions—but it does not dictate the technology that must be used to do so. This allows the market to do what it does best—finding the most efficient, cost-effective technologies to produce this energy. These funding streams, combined, are designed to de-risk new technologies, support the development of necessary infrastructure, and more, making new technologies and domestic manufacturing cost-competitive. Sending Demand Signals Other public investments function by sending a clear demand signal to the private sector, spurring private investments to meet the anticipated demand. For example, the Investing in America agenda includes tax credits to increase consumer demand for electric vehicles and support energy-efficient upgrades to homes, including the installation of heat pumps or energy-efficient windows and doors. Likewise, the Administration is supporting the purchase of low- or no-emission buses to help reduce emissions and support private sector investments in electric buses. The federal government’s purchasing power, and that of other public entities, can also be an important tool for seeding demand in nascent industries. The Federal Buy Clean Initiative, for instance, is working to leverage the $650 billion annual purchasing power of the federal government to build a market for low-carbon construction materials critical for reducing emissions from hard-to-abate sectors of the economy. Twelve states have joined the Administration to launch a Federal-State Buy Clean Partnership to use their own purchasing power further advance the use of low-carbon construction materials. Additionally, domestic content bonuses in the legislation—along with the Build America, Buy America act—support domestic manufacturing by increasing demand for inputs like iron and steel manufactured in the United State

**Indeed,**

**Bryan ‘25** [Susan Montoya Bryan (Associated Press Southwest chief correspondent, covering New Mexico, Indigenous issues, energy, water, environment and the outdoors), 2-25-2025, “US energy secretary touts nuclear power as tech sector’s thirst for electricity grows”, Associated Press, <https://apnews.com/article/nuclear-energy-secretary-wright-new-mexico-71e8428ae34d1556f075bf4a499dc2b3> DOA 3/17/25] // SH

U.S. Energy Secretary Chris Wright says **it’s critical that the nation be out in front when it comes to artificial intelligence, and that means having reliable and affordable sources of electricity to meet the growing demands of the technology sector.** Wright made the comments Tuesday before touring Sandia National Laboratories. On Monday, he visited Los Alamos National Laboratory, home to the top secret project during World War II that created the atomic bomb. A fossil fuel executive and graduate of MIT, Wright highlighted the labs’ legacies and said they will play a role in what he described as this generation’s Manhattan Project—a critical scientific undertaking that will change the course of the world in ways yet to be imagined. **To win the AI race,** he said **the nation needs reliable** and affordable **electricity** and the infrastructure to move it around. “I’m a believer,” Wright said, adding that **nuclear power will be** part of **the solution.** How big is the nuclear piece of the energy pie? Federal energy analysts say the U.S. has generated more nuclear electricity than any other country and that plants here have supplied close to 20% of the nation’s total annual electricity since 1990. That’s enough to power more than 70 million homes.

**The brightline is coming**

**Buchaniec-22** (Catherine Buchaniec, 9-13-2022, “US approaching ‘critical time’ in teach race with China,” C4 Isrnet.

https://www.c4isrnet.com/artificial-intelligence/2022/09/13/us-approaching-critical-time-in-tech-race-with-china-report-says/ //doobz)

The nearly 200-page assessment, called the “Mid-Decade Challenges to National Competitiveness,” is the first published by the Special Competitive Studies Project, a private group led by Eric Schmidt, former Google CEO and co-chairman of the U.S government’s National Security Commission on Artificial Intelligence, and Work, who serves on the group’s board of advisors. The organization seeks to build on the work completed by the congressionally mandated AI commission, which identified technology as the central element of the rivalry between the U.S. and China. The commission wrapped up its work last October. According to the report, the years 2025 to **2030 will prove critical in deciding whether the U.S. keeps pace or falls behind in the technology battle. Losing the competition could comprise Americans’ daily lives**, the report said. Not only could China use its techno-economic advantage for political leverage, but Chinese domination could threaten free access to the internet and create a dependence on the country for most core digital technologies, making nations vulnerable to cyber attacks. “Up to this point, because of the 20 years we spent in the Middle East, it kind of took our eyes off the ball,” Work said. “As this technological rivalry and competition was really growing in strength, we didn’t really respond as we normally have done in the past.” **Three technology battlegrounds — microelectronics, fifth-generation wireless technology (5G), and AI — tell the story of the U.S. and its allies coming perilously close to ceding the strategic technology landscape**, the report said. **Those technologies represent the critical hardware, network infrastructure and software underpinning everyday life in the U.S. as well as the country’s national security apparatus.**

**Otherwise war ensues**

**Kroenig 18** Matthew Kroenig, 11/12/2018, Will disruptive technology cause nuclear war, <https://thebulletin.org/2018/11/will-disruptive-technology-cause-nuclear-war/>[)](https://thebulletin.org/2018/11/will-disruptive-technology-cause-nuclear-war/)/JLPark) // doobz + JZ

Recently, analysts have argued that **emerging technologies** with military applications **may undermine nuclear stability** (see here, here, and here), but the logic of these arguments is debatable and overlooks a more straightforward reason why **new technology might cause nuclear conflict: by upending the existing balance of power among nuclear-armed states**. This latter concern is more probable and dangerous and demands an immediate policy response. For more than 70 years, the world has avoided major power conflict, and many attribute this era of peace to nuclear weapons. **In situations of** mutually assured destruction (**MAD**), **neither side has an incentive to start a conflict** because doing so will only result in its own annihilation. The key to this model of deterrence is the maintenance of secure second-strike capabilities—the ability to absorb an enemy nuclear attack and respond with a devastating counterattack. Recently analysts have begun to worry, however, that new strategic military technologies may make it possible for a state to conduct a successful first strike on an enemy. For example, Chinese colleagues have complained to me in Track II dialogues that the United States may decide to launch a sophisticated cyberattack against Chinese nuclear command and control, essentially turning off China’s nuclear forces. Then, Washington will follow up with a massive strike with conventional cruise and hypersonic missiles to destroy China’s nuclear weapons. Finally, if any Chinese forces happen to survive, the United States can simply mop up China’s ragged retaliatory strike with advanced missile defenses. China will be disarmed and US nuclear weapons will still be sitting on the shelf, untouched. If the United States, or any other state acquires such a first-strike capability, then the logic of MAD would be undermined. Washington may be tempted to launch a nuclear first strike. Or China may choose instead to use its nuclear weapons early in a conflict before they can be wiped out—the so-called “use ‘em or lose ‘em” problem. According to this logic, therefore, the appropriate policy response would be to ban outright or control any new weapon systems that might threaten second-strike capabilities. This way of thinking about new technology and stability, however, is open to question. Would any US president truly decide to launch a massive, bolt-out-of-the-blue nuclear attack because he or she thought s/he could get away with it? And why does it make sense for the country in the inferior position, in this case China, to intentionally start a nuclear war that it will almost certainly lose? More important, this conceptualization of how new technology affects stability is too narrow, focused exclusively on how new military technologies might be used against nuclear forces directly. Rather, we should think more broadly about how new technology might affect global politics, and, for this, it is helpful to turn to scholarly international relations theory. **The dominant theory of** the **causes of war** in the academy **is the “bargaining model of war.”** **This** theory **identifies rapid shifts in the balance of power as a primary cause of conflict.** International politics often presents states with conflicts that they can settle through peaceful bargaining, but when bargaining breaks down, war results. **Shifts in** the **balance of power are problematic because they undermine effective bargaining**. After all, why agree to a deal today if your bargaining position will be stronger tomorrow? And, a clear understanding of the military balance of power can contribute to peace. (Why start a war you are likely to lose?) But **shifts in the balance of power muddy understandingsof which states have the advantage**. You may see where this is going. **New technologies threaten to create** potentially **destabilizing shifts in the balance of power**. **For decades, stability in Europe and Asia has been supported by US military power**. **In recent** years, however, **the balance of power in Asia has begun to shift, as China has increased its military capabilities**. Already, **Beijing has become more assertive in the region, claiming contested territory in the South China Sea**. And the results of Russia’s military modernization have been on full display in its ongoing intervention in Ukraine. Moreover, **China may have the lead over the U**nited **S**tates **in emerging technologies that could be decisive for the future of military acquisitions and warfare, including 3D printing, hypersonic missiles, quantum computing, 5G wireless connectivity, and** artificial intelligence (**AI**). And Russian President Vladimir Putin is building new unmanned vehicles while ominously declaring, “**Whoever leads in AI will rule the world**.” If China or Russia are able to incorporate new technologies into their militaries before the United States, then this could lead to the kind of rapid shift in the balance of power that often causes war. **If Beijing believes emerging technologies provide it with a newfound**, local **military advantage over the U**nited **S**tates, for example**, it may be more willing** than previously **to initiate conflict over Taiwan**. **And** if Putin thinks new tech has strengthened his hand, he may be more tempted to launch a Ukraine-style invasion of a NATO member. Either **scenario could bring[ing] the**se nuclear **power**s **into direct conflict with the U**nited **S**tates, **and once nuclear armed states are at war, there is an inherent risk of nuclear conflict through limited nuclear war strategies, nuclear brinkmanship, or** simple **accident or inadvertent escalation**. This framing of the problem leads to a different set of policy implications. The concern is not simply technologies that threaten to undermine nuclear second-strike capabilities directly, but, rather, any technologies that can result in a meaningful shift in the broader balance of power. And the solution is not to preserve second-strike capabilities, but to preserve prevailing power balances more broadly. **When it comes to new technology, this means that the United States should seek to maintain an innovation edge.** Washington should also work with other states, including its nuclear-armed rivals, to develop a new set of arms control and nonproliferation agreements and export controls to deny these newer and potentially destabilizing technologies to potentially hostile states. These are no easy tasks, but **the consequences of Washington losing the race for technological superiority to its autocratic challengers** just **might mean nuclear Armageddon.**

**US-China war goes nuclear.**

**Talmadge 18** [Caitlin Talmadge (10-15-2018), PhD in Political Science from MIT, BA in Government from Harvard, Professor of Security Studies at Georgetown University, “Beijing’s Nuclear Option,” Foreign Affairs,<https://www.foreignaffairs.com/articles/china/2018-10-15/beijings-nuclear-option>]//recut CHS PK

As China’s power has grown in recent years, so, too, has the risk of war with the United States. Under President Xi Jinping, China has increased its political and economic pressure on Taiwan and built military installations on coral reefs in the South China Sea, fueling Washington’s fears that Chinese expansionism will threaten U.S. allies and influence in the region. U.S. destroyers have transited the Taiwan Strait, to loud protests from Beijing. American policymakers have wondered aloud whether they should send an aircraft carrier through the strait as well. Chinese fighter jets have intercepted U.S. aircraft in the skies above the South China Sea. Meanwhile, U.S. President Donald Trump has brought long-simmering economic disputes to a rolling boil. A war between the two countries remains unlikely, but the prospect of a military confrontation—resulting, for example, from a Chinese campaign against Taiwan—no longer seems as implausible as it once did. And **the odds of such a confrontation going nuclear are higher than most policymakers and analysts think**. Members of China’s strategic community tend to dismiss such concerns. Likewise, U.S. studies of a potential war with China often exclude nuclear weapons from the analysis entirely, treating them as basically irrelevant to the course of a conflict. Asked about the issue in 2015, Dennis Blair, the former commander of U.S. forces in the Indo-Pacific, estimated the likelihood of a U.S.-Chinese nuclear crisis as “somewhere between nil and zero.” This assurance is misguided. If deployed against China, the Pentagon’s preferred style of conventional warfare would be a potential recipe for nuclear escalation. Since the end of the Cold War, the United States’ signature approach to war has been simple: punch deep into enemy territory in order to rapidly knock out the opponent’s key military assets at minimal cost. But the Pentagon developed this formula in wars against Afghanistan, Iraq, Libya, and Serbia, none of which was a nuclear power. **China**, by contrast, **not only has nuclear weapons; it has also intermingled them with its conventional military forces, making it difficult to attack one without attacking the other. This means that a major U.S. military campaign targeting China’s conventional forces would likely also threaten its nuclear arsenal. Faced with such a threat, Chinese leaders could decide to use their nuclear weapons while they were still able to**. As U.S. and Chinese leaders navigate a relationship fraught with mutual suspicion, they must come to grips with the fact that a conventional war could skid into a nuclear confrontation. Although this risk is not high in absolute terms, its consequences for the region and the world would be devastating. As long as the United States and China continue to pursue their current grand strategies, the risk is likely to endure. This means that leaders on both sides should dispense with the illusion that they can easily fight a limited war. They should focus instead on managing or resolving the political, economic, and military tensions that might lead to a conflict in the first place.

**That’s disastrous.**

**Starr-15** Steven Starr, 2-28-2015, "Steven Starr: Nuclear War: An Unrecognized Mass Extinction Event Waiting to Happen," Symposium: The Dynamics of Possible Nuclear Extinction,<https://ratical.org/radiation/NuclearExtinction/StevenStarr022815.html>. // YB

A war fought with 21st century strategic nuclear weapons would be more than just a great catastrophe in human history. If we allow it to happen, such a war would be a mass extinction event that ends human history. There is a profound difference between extinction and “an unprecedented disaster,” or even “the end of civilization,” because even after such an immense catastrophe, human life would go on. But extinction, by definition, is an event of utter finality, and **a nuclear war that could cause human extinction should really be considered as the ultimate criminal act.** It certainly would be the crime to end all crimes The world’s leading climatologists now tell us that nuclear war threatens our continued existence as a species. Their studies predict that a large nuclear war, especially one fought with strategic nuclear weapons, **would create a post-war environment in which for many years it would be too cold and dark to even grow food.** Their findings make it clear that not only humans, but most large animals and many other forms of complex **life would likely vanish forever in a nuclear darkness** of our own making. The environmental consequences of nuclear war would attack the ecological support systems of life at every level. **Radioactive fallout**, produced not only by nuclear bombs, but also by the destruction of nuclear power plants and their spent fuel pools, would **poison the biosphere. Millions of tons of smoke would act to destroy Earth’s protective ozone layer** and **block most sunlight** from reaching Earth’s surface, creating **Ice Age weather conditions**that would last for decades. Yet the political and military leaders who control nuclear weapons strictly avoid any direct public discussion of the consequences of nuclear war. They do so by arguing that nuclear weapons are not intended to be used, but only to deter. Remarkably, the leaders of the Nuclear Weapon States have chosen to ignore the authoritative, long-standing scientific research done by the climatologists, **research that predicts virtually any nuclear war, fought with even a fraction of the operational and deployed nuclear arsenals, will leave the Earth essentially uninhabitable.**

**Contention 2 is Pipelines**

**US electricity is reliant on fossil fuels**

**USEIA 24** [U.S. Energy Information Association (The U.S. Energy Information Administration (EIA) is a principal agency of the U.S. Federal Statistical System responsible for collecting, analyzing, and disseminating energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment), 7-15-2024, <https://www.eia.gov/energyexplained/us-energy-facts/> DOA 3/13/25] // SH

U.S. energy production has been greater than U.S. energy consumption in recent years U.S. total annual energy production has exceeded total annual energy consumption since 2019. In 2023, production was about 102.83 quads and consumption was 93.59 quads. **Fossil fuels**—petroleum, natural gas, and coal—**accounted for** about **84% of** total **U.S.** primary **energy production in 2023.** The percentage shares and amounts (in quads) of total U.S. primary energy production by major sources in 2023 were:2

**Electricity generation from fossil fuels requires pipelines**

**Lehigh ND** [Lehigh University, no date, "ELI: Energy: Support Materials: Fossil Fuels", Lehigh University, <https://ei.lehigh.edu/learners/energy/fossilfuels/fossilfuels11.html>] // SH

Transportation of Fossil Fuels Despite their negative environmental impacts, **fossil fuels are** still in high demand. This means they need to be **transported around the countr**y--and sometimes—around the world. Petroleum (crude oil) is relatively easy to transport, but can cause catastrophic damage if spilled. **The safest and cheapest way to transport large amounts of petroleum (crude oil) over land is** **via pipelines.** Construction, placement of the pipeline and control of the pipeline often figure heavily in politics between states and countries. When petroleum (crude oil) needs to travel overseas, oil tankers are used. **Natural gas is easy to transport over land in pipelines**, but difficult to transport over oceans due to its low density and thus large volume. Increasingly, countries are importing and exporting natural gas in a liquefied form. If natural gas is chilled to about -260°F, it changes to liquid form and can be easily transported and stored. It takes up much less space and can be loaded into domed tanks, like the ones pictured on the tanker above. The **tanks hold the gas in liquefied form until it’s needed, then it is converted back into gas and sent through pipelines to consumers.** Transporting coal can be costly but there are many ways to do it. Most of the coal in the USA travels by train, at least for part of its journey from mine to market. Near the mine, coal can be moved around by trucks and conveyors. River barges and ships are often a cheaper means of transport than trains but are obviously limited in where they can go. Finally, **if the coal is crushed and mixed with water, it can even travel through a pipeline**

**However, the US is facing a lack of pipeline space, hindering efficiency**

**Disavino ‘25** Scott Disavino, Scott Disavino Covers the North American power and natural gas markets. 3-13-2025, "AI, LNG demand to keep US natgas use at record highs but bottlenecks threaten", Reuters, https://www.reuters.com/business/energy/ceraweek-ai-lng-demand-keep-us-natgas-use-record-highs-bottlenecks-threaten-2025-03-12/

HOUSTON, March 12 - **U.S. natural gas use is** set to continue **hitting record highs** due to soaring liquefied natural gas (LNG) demand and power consumption from data centers, executives said at a conference this week, while also warning a lack of infrastructure could hurt the industry. The U.S. is the world's largest gas producer and is expected to produce some 105.2 billion cubic feet per day (bcfd) this year, according to U.S. government data. Demand has already hit a record nearly each year since 2010, but some **markets in the U.S. have been hampered by lack of** available **pipeline space. Pipeline capacity has not caught up** with production after a series of project cancellations over the last eight years, according to Toby Rice, CEO of EQT (EQT.N), the No. 2 U.S. gas producer. **This has contributed to a 35% rise in electricity costs for U.S. consumers in the last four years**, he said. "We have the gas, we just don't have the pipelines to get it to places, so now you see a situation where it doesn't matter how much we produce," Rice said in an interview on the sidelines of the conference

**Nuclear energy solves**

**Zhang et al ‘23** [Kefan Zhang a, Weixiang Wang a, Chengjie Duan b, Xiangliang Chen b, Wenshun Duan a, Xiao Luo a, Hongli Chen a (a: School of Nuclear Science and Technology, University of Science and Technology of China, Hefei, Anhui, 230026, China, b: China Nuclear Power Technology Research Institute Co., Ltd, Shenzhen, 518028, China), 8-24-2023, “A small modular lead-bismuth-cooled fast reactor for mobile energy supply”, Progress in Nuclear Energy, Volume 164, October 2023, 104860, accessed through Science Direct, <https://doi.org/10.1016/j.pnucene.2023.104860> DOA 3/26/25] // SH

The Argonne National Laboratory has developed several lead-cooled small transportable and autonomous reactors, the STAR-LM(Sienicki and Petkov, 2002a, 2002b), SSTAR (Sienicki et al., 2008; Smith et al., 2008) and SUPERSTAR (Sienicki et al., 2011; Bortot et al., 2011). SSTAR is a conceptual design for a Small Secure Transportable Autonomous Lead-Cooled **Fast Reactor.** It**s** development has focused on creating a small, modular, proliferation-resistant reactor suitable for international deployment in small grid applications. The reactor has a thermal power of 45 MW and uses S–CO2 Brayton cycles to convert power. The reactor vessel has a height of 12 m and a diameter of 3.23 m, and its design core lifetime is 30 years. The 100-MWe SVBR-100 (Zrodnikov et al., 2011), developed by the Russian Federation, is designed to supply both electricity and process heat for non-electrical applications. Its **important features include**: **an integral** (monoblock) **arrangement of primary circuit equipment, which eliminates** primary circuit **pipelines** and valves; **the ability to transport the reactor monoblock in factory-ready condition by railway or other transport**; and a core breeding ratio (CBR) that exceeds 1 when MOX fuel is used. The Xi'an Jiaotong University has developed an innovative small transportable lead‐bismuth cooled fast reactor (SPARK) (Zhou et al., 2018; Hashim et al., 2020), with a rated power of 20 MWth and capable of operating for 20 years without refueling. The Nuclear Transmutation Energy Research Center of Korea has developed a small, proliferation-resistant transportable power capsule known as PASCAR(Hwang et al., 2008) based on earlier large- and medium-scale burner designs of PEACER (Proliferation-resistant, Environment-Friendly, Accident-tolerant, Continual, and Economical Reactor). This design features an integral reactor capsule, an open-square lattice core of U-TRU-Zralloy fuel rods, and in-vessel steam generators with no pump. A capsule can deliver a reference thermal power of 100 MW cooled by LBE and operate for 20 years with the initial loading of the core.

**Otherwise, energy price spikes lead to poverty**

**Guan et al ‘23** [Guan, Y. (Integrated Research on Energy, Environment and Society (IREES), Energy and Sustainability Research Institute Groningen, University of Groningen, Groningen, Netherlands), Yan, J. (Integrated Research on Energy, Environment and Society (IREES), Energy and Sustainability Research Institute Groningen, University of Groningen, Groningen, Netherlands), Shan, Y. (School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham, UK) et al. Burden of the global energy price crisis on households. Nat Energy 8, 304–316 (2023). https://doi.org/10.1038/s41560-023-01209-8

**High energy prices** impose cost burdens on households in two ways. On the one hand, fuel price rises **directly increase household fuel bills** (for example, for heating and cooling, cooking and mobility). On the other hand, energy **and** fossil feedstock inputs needed for the production of goods and services for final household consumption will **lead to higher prices of household-expenditure items**12,13. Due to the unequal distribution of income, reflected in different household consumption patterns, surging energy prices could affect households in very different ways11,14,15. **Unaffordable costs of energy** and other necessities would **push** vulnerable **populations into** energy poverty and even **extreme poverty**16. Understanding how global energy prices are transmitted to households through global supply chains and how they are affected is crucial for effective and equitable policy design.

**Poverty leads to death**

**Muller 23** [Paul S. Muller, medical professor @ UT, 4-20-2023, NEJM Journal Watch: Summaries of and commentary on original medical and scientific articles from key medical journals, NEJM, https://www.jwatch.org/na56040/2023/04/20/poverty-leading-cause-death-us]

Current poverty is associated with 42% excess risk for death. Cumulative poverty (i.e., 10 continuous years of poverty) is associated with 71% excess risk for death. Survival of people in poverty diverges from those not in poverty at age 40. Divergence peaks at age 70 and diminishes thereafter. In 2019, among people who were 15 or older, cumulative poverty was the fourth leading cause of death (296,000 deaths), behind heart disease, cancer, and smoking, and ahead of dementia and obesity. Current poverty was the seventh leading cause (183,000 deaths), ahead of accidents, chronic lung disease, stroke, suicide, and homicide.

**2AC**

**Stanford ‘13** [George S. Stanford (George S. Stanford, Ph.D., is a nuclear reactor physicist, now retired from Argonne National Laboratory after a career of experimental work pertaining to power-reactor safety.), May 2013, “What Is the IFR?”, Argonne National Library, <https://www.ne.anl.gov/About/reactors/ifr/What%20Is%20the%20IFR.25.pdf>, DOA 3/26/25] // SH

“Fuel cycle” refers to all the steps involving nuclear fuel that are needed to generate electricity: mining, milling, enrichment, fuel fabrication, reactor operation, reprocessing and waste management. Depending on the fuel cycle, some of those steps might not be needed. The three major fuel cycles of current interest are: thermal without reprocessing (“once-through,” or “throw-away”), thermal with reprocessing, and fast reactors—e.g. IFR. The **IFR will eliminate the need for uranium mining** (**for centuries**), **and milling and enrichment** (**forever**).

**NPR 24** NPR, 1/28/2024, "Demand for minerals sparks fear of mining abuses on Indigenous peoples' lands", https://www.npr.org/2024/01/29/1226125617/demand-for-minerals-sparks-fear-of-mining-abuses-on-indigenous-peoples-lands//HS

**Demand for lithium** and other metals like **cobalt, copper and nickel is soaring [for]** as the world increases **manufacturing of green energy components like batteries and solar panels.** But research finds **more than half of these mineral projects are on** or near the **lands of Indigenous peoples in the U.S.** and around the world. **From water pollution to human rights abuses, mining** has historically **come with huge costs to native groups**, says Galina Angarova of the Buryat Peoples in Siberia, who heads the Securing Indigenous Peoples' Rights in the Green Economy coalition. New mining, even when it's meant to address climate change, threatens to repeat mistakes of the past, she says. "The question is, is the green transition going to be the same old thing?" she asks, "Or are we going to do it the right way?" Mining on Indigenous lands often comes with problems Bender's ranch is home to Ha'Kamwe', the turquoise blue hot springs on Hualapai tribal land. Bender scoops some algae out of the water at the springs, "This water is important, this water right here." The Hualapai consider this water healing and sacred. "There's one of our elders, the way she described it is, 'You're on holy land, you're on holy ground,'" he says.

**Kruse ‘23** [Tyler Kruse (Senior Communications Specialist), 6-5-2023, “New Study: Fossil Fuels Disproportionately Impact Black, Brown, Indigenous, and Poor Communities Throughout The Supply Chain”, GreenPeace, <https://www.greenpeace.org/usa/new-study-fossil-fuels-disproportionately-impact-black-brown-indigenous-and-poor-communities-throughout-the-supply-chain/#:~:text=The%20publication%20draws%20from%20200,disproportionate%20burden%20of%20these%20harms>. DOA 3/18/25] // SH

The study identifies the public health harms as well as the disproportionate impacts on communities at each stage of the coal, oil, and gas lifecycles – extraction, processing, transport, and combustion. It was authored by experts from Greenpeace USA, Salem State University, and Taproot Earth and published in Energy Research & Social Science. The publication draws from **200+ academic studies** which **reveal** a consistent pattern: **fossil fuel pollution is associated with asthma, birth complications, cancer, respiratory disease, heart conditions, and premature mortality.** Black, Brown, **Indigenous**, and poor **communities bear a disproportionate burden of these harms.** These same communities are hit hardest by the impacts of the climate crisis. Additionally, the study concludes that policies solely focused on reducing greenhouse gas emissions without reducing fossil fuel usage could fail to reduce local air and water pollution, fail to alleviate public health harms, and end up perpetuating the racially inequitable impacts of the fossil fuel economy. Black, Asian, Hispanic or Latino, and low-income populations already have an elevated burden of exposure to air pollutants that can harm the respiratory system known as PM2.5, a pattern that is consistent across nearly all emission source types. Poorly designed climate policies could concentrate this pollution in community “hotspots” even as overall carbon emissions decline.

**Wang ‘24** Seaver Wang, May 23 2024, “It's Settled, More Nuclear Energy Means Less Mining,” The Breakthrough Institute, <https://thebreakthrough.org/issues/energy/its-settled-more-nuclear-energy-means-less-mining> //SBB

For decades, the environmental movement has lumped nuclear energy with fossil fuels as a mining-intensive, environmentally destructive technologies while extolling solar and wind as pillars of a more sustainable future. “Nuclear energy is a carbon hog. Plant construction cement, steel, and complex electronics is carbon intensive” opines Greenpeace co-founder Rex Wyler in one rambling essay. Another report by Friends of the Earth condemns mining for nuclear fuel as unacceptable, while exonerating mining for solar and wind as worrying but manageable in the next breath. A graphic produced by the Japanese environmental think tank Climate Integrate groups nuclear power and mining under an unequal fossil-fuel system while enshrining wind and solar within an “equal” and “nature positive” future society, somehow blissfully separated from mineral production. Claiming that nuclear power is more mining-intensive than renewables never made much sense to begin with, but such assertions have stubbornly persisted in environmental forums, simply because nobody had invested the effort into challenging them with modern data. That debate is now settled. When considering how to best manage the mining footprint of a global shift to low-carbon energy, the math clearly shows that **clean energy systems using relatively more nuclear energy will impose fewer mining impacts** than systems using only solar, wind, and storage. A major research report from my team, building on recent U.S. National Renewable Energy Laboratory, MIT, and United States Geological Survey analyses, finds **that every unit of clean electricity from a nuclear power plant requires excavating just 30%** or 23% **the mass of rock and metal, compared to an equal unit of solar or** onshore **wind** electricity. But many traditional environmentalists and nuclear technology opponents remain determined to exclude clean nuclear power from consideration as a clean energy source by any means necessary. However, using mining as an angle of attack to label nuclear energy as “not sustainable” relative to solar and wind is to make arguments utterly unmoored from real-world data. Rather, insisting on a renewables-only nuclear-free energy system means accepting higher mining-related environmental tradeoffs. Anti-nuclear environmental thinkers must either grapple with that tension or embrace it, but they cannot deny it.

**Gould ‘22** Ariel Gould, August 31 2022, “Sustainable and Ethical Uranium Mining: Opportunities and Challenges,” Good Energy Collective, <https://www.goodenergycollective.org/policy/sustainable-and-ethical-uranium-mining-opportunities-and-challenges> //SBB

Uranium demand is steadily increasing alongside critical mineral demand as the global transition to carbon-free energy takes off. Kazakhstan (45% of the world’s supply), Namibia (12%), Canada (10%), and Australia (9%) are the main global suppliers of the uranium needed for nuclear power. Currently, less than 1% of global uranium is produced in the U.S., and many of its active uranium mines have remained dormant due to the low price of global uranium and the low grade of domestic uranium deposits. Global uranium exploration and mine development is trending downward; since 2014, there has been a drop of 1.5 billion in funding in the uranium sector. This is due in part to the legacy left by the Fukushima Daiichi nuclear accident in 2011, which led to community concerns about nuclear energy safety and government officials responding by decommissioning nuclear plants and temporary closures for safety upgrades. Even as the contemporary market is depressed, demand for uranium is expected to rise steadily in the next 10-20 years due to the increase in global energy demand and the critical need for carbon-free baseload energy sources to replace coal and natural gas generation. The number of identified recoverable uranium resources has grown in the U.S. and globally, with the largest increases expected in East Asia. **In light of past failures, the modern global uranium industry has some of the highest standards of any mineral mining sector.** Australia maintains the world’s largest uranium resources at the Olympic Dam. The mine has continuously produced uranium since 1988. Critical to Australia’s approach is rigorous environmental impact assessments with opportunities for public comment to ensure equitable mining practices are taking place. **Uranium producers must account for environmental degradation, cultural heritage, nuclear safeguards, and Aboriginal rights.** Yet, even with these requirements, Australia has a controversial uranium mining legacy, particularly with regards to Aboriginal land rights and cultural resources. Canada sets strict uranium mining and milling licensing requirements on uranium mines. It requires industry participants to undergo five-year periodical environmental risk assessments and mandates that mines face continuous inspections, reviews, and data analysis to ensure adherence to strict standards. However, Canada has attracted criticism from progressive environmental groups that say the state fails to protect vulnerable populations, including First Nations, and the environment. The Watershed Sentinel, a grassroots environmental policy publication from Canada, finds that the Elliot Lake Mines have been responsible for the release of 170 million tonnes of radioactive tailings into Lake Huron. Canada’s Nuclear Safety Commission asserts that Cameco, the largest industrial employer of First Nations people in Canada, has continuously shown high levels of safety for their workers. Canada also has one of the most extensive uranium mine and mill licensing standards and requires licenses and environmental reviews through the entire life cycle of uranium mines and mills from pre-planning, operation, decommissioning, and post-closure. Kazakhstan has outlawed open pit and underground mining for uranium and restricts in-situ leach mining to areas far away from population centers and where water is already unusable (due to high salt content) to ensure the lowest environmental impact. Other notable innovations in uranium mining in Kazakhstan include: a liquidation fund to eliminate the effects of operations on subsoil use; a requirement that 1% of the cost of exploration be deposited in the liquidation fund; all contracts for uranium exploration and mining require financial contributions to local social and cultural improvements. The government also requires uranium mining profit to go toward healthcare for employees and local citizens, education, sport, recreation, and other activities. While the U.S. does not currently produce much uranium, policymakers are increasingly exploring ways to increase domestic supplies to reduce reliance on Russian or Russian-enriched uranium after the invasion of Ukraine.

**Scissons ‘13 furthers** Kevin Scissons, former regulator of uranium mining, 10-25-2013, “Modern uranium mining is safe and can protect the environment nearby, downstream,” Chatham Star-Tribune, <https://www.chathamstartribune.com/opinion/article_9ce6ba26-305e-11e3-86fb-0019bb2963f4.html> //SBB

Yes, uranium mining can be and has been done safely for decades in Canada, where I served as director of uranium mines and mills for the Canadian Nuclear Safety Commission. In fact, over the last few decades uranium **mining and** milling has been done **safely** in many places around the world including in the United States. This trip was not my first contact with the issue of uranium mining. In the fall of 2011, I met with a delegation of Virginia legislators, farmers and other elected officials to share my 32 years of Canadian regulatory experience with them. At the time, I was still in my official position with the Canadian Nuclear Safety Commission, but soon after I retired I accepted an invitation to come to Virginia, and have been following this debate closely ever since. On this recent trip, it was my pleasure to share with people in Pittsylvania County what we have learned in Canada and globally about the effective regulation of uranium mining — regulation that puts the health and safety of workers, the environment and the public first. As I said many times while I was in Virginia, my perspective is one of a regulator. I am not an advocate for mining, but I am a passionate advocate for effective regulation that protects people and the environment. It is within that context that I share the answers to questions most commonly asked by concerned Virginians: Why did uranium mining cause so much concern in the past? Unfortunately, the **poor mining practices** (uranium and other metals) **of the** 1940s, 19**50s and** 19**60s were undertaken with no regulatory controls** or protection of people and the environment. Those terrible impacts continued even into the early 1980’s when “the modern era” of uranium mining began. Today, in Canada and around the world, **the modern uranium mining industry is very different** than it was in the 1960s; **off-site impacts are no longer tolerated and have effectively been controlled for three decades**. There are many things that are much safer today than they were 20 or 30 years ago, from cars and airplanes to surgery and other medical treatments. That trend has been the same with every industrial activity, including uranium mining. Can uranium be mined in a climate like Virginia? Based on our experience in Canada and internationally, yes, a modern uranium mine here can be designed to operate safely in your climate. The precise answer will come when regulations are set and an application made. Our experience and results in Canada provide a good indicator that engineers and regulators in Virginia can also achieve these successful results. In Canada uranium is mined safely in a harsh and challenging climate that includes land surrounded by thousands of lakes, a high ground water table, extreme cold temperatures and a spring melt that gives us an entire winter’s worth of precipitation to deal with all at once. Can one little mistake or human error cause a catastrophic event at the site, like a release off site of the uranium tailings? No, modern uranium mines are designed with the likelihood of human error in mind and employ multiple levels of contingency measures, fail-safe systems, detection systems, secondary containment systems, and controls to guard against them. Though mistakes and human errors do occur, and valves or pipes might rupture, all those kinds of risks are addressed and controls put in place to minimize the impact and ensure the safety of workers, the public and the surrounding environment. Is there a threat to our water supply either nearby or downstream as far away as Virginia Beach? Based on my recent site visit of the Coles Hill area I feel very confident saying “no” to this question. The U.S. Nuclear Regulatory Commission operates much like the Canadian Nu-clear Safety Commission and they govern the milling process and the safe storage of the tailings. Both agencies have very similar standards and requirements. I foresee no circumstance under which any proposal would get approved by regulators that isn’t a safe, modern facility with below-grade tailings management, a multi-layered containment system, with seepage detection and groundwater monitoring. In fact, it is difficult to imagine an operator proposing anything less in today’s world where the **consequences** and **cost of environmental damage** is so high and the technology and processes to avoid it so readily **available**. These modern mining operations I refer to **have a track record of success**. With the assistance of local community members, routine testing of the water, wildlife and vegetation surrounding our sites consistently shows that mining activities have not harmed the environment near these sites or anywhere downstream. If you protect those closest to the site, you will by extension protect anyone farther away. To go even further, **peer-reviewed studies have shown that over the last 30 years, modern uranium mines** and mills in Canada **have had no** **adverse** **impacts on** **the** **health of local** **populations**. Our robust air monitoring programs show that there are no harmful off-site releases of radiation. We have recorded **no** increased **cancer rates** or any other health problems in our uranium mining communities.

**GAO 23** Government Accountability Office 05/24/2023, "Nuclear Waste Disposal", No Publication, https://www.gao.gov/nuclear-waste-disposal//HS

Waste from weapons programs. DOE also oversees the treatment and disposal of about **90 million gallons of radioactive waste from** the nation's **nuclear weapons** program. Most of this waste is stored in tanks at 3 DOE sites. According to federal law, certain high-level mixed waste must be vitrified—a process in which the waste is immobilized in glass—and disposed of in a deep geologic repository. However, DOE estimates that about 90% of the volume of this waste contains about 10% of the radioactivity. DOE considers this portion of the waste to be low-activity waste, which experts believe may be safely treated and disposed of with methods other than vitrification. Nevertheless, DOE plans to vitrify a portion of this low-activity waste at its Hanford Site in Washington State but may face challenges starting operations of a treatment facility to do so. In addition, DOE may be able to reduce certain risks and save tens of billions of dollars by adopting alternative approaches to treating and disposing of a portion of Hanford’s low-activity radioactive waste. DOE has also faced challenges designing and building high-level waste treatment facilities at Hanford and the Idaho National Laboratory. Additionally**, the United States will continue to generate new** high-level defense **waste as a result of its ongoing** weapons program **and efforts to modernize the nuclear stockpile**.

**NCSl 24** National Conference of State Legislatures, December 9 2024, News Reactor | December 2024

<https://www.ncsl.org/newsletter/details/news-reactor-december-2024#:~:text=A%20bill%20introduced%20in%20the,to%20advance%20spent%20fuel%20solutions>.

**Bipartisan Bill** **Would Create Nuclear Waste Administration**

A bill **introduced in the U.S. House proposes a new agency to manage nuclear waste and consent-based siting. The legislation, titled the Nuclear Waste Administration Act of 2024, creates an independent authority to manage spent nuclear fuel and oversee funding for waste management programs.** The bill would remove the current spent fuel management responsibilities from the Department of Energy and instead create a single administration.Bill sponsors Reps. Mike Levin (D-Calif.) and August Pfluger (R-Texas) state that despite current federal efforts, a new administration is needed to make headway on spent fuel and to create a national repository. The sponsors also outline taxpayer costs related to current on-site temporary storage as a motivator to advance spent fuel solutions.

**WNA 22** WNA, 01/25/2022, "Radioactive Waste Management", No Publication, https://world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-waste/radioactive-waste-management//HS

Like all industries, the generation of electricity produces waste. Whatever fuel is used, the waste produced in generating electricity must be managed in ways that safeguard human health and minimize the impact on the environment. For radioactive waste, this means isolating or diluting it such that the rate or concentration of any radionuclides returned to the biosphere is harmless. To achieve this, **practically all radioactive waste is contained and managed,** with some clearly needing deep and permanent burial. **From nuclear power generation**, unlike all other forms of thermal electricity generation, **all waste is regulated – none is allowed to cause pollution**. Nuclear power is characterized by the very large amount of energy produced from a very small amount of fuel, and the amount of waste produced during this process is also relatively small. However, much of the waste produced is radioactive and therefore must be carefully managed as hazardous material. All parts of the nuclear fuel cycle produce some radioactive waste and the cost of managing and disposing of this is part of the electricity cost (i.e. it is internalized and paid for by the electricity consumers). All toxic waste needs be dealt with safely – not just radioactive waste – and in countries with nuclear power, radioactive waste comprises a very small proportion of total industrial hazardous waste generated. Radioactive waste is not unique to the nuclear fuel cycle. Radioactive materials are used extensively in medicine, agriculture, research, manufacturing, non-destructive testing, and minerals exploration. Unlike other hazardous industrial materials the level of hazard of all radioactive waste – its radioactivity – diminishes with time.

**WNA 22** WNA, 01/25/2022, "Radioactive Waste Management", No Publication, https://world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-waste/radioactive-waste-management//HS

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