We Affirm

Contention 1 is Small Modular Reactors or SMRS

Waleed ‘25 finds

Hammad Waleed (Research Associate at Strategic Vision Institute), 03-13-2025, "Nuclear’s Next Chapter: Can Small Modular Reactors Succeed?," SVI - Strategic Vision Institute - Strategic Vision Institute, https://thesvi.org/nuclears-next-chapter-can-small-modular-reactors-succeed/, accessed 3-31-2025 //RP

In the vast chessboard of global energy, a new player is making its move—a promise wrapped in steel and uranium, heralded as the saviour of both the climate crisis and the nuclear industry itself. **Small Modular Reactors (SMRs) are being hailed as the future of clean energy, a technology that could redefine power generation as we know it**. **Compact, factory-built, and supposedly safer, faster, and cheaper,** SMRs have been cast as the solution to nuclear energy’s greatest pitfalls. SMRs are marketed as a nuclear breakthrough—smaller, safer, and scalable—but their **high costs and lack of investment slow progress**. Yet, for all the fanfare, the revolution has yet to arrive. Over 80 different SMR projects have been proposed in recent decades, yet **only two have been designed and put into commercial operation .** The Western world, despite its enthusiasm, is struggling to make SMRs a reality. **Meanwhile, the East—led by Russia and China—is racing ahead, proving that when it comes to nuclear energy, state-backed ambition often trumps free-market hesitation**. Not too long ago , nuclear energy was the great hope of modern civilization. It was the power of the future, promising limitless energy without the environmental scars of coal and oil. But then came Chernobyl. Three Mile Island. Fukushima. One disaster after another shattered public confidence, turning nuclear into a relic of a more naive era. Now, as the world plummets toward climate catastrophe, **nuclear power is finding its way back into the mainstream energy discourse .** The International Energy Agency (IEA) has stated, unequivocally, that **nuclear capacity must double by 2050 if we are to meet global net-zero targets.** But here’s the problem—**traditional nuclear plants are too expensive, too slow to build, and too politically fraught** (something that politicians dependant upon five year election cycles would consider too costly and politically less rewarding) **Enter SMRs, the golden compromise. They’re small. They’re scalable. They can be mass-produced in factories like airplanes instead of being built from scratch on-site. They take up a fraction of the space required by wind and solar farms**. In theory, they’re a silver bullet. In practice? Not so much. **China and Russia lead the SMR race, using state-backed funding, streamlined regulation, and full-service nuclear deals to outpace the West**. The logic behind **SMRs is simple: make them smaller, make them safer, and make them modular. Instead of sprawling mega-facilities that take decades to construct, SMRs could be produced assembly-line style and shipped to wherever they’re needed**. They could power remote towns, support industrial manufacturing, and even serve as a replacement for decommissioned coal plants. More importantly, **they are designed with passive safety features—instead of relying on external power and human intervention, many SMRs cool themselves naturally. No pumps, no backup generators—just physics doing its job**. The nuclear industry argues that this makes them inherently safer than their predecessors, ensuring that a **Fukushima-style meltdown would be nearly impossible.**

Subpoint A. Climate Change

Emissions are increasing but extinction isn't locked in, WMO '25

World Meteorological Organization (No Quals) , 3-19-2025, "WMO report documents spiralling weather and climate impacts," https://wmo.int/news/media-centre/wmo-report-documents-spiralling-weather-and-climate-impacts, accessed 4-8-2025 //RP

The clear signs of human-induced climate change reached new heights in 2024, with some of the consequences being irreversible over hundreds if not thousands of years, according to a new report from the World Meteorological Organization (WMO), which also underlined the massive economic and social upheavals from extreme weather. Key messages Key **climate change indicators again reach record levels Long-term warming (averaged over decades) remains below 1.5°C Sea-level rise** and ocean warming irreversible for hundreds of years Record greenhouse gas concentrations combined with El Niño and other factors to drive 2024 record heat Early warnings and climate services are vital to protect communities and economies A split landscape shows a serene lake with mountains on the left and cracked, dry earth under a red sky on the right, illustrating a contrast between lush and arid environments. **WMO's State of the Global Climate report confirmed that 2024 was likely the first calendar year to be more than 1.5°C above the pre-industrial era, with a global mean near-surface temperature of 1.55 ± 0.13 °C above the 1850-1900 average.** This is the warmest year in the 175-year observational record. WMO's flagship report showed that: **Atmospheric concentration of carbon dioxide are at the highest levels in the last 800,000 years. Globally each of the past ten years were individually the ten warmest years on record.** Each of the past eight years has set a new record for ocean heat content. The 18 lowest Arctic sea-ice extents on record were all in the past 18 years. The three lowest Antarctic ice extents were in the past three years. The largest three-year loss of glacier mass on record occurred in the past three years**. The rate of sea level rise has doubled since satellite measurements began. "Our planet is issuing more distress signals -- but this report shows that limiting long-term global temperature rise to 1.5 degrees Celsius is still possible. Leaders must step up to make it happen -- seizing the benefits of cheap, clean renewables for their people and economies** - - with new National climate plans due this year, " said United Nations Secretary-General António Guterres. **"While a single year above 1.5 °C of warming does not indicate that the long-term temperature goals of the Paris Agreement are out of reach, it is a wake-up call that we are increasing the risks to our lives, economies and to the planet,**" said WMO Secretary-General Celeste Saulo. Global mean temperature 1850-2024 Difference from 1850-1900 average Berkeley Earth (1850-2024.12)ERA5 (1940-2024.12)GISTEMP (1880-2024.12)HadCRUT5 (1850-2024.12)JRA-3Q (1947-2024.12)NOAAGlobalTemp v6 (1850-2024.12) 1860 1880 1900 1920 1940 1960 1980 2000 2020 −0.2 0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 °C Annual global mean temperature anomalies relative to a pre-industrial (1850–1900) baseline shown from 1850 to 2024 Chart: WMOGet the dataEmbed Download imageCreated with Datawrapper The report said that long-term global warming is currently estimated to be between 1.34 and 1.41 °C compared to the 1850-1900 baseline based on a range of methods – although it noted the uncertainty ranges in global temperature statistics. A WMO team of international experts is examining this further in order to ensure consistent, reliable tracking of long-term global temperature changes to be aligned with the Intergovernmental Panel on Climate Change (IPCC). Regardless of the methodology used, **every fraction of a degree of warming matters and increases risks and costs to society.** The record global temperatures seen in 2023 and broken in 2024 were mainly due to the ongoing rise in greenhouse gas emissions, coupled with a shift from a cooling La Niña to warming El Niño event. Several other factors may have contributed to the unexpectedly unusual temperature jumps, including changes in the solar cycle, a massive volcanic eruption and a decrease in cooling aerosols, according to the report. **Temperatures are just a small part of a much bigger picture.** "Data for 2024 show that our oceans continued to warm, and sea levels continued to rise. The frozen parts of Earth's surface, known as the cryosphere, are melting at an alarming rate: glaciers continue to retreat, and Antarctic sea ice reached its second-lowest extent ever recorded. Meanwhile, extreme weather continues to have devastating consequences around the world," said Celeste Saulo.

Only nuclear energy solves --- investment is key.

Grossi 24 [Rafael Mariano Grossi, PhD in History, International Relations and International Politics from the Graduate Institute of International Studies, 1-17-2024, 5 reasons we must embrace nuclear energy in the fight against climate change, World Economic Forum, https://www.weforum.org/stories/2024/01/nuclear-energy-transistion-climate-change/]

Globally, nuclear energy is also playing a **key role** in the transition to net zero. Fears about nuclear are slowly giving way to fact-based understanding. This year, for the first time, the document agreed at COP backed nuclear energy investment among low-emissions technologies. One of nuclear's key attributes is its energy intensity. A **thimble**-sized pellet of uranium produces as much energy as almost **3 barrels** of oil, more than 350 cubic metres of natural gas and about half a tonne of coal. 5 reasons we cannot ignore nuclear energy Nuclear power, which has 20,000 reactor years of experience across the world, has five distinct advantages. 1. From cradle to grave, nuclear energy has the **lowest carbon footprint** and needs **fewer materials** and less land than other electricity source. For example, to produce one unit of energy, **solar** needs more than **17 times as much material and 46 times as much land.** 2. **Uranium in the earth's crust and oceans is more abundant** than gold, platinum and other rare metals. It is going to take us about 100 to 150 years to get through the uranium resources we deem economically recoverable today. 3. Nuclear power **doesn't rely on the weather.** Well-run nuclear power plants, including for example those in the US, operate at least **two to three times as reliably** for two to three times as many years as intermittent low-carbon sources. As a flexible baseload for wind and solar that provides more energy when it is needed and less when it is not, nuclear power plants displace coal and enable renewables. 4. Each year, nuclear power plants produce a quarter of the world's low-carbon electricity, saving many lives that would otherwise be cut short by the lethal pollution fossil fuels pump into the air. Nuclear energy is about as safe as solar. It is far safer than coal, gas and oil, and safer than almost every other alternative energy source. 5. It is true that spent fuel is highly radioactive and emits heat. But it is also relatively compact, and extremely carefully managed and regulated. Nuclear energy generation is so efficient that the amount of all spent fuel ever produced would — in theory — fit into 42 Olympic-sized swimming pools. Today, it is carefully stored in pools and dry storage systems or recycled. Countries like Finland and Sweden are close to putting into place deep geological repositories to dispose of spent fuel. France is also progressing in the implementation of a deep geological repository for high-level waste from spent fuel recycling. Nuclear is one of the safest, cleanest, **least environmentally burdensome** and — ultimately, over the lifetime of a nuclear power plant — one of the cheapest sources of energy available. But for all of nuclear energy's positive attributes, there are hurdles to overcome. The accidents at Chernobyl and at the Fukushima Daiichi Nuclear Power Station left long shadows of mistrust and **underinvestment**. The upfront cost of building a nuclear power plant is considerable and budget overruns and long delays have made it more difficult to **gain support for new construction.** Three levers to catalyze investment in nuclear energy Three main levers will need to be pulled if we are to triple today's investment levels and build the nuclear capacity that will help get us to net zero. Lever 1: Nuclear must be acknowledged for what it is: a reliable, scalable, safe and highly affordable low-carbon source of energy. It must be treated that way when it comes to investment incentives. Today's energy markets are not the same as those of the 1970s and 1980s. Nuclear needs private investment, even in markets where governments still take on much of the financing. Governments need to shoulder the **risk of the high capital costs at the start**. But that alone is not enough. They need to attract private financing through assured revenues and an enabling investment environment over the longer term. That means levelling the playing field nationally and internationally, including by changing the policies preventing investment in nuclear energy by many key international financial institutions and development banks.

U.S. adoption is key for global modeling. Brook '11

Brook '11 [Barry, Tom Blees, and others; February 24; Australian Laureate Professor and Chair of Environmental Sustainability at the University of Tasmania in the Faculty of Science, Engineering and Technology, formerly an ARC Future Fellow in the School of Earth and

Environmental Sciences at the University of Adelaide, Australia, where he held the Sir Hubert Wilkins Chair of Climate Change from 2007 to 2014, and was also Director of Climate Science at the Environment Institute; 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; Conference Paper from the 91st American Meteorology Society Annual Meeting, "Advanced nuclear power systems to mitigate climate change (Part III)," http://bravenewclimate.com/2011/02/24/advanced-nuclear-power-systems-to-mitigate-climate-change]

There are many compelling reasons to pursue the rapid demonstration of a full-scale IFR, as a lead-in to a subsequent global deployment of this technology within a relatively short time frame. Certainly the urgency of climate change can be a potent tool in winning over environmentalists to this idea. Yet political expediency—due to widespread skepticism of anthropogenic causes for climate change—suggests that the arguments for rolling out IFRs can be effectively tailored to their audience. Energy security—especially with favorable economics—is a primary interest of every nation. The impressive safety features of new nuclear power plant designs should encourage a rapid uptick in construction without concern for the spent fuel they will produce, for all of it will quickly be used up once IFRs begin to be deployed. It is certainly manageable until that time. Burying spent fuel in non-retrievable geologic depositories should be avoided, since it represents a valuable clean energy resource that can last for centuries even if used on a grand scale. Many countries are now beginning to pursue fast reactor technology without the cooperation of the United States, laboriously (and expensively) re-learning the lessons of what does and doesn't work. If this continues, we will see a variety of different fast reactor designs, some of which will be less safe than others. Why are we forcing other nations to reinvent the wheel? Since the USA invested years of effort and billions of dollars to develop what is arguably the world's safest and most efficient fast reactor system in the IFR, and since several nations have asked us to share this technology with them (Russia, China, South Korea, Japan, India), there is a golden opportunity here to develop a common goal—a standardized design, and a framework for international control of fast reactor technology and the fissile material that fuels them. This opportunity should be a top priority in the coming decade, if we are serious about replacing fossil fuels worldwide with sufficient pace to effectively mitigate climate change and other environmental and geopolitical crises of the 21st century.

Pearce '23 terminalizes

Joshua Pearce (Joshua M. Pearce is the John M. Thompson Chair of Information Technology and Innovation at the Thompson Centre for Engineering Leadership & Innovation. He holds appointments at Ivey Business School and the Department of Electrical & Computer Engineering at Western University in Canada), 07-31-2023, "Quantifying Greenhouse Gas Emissions in Human Deaths to Guide Energy Policy", MDPI, https://www.mdpi.com/1996-1073/16/16/6074, accessed 4-8-2025 //RP

The estimates made in sections 2.1 to 2.3 are very rough but provide a useful rule of thumb for gaging a first approximation. The 1000-ton rule makes it clear that there is a marginal human death cost to every amount of warming, no matter how small. Thus, **every 0.1 °C degree of warming can be expected to cause 100 million deaths. Similarly, every 0.001 °C of warming will cause a million deaths.** If humanity misses the 2°C target or any of the more granular goals to stop 'dangerous climate change' [67], which appears likely according to AI models [68], rather than relax and accept it, all efforts to reduce carbon emissions can be viewed as lifesaving.

Subpoint B. Grid security

Cyber risks are high under trump. Kirch ‘25.

Kirchgaessner ’25 [Stephanie; Deputy Head of Investigations for Guardian US; February 28; The Guardian; “Trump administration retreats in fight against Russian cyber threats,” https://www.theguardian.com/us-news/2025/feb/28/trump-russia-hacking-cyber-security; DOA: 3-3-2025] tristan **brackets r og**

The **Trump** administration has publicly and privately **signaled** that it does **not believe** Russia represents a **cyber threat** against US national **security** or **critical infrastructure**, marking a radical departure from longstanding intelligence assessments. The **shift** in **policy** could make the **US vulnerable** to **hacking attacks** by **Russia**, experts warned, and appeared to reflect the warming of relations between Donald Trump and Russia’s president, Vladimir Putin. Two recent incidents indicate the US is no longer characterizing Russia as a cybersecurity threat. Liesyl Franz, deputy assistant secretary for international cybersecurity at the state department, said in a speech last week before a United Nations working group on cybersecurity that the **US** was **concerned** by threats perpetrated by some states but only named **China** and **Iran**, with **no mention** of **Russia** in her remarks. Franz also did not mention the Russia-based LockBit ransomware group, which the US has previously said is the most prolific ransomware group in the world and has been called out in UN forums in the past. The treasury last year said LockBit operates on a ransomeware-as-service model, in which the group licenses its ransomware software to criminals in exchange for a portion of the paid ransoms. In contrast to Franz’s statement, representatives for US allies in the European Union and the UK focused their remarks on the threat posed by Moscow, with the UK pointing out that Russia was using offensive and malicious cyber-attacks against Ukraine alongside its illegal invasion. “It’s **incomprehensible** to give a speech about **threats** in cyberspace and **not mention Russia** and it’s **delusional** to think this will turn Russia and the FSB [the Russian security agency] into our friends,” said James Lewis, a veteran cyber expert formerly of the Center for Strategic and International Studies think tank in Washington. “They **hate** the **US** and are still mad about losing the cold war. Pretending otherwise won’t change this.” The US **policy change** has also been **established** behind **closed doors**. A recent memo at the Cybersecurity and Infrastructure Security Agency (**Cisa**) set out **new priorities** for the agency, which is part of the Department of Homeland Security and monitors cyber threats against US critical infrastructure. The new directive set out priorities that included China and protecting local systems. It did **not mention Russia**. A person familiar with the matter who spoke to the Guardian on the condition of anonymity said **analysts at the agency were verbally informed** that they were **not** to **follow** or **report** on **Russian threats**, even though this had **previously** been a **main focus** for the agency. The person said **work** that was being **done on** something “**Russia**-related” was in effect “**nixed**”. “Russia and China are our biggest adversaries. With all the **cuts** being **made** to different agencies, a lot of **cybersecurity personnel** have been **fired**. Our **systems** are **not** going to be **protected** and our **adversaries know** this,” the person said. The person added: “People are saying Russia is **winning**. Putin is on the **inside** now.” The New York Times has separately reported that the Trump administration has also **reassigned officials** at **Cisa** who were focused on safeguarding elections from cyber-attacks and other attempts to **disrupt voting**. Another person who previously worked on US joint task forces operating at elevated classification levels to track and combat Russian cyber threats said the development was “truly shocking”. “There are **thousands** of US government **employees** and **military** working daily on the **massive threat Russia poses** as possibly the most significant nation state threat actor. Not to diminish the significance of China, Iran or North Korea, but Russia is at least on par with China as the most significant cyber threat,” the person said. The person added: “There are **dozens** of discrete **Russia** state-sponsored **hacker teams dedicated** to either producing **damage** to US government, **infrastructure** and commercial interests or conducting information theft with a key goal of maintaining persistent access to computer systems.”

SMRs solve

Curtis '24 [Steven; Consultant @ the Readiness Resource Group; February 15; National Defense University Press; "Microgrids for the 21st Century: The Case for a Defense Energy Architecture," https://ndupress.ndu.edu/Media/News/News-Article-View/Article/3678506/microgrids-for-the-21st-century-the-case-for-a-defense-energy-architecture/; DOA: 3-2-2025] tristan

This would **enable** DOD **installations** to **sever** themselves completely from the **national grid** over time and achieve clean energy goals. Provide Continuous Energy on Demand A second aspect of a DEA is to ensure the availability of continuous operational energy. Again, the intermittent nature of renewables causes issues with instantaneous accessibility to energy. For an organization with 24/7 operational needs, this would not do. Much of the DOD focus thus far has been to look at **battery storage** to preserve the electricity generated by solar and wind sources.12 However, lithium-ion batteries, which are the current state of the art, are best suited for intra-day storage, as their ability to store energy competitively is capped at around **8 hours**.13 In a normal operating environment, this is possibly adequate since it provides overnight storage and dispersion when demand for electricity is low. However, in a crisis scenario when high energy loads are present around the clock, this may **lead** to **shortfalls**. In addition, if a **natural disaster** took **solar** and **wind** capabilities **offline**, battery storage capability would be diminished rapidly after only a few hours. Therefore, a truly **independent** microgrid **system** should have **autonomous power** that could be provided in the case of a prolonged interruption. While **SMRs** are ideal for providing **continuous energy**, a microgrid system should have backup power available in case the unit does need to go offline for any period. As stated, batteries have limited ability to provide anything beyond intra-day energy storage, which itself is a system vulnerability. **Hydrogen** has much greater capability to **integrate** with a **microgrid system** to meet energy storage needs. Hydrogen can be produced by splitting water molecules (H20) into their component parts of H2 and elemental oxygen. When this is done with renewable electricity, the resulting hydrogen is carbon-free or "green." Once hydrogen is formed, it can **store energy** indefinitely.14 Therefore, H2 could maximize the total amount of energy produced by renewables.15 Furthermore, **hydrogen** can be **produced** by **nuclear power**, so it is also carbon-free and can store an almost **unlimited** amount of **energy. Infrastructure** investments would be **required** to store the hydrogen in a safe manner, but this is currently done globally in many industries that use hydrogen. If the SMR ever went down, **hydrogen** could provide a long-term **bridge** of **operational energy** until the issue was resolved. Though currently less efficient for short-duration storage than batteries, the flexibility that hydrogen provides in a microgrid system makes it extremely valuable for **energy assurance**. In fact, coupling hydrogen with battery storage may provide the most overall benefit for the entire system. Provide Security and Resiliency A third requirement for a microgrid system for defense use is the ability to safeguard it from potential attacks. We have noted that one of the vulnerabilities of the current grid is susceptibility to cyber attacks. The nature of warfare is constantly evolving. A World War I–era general transported to the 21st century would barely recognize how warfare is conducted in the age of long-range missiles, precision-guided munitions, and stealth bombers. It is not difficult to believe that future warfare may become as unrecognizable to us, since the main contested spaces in the future might not be air, land, and sea but space and cyberspace. A **tipping point** may have been **reached** already with **advances** in the sophistication of **offensive** cyber **capabilities** and society's increasing **reliance** on digital **technology**.16 The national electric **grid** is **vulnerable** because of **age** and the **threat** to the Supervisory Control and Data Acquisition (**SCADA**) **control** system from **cyber attacks**. An additional threat comes from **EMP weapons**, which deliver a pulse of energy from a nuclear or electromagnetic detonation "that creates a powerful **electromagnetic field** capable of **short-circuiting** a wide range of **electronic equipment**," including computers and telecommunications equipment.17 The conventional grid is **exposed** to **EMP attacks** in the form of high-voltage control cables and transformers that regulate the grid. High-voltage transformers take 2 years to build, and the United States is inadequately stocked with backup transformers. Thus, a **large-scale** EMP **attack** could **bring down** a large section of the **grid** for an extended time.18 Certainly, military operational readiness would **suffer** if military **installations** were **still integrated** in the national grid at the time of such an attack. Again, this is not a scenario

found only in science fiction novels and dystopian Hollywood films. Today, **China** is already believed to **possess super-EMP weapons** and to have **developed procedures** to execute a **first strike**.19 This rationale is arguably enough for DOD to explore alternative power delivery systems to maintain response capabilities in the event of such an assault. Fortunately, a microgrid system based on **SMR technology** has significant **defensive advantages** to the national grid. First, by definition, a microgrid is a discrete system that provides power locally. An SMR acts as an "**island** of **power**," which **decouples** from the larger **grid** and from other military installations, so a successful attack on one installation would be an **isolated incident** and not a **systemic failure**. In the case of a cyber-attack or EMP detonation on the **larger** grid **infrastructure**, a military **microgrid** would simply **not** be **affected** because it is **separate** from the rest of the **system**. Direct **cyber-attacks** on **microgrid** infrastructure are also **possible**, but this infrastructure is more **resilient** because of its **independent** computer **control**. We recommend that both **buried SMRs** and underground power lines are a **standard** part of a DEA microgrid configuration. By virtue of being below surface, they are **less vulnerable** to overhead **EMP explosions**, which is not an option for systems based on solar panels and wind turbines. Increased sophistication and sheer volume of monitoring sensors required on a large grid necessitate the automated monitoring capabilities of a SCADA system. Automation not only provides efficiency of operation but also affords efficiency of disruption if cyber security systems can be breached. A series of smaller **grid systems** could be better **protected individually**, thus vastly increasing cyber security.20 Furthermore, the use of hydrogen as an energy storage medium provides a long-term reservoir of energy, and if the SMR were taken offline for a period, a reversible hydrogen stack could return the stored power in the form of electricity, assuming no damage to the transmission infrastructure. Provide Expeditionary Capability The fourth concept underpinning the DEA is the idea that any **investments** in energy production and storage systems should be **applicable** in **expeditionary environments** as well as at installations after the strategic systems become mature. The military uses doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) to assess organizational systems and the resources required to support those systems. DOD should avoid redundancy of DOTMLPF for separate systems for energy production and delivery in garrison and expeditionary environments.

Perception is enough.

Andres '11 [Richard; Professor of National Security Strategy @ the National War College, Senior Fellow & Energy and Environmental Security Policy Chair @ the Center for Strategic Research at the National Defense University; February; National Defense University; "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications," https://ndupress.ndu.edu/Portals/68/Documents/stratforum/SF-262.pdf; DOA: 3-3-2025] tristan

Strategically, islanding bases with small reactors has another benefit. One of the **main reasons** an **enemy** might be **willing** to **risk** reprisals by **taking down** the U.S. **grid** during a period of military hostilities would be to **affect** ongoing military **operations**. **Without** the **lifeline** of **intelligence**, **communication**, and **logistics** provided by U.S. domestic bases, American **military operations** would be **compromised** in almost **any** conceivable **contingency**. Making bases more **resilient** to civilian power **outages** would **reduce** the **incentive** for an **opponent** to **attack** the **grid**. An opponent might still attempt to take down the grid for the sake of disrupting civilian systems, but the powerful **incentive** to do so in order to win an ongoing battle or war would be greatly **reduced**.

Cyber attacks are existential. Miller '17 terminalizes,

[James N. Miller and Richard Fontaine, 9-19-2017, A New Era in U.S.-Russian Strategic Stability, Center for a New American Security, https://s3.us-east-1.amazonaws.com/files.cnas.org/hero/documents/CNASReport-ProjectPathways-Finalb.pdf] //

As was the case in the Cold War, the most plausible scenario for U.S. and Russian military forces to engage in large-scale combat is in Europe. It is worth considering first how even a very limited attack or incident could set both sides on a slippery slope to rapid escalation. If armed conflict looks at all likely, both sides would have overwhelming incentives to go early with offensive cyber and counter-space capabilities to negate the other side's military capabilities or advantages. If these early cyber and space attacks succeed, it could result in huge military and coercive advantage for the attacker – with few or even no direct casualties. It may appear very unlikely that the attacked side would retaliate strongly in response to some damaged computers and some malfunctioning satellites in outer space. Moreover, if the attacks fail to have the desired effect, the other side may not even notice. Large-scale **cyber** and space **attacks** – preferably before a kinetic conflict even starts – therefore may**appear** a **low-risk**, high-payoff move for both sides. LIMITED CYBER AND SPACE ATTACKS WITH CASCADING EFFECTS ON CIVIL SOCIETY**With each side having emplaced cyberimplants to disrupt or destroy the other side's military systems and critical infrastructure –** including war-supporting infrastructure as well as purely civilian infrastructure,**a small spark in cyberspace could rapidly escalate**. The **s**park could come **from**an intentional cyber attack that had**unintended cascading effects, or from proxies or false flag attacks**. Thus, cyber and space attacks intended to be highly discriminative against military targets may cascade to affect critical infrastructure essential to the broader society and economy. If this occurred,**an attack intended to be precise**and limited to military targets instead **could result in the widespread loss of electrical power, water**, or other**essential services, with resulting economic disruption and potential loss of life.** The attacked side could feel compelled to respond at least in kind. Alternatively,**a tit-for-tat cycle may occur**, as**one side** may **believe it could gaincoercive advantage** by intentionally demonstrating its ability to hold at risk the other side's critical infrastructure through cyber, counter-space, and perhaps sabotage attacks. There is debate within the expert community as to whether cyber attacks alone could have devastating effects, but it does appear likely that combined cyber and precision attacks on critical infrastructure could devastate an economy and society. Whether such **attacks escalated through a gradual tit-for-tat or more rapid counterpunching, such counter-value strikes could lead to major conflict and**potentially**nuclear war**.

Abdussami '24 continues,

Abdussami 24 [Muhammad R. Abdussami, M.A. in Nuclear Engineering from Ontario Tech University & PhD from University of Michigan, June 2024, Investigation of potential sites for coal-to-nuclear energy transitions in the United States, Energy Reports, https://www.sciencedirect.com/science/article/pii/S2352484724002993, Willie T.]

1.2. Literature review

The U.S. government has undertaken various initiatives to assess the potential for coal-to-nuclear (C2N) transitions at coal sites across the country. Hansen et al. drafted an extensive report for the U.S. Department of Energy (DOE) that examined key factors influencing viable transitions for a hypothetical coal plant, considered the techno-economic aspects of C2N conversions, and evaluated the potential effects on local communities during this transition (Hansen et al., 2022). Similarly, Griffith et al. investigated different nuclear reactor technologies and provided **valuable insights** into the considerations for siting and replacing coal plants with nuclear alternatives (Griffith, 2021). A few technical studies have also been carried out in the field of C2N transitions. One investigation ("Gone with the Steam How new nuclear, 2021) discovered that repurposing coal plants with advanced reactors could offer economic advantages and benefits for host communities compared to renewable energy generation. A technical report published by NuScale SMR technology highlighted the capability of NuScale SMR technology to **repurpose retired coal plants** while **ensuring the economic stability** of communities and workers ("An Ideal Solution for Repurposing U.S, 2021). Bartela et al. conducted a case study on a 460 MWe supercritical coal-fired plant in Poland, demonstrating the techno-economic benefits of replacing it with a nuclear reactor incorporating thermal energy storage (Bartela et al., 2022), (Bartela et al., 2021). Furthermore, Lukowicz et al. performed a techno-economic analysis on the same Polish coal plant, proposing the replacement of the plant's steam cycle with a small-scale modular Pressurized Water Reactor (PWR) (Łukowicz et al., 2023). Simonian et al. evaluate the potential of C2N transition at the Limestone coal plant in Texas, comparing small modular,

high-temperature gas-cooled, and molten salt nuclear reactor technologies. Each technology's pros and cons are weighed against cost, risk, and C2N integration complexity. The study concludes no one-size-fits-all solution exists for C2N transitions, and specific nuclear designs and transition schemes must be carefully considered for each project based on technical specifications and feasibility (Simonian and Kimber, 2023). Notably, although these studies focused on specific candidate coal plants, comprehensive siting analyses for C2N transitions were not addressed.

The potential for advanced nuclear reactors to replace coal plants has been discussed in ("Coal-to-Nuclear Transitions, 2024), **emphasizing their compatibility** with variable renewable technologies and their capability to provide both electricity and process heat. The document ("Coal-to-Nuclear Transitions, 2024) examines economic impacts, job creation, and revenue benefits in host communities, noting **significant increases in employment and income** following a coal-to-nuclear transition. It discusses workforce requirements, educational needs, and training for transitioning workers, outlining the overlap and distinct roles between coal and nuclear plants. Policy and funding aspects, including **tax incentives** and loans, are also addressed, with a focus on achieving net-zero emissions targets by 2050 and supporting disadvantaged communities. The document emphasizes the critical role of utilities in managing transitions and presents a comprehensive outlook on infrastructure reuse and community engagement strategies for successful coal-to-nuclear conversions. In another paper, the advantages of repurposing existing site infrastructure, including transmission infrastructure, environmental permits, and water usage rights, have been examined. Repowering coal plant sites with nuclear power offers **clean, reliable, and dispatchable energy**, addressing the twin challenges of decommissioning and transitioning to low-carbon energy sources. The paper guides utilities through the key considerations and steps involved in evaluating and repurposing coal plant sites for advanced nuclear generation, focusing on the potential to retain jobs, tax bases, and community support. In contrast to the technoeconomic analyses described above, the siting of advanced nuclear reactors within operating or retired CPPs has received relatively little attention in the literature. Belles et al. conducted an analysis using the Oak Ridge Siting Analysis for Power Generation Expansion (OR-SAGE) tool to evaluate the suitability of 13 coal power plants in the Tennessee Valley Authority (TVA) service territory for the deployment of advanced nuclear reactors (Belles et al., 2013). A similar approach was adopted in another study (Belles et al., 2021), where OR-SAGE was utilized to assess the retrofitting of advanced nuclear reactors in existing or retired coal plants. Furthermore, Omitaomu et al. employed the OR-SAGE tool to investigate the siting of advanced nuclear reactors across the contiguous United States (Omitaomu et al., 2022). In a separate study, Toth et al. employed the Advanced Nuclear Site Locator (ANSL) tool to evaluate 304 coal sites in the U.S., identifying **79** potentially feasible sites for coal-to-nuclear transitions (Toth et al., 2021). However, they reported that state-level policies could pose challenges to the demonstration of advanced nuclear reactors. Therefore, a comprehensive assessment of all coal plants in the United States, encompassing operational and retired facilities, is necessary to gain an understanding of the most suitable coal sites for transitioning to nuclear power. While the existing literature provides some valuable insights into the siting potential of advanced nuclear reactors in coal plants, the number of studies on this subject remains limited. 1.3. ContributionThis paper aims to assess the feasibility of converting each operational coal site to nuclear power using a tool called Siting Tool for Advanced Nuclear Development (STAND). The studied coal plants are classified into two different groups (Group-01 and Group-02) based on their capacity. Since advanced nuclear reactors are divided into various classes, such as micro-reactors, medium-scale reactors, and Small Modular Reactors (SMRs), it is necessary to categorize coal plants accordingly to match their capacity for a smooth transition to nuclear power. Categorization will also help in presenting the research findings and data clearly, considering the substantial amount of data involved in the analysis. To conduct this analysis, our first step was to gather information on all operational coal sites in the U.S. until January 2023. The operational coal sites are the focus of this study to **take advantage** of the existing Balance of Plant (BOP) equipment, such as transmission lines and power system protection components, which can **reduce construction time and costs**. Analyzing operational coal plants will also guide policymakers, state-level governments, and energy modelers in determining the prioritization of coal plant retirements. Furthermore, we limit our study to operational coal sites in the U.S. as many retired coal sites lack the necessary technical infrastructure for an attractive coal-to-nuclear transition. Next, we classify all operational coal sites into two clusters based on their nameplate capacity. The CPPs located in non-contiguous states (e.g., Alaska and Hawaii) are not considered due to the lack of sufficient data in STAND. Each cluster is then individually simulated in STAND using selected attribute values, as mentioned in Section 2, specifically in Table 1, Table 2, Table 3. Section 3 discusses the clustering of CPPs. Section 4 provides additional information about the STAND tool. Section 5 presents the results of the study, while Section 6 concludes the study with discussion. This paper presents a comprehensive approach for utilizing STAND in evaluating the feasibility of transitioning from coal to nuclear energy across the U.S. The detailed results and investigation will provide a clear idea on which factors one should consider for a particular region/area to C2N transitions.

Contention 2 is AI

Moynihan From Today finds

Lydia Moynihan (Lydia covers the most notable stories at the intersection of Washington, Wall Street, and Silicon Valley. She regularly appears on Fox News, CNBC, and Fox Business and has hosted panels at the 92NY, the Future Investment Initiative, and Global Alts. During her time at The Post, she's conducted interviews with notable business leaders including Barry Diller, Bill Ackman, and Eric Schmidt, as well as senators and presidential candidates. She's broken dozens of stories, including efforts to ban TikTok, Rudy Giuliani's indictment, and Trump's SPAC.), 4-11-2025, "Scale AI CEO Alexandr Wang issues stark warning about America's need to keep pace with China on AI," New York Post, https://nypost.com/2025/04/11/business/scale-ai-ceo-alexandr-wang-issues-stark-warning-about-china/, accessed 4-11-2025 //RP

Alexandr Wang, the world's youngest self-made billionaire and CEO of the $14 billion company Scale AI, has become one of the most important voices on artificial intelligence. And the message he is sharing now is that the US is at risk of falling behind. "The Chinese Communist Party has enacted a whole-of-government approach to leading in AI — an AI master plan," he said**. "They want to be the leader by 2030 … their approach integrates their economy, their government and every part of the Chinese society to ensure that they're able to come out ahead."** And, he admitted, that unnerves him. **"One of the things I'm really concerned about is, if China races ahead on AI — and, let's say, they start applying AI to their military and their cyber operations more effectively than we do in the United States — they'll be able to hack into our systems**. They'll be able to hack into our energy grid and shut it off." At 28, he has the attention of Congressmen, CEOs and celebrities — and the ability to influence policy. The video player is currently playing an ad. Scale AI CEO Alexandr Wang testifying before a House Armed Services Subcommittee on Cyber, Information Technology, and Innovation in Washington, U.S. 4 **Wang sees a narrow window — one to two years — for the US to secure its lead in AI, especially as China accelerates its own ambitions. REUTERS Since moving to San Francisco nearly a decade ago, he's gotten to know all of the right people in Silicon Valley (Sam Altman even lived with him for a few months)** and has become a fixture at global events like the Allen & Company Conference in Sun Valley, Davos, and, most recently, the Paris AI Summit, where world leaders from Narendra Modi to Emmanuel Macron seek his counsel. Now, he's helping the US approach to AI — and believes the time is right: "This administration has been super focused on AI, thinking a lot about how to ensure American leadership." This week, after testifying before the House Energy and Commerce Committee and unveiling his vision for America's AI strategy, Wang spoke with me about why this moment is so urgent, why he's prioritizing time with government leaders (he sat for four and a half hours in front of Congress) and why he believes Silicon Valley is committed to helping the US win the race. **Wang told me he sees a narrow window — one to two years — for the US to secure its lead in AI, especially as China accelerates its own ambitions.** Alexandr Wang and Barry Diller attending the Allen & Company Sun Valley Conference, walking by a car in Sun Valley, Idaho 4 Alexandr Wang, seen here with Barry Diller, has become a fixture at global events like the Allen & Company Conference in Sun Valley. Getty Images Explore More What financial advisers are telling clients about their 401(k)s amid wild Wall Street volatility CBS loses 'Jeopardy!' and 'Wheel of Fortune' distribution rights — dealing Sony major win Finance CEO's grim recession warning: Trump tariffs 'beyond anything I could have imagined' While the US holds an edge in computing power, one of the key areas of the AI race, **Wang said the competition with China is neck-and-neck on algorithms — and we're falling behind on data. "The United States needs a strategy for data dominance,"** he emphasized. **"We need an approach both in the public and private sectors to win on data."** He has several ideas that would help our government compete. The first is to establish an information reserve that would allow data to be shared between agencies and help train AI. Another is to integrate AI into the government — what Wang calls an "agentic" approach — with the goals of streamlining processes, like energy permitting, and strengthening national security. "I'm advocating for AI agents to make the federal government more efficient," he said.

Energy shortages will kill the AI race

Li 2025(FENGRONG LI, CFA, CIRA Managing Director Power, Renewables & Energy Transition (PRET) FTI Consulting, 27 February 2025, "The Powerful Duo of Nuclear and Data Centers", FTI, https://www.fticonsulting.com/insights/articles/powerful-duo-nuclear-data-centers, DOA: 3/7/2025)ET

Acute power shortages and mounting resource adequacy challenges have emerged as existential threats to the AI race. Hyperscale and colocation data centers — among the most energy- intensive digital infrastructures — **depend on reliable, 24/7 electricity to sustain AI workloads and cloud computing. However, intermittent, non-dispatchable generation resources dominate the interconnection queues; power constraints stall data center deployment. Nuclear power, with its carbon-free, high-energy output, presents a compelling solution to alleviate the bottleneck.** Large tech players and the nuclear industry have forged strategic alliances to **move new nuclear projects forward. These partnerships represent a crucial down payment on building sustainable energy infrastructures capable of supporting AI growth.** Experts at FTI Consulting have evaluated the collaboration models between these two sectors, including co-location strategies, which have gained momentum despite encountering pushbacks from market participants and regulatory bodies.

Shortages kill data centers. Patel ‘25

Patel 2025(Sonal Patel, POWER senior editor, 3-3-2025, "The SMR Gamble: Betting on Nuclear to Fuel the Data Center Boom", POWER Magazine, https://www.powermag.com/the-smr-gamble-betting-on-nuclear-to-fuel-the-data-center-boom/, DOA: 3/7/2024)ET

That has dramatically raised the stakes, igniting a desperate frenzy across both the power industry—which must generate and deliver reliable electricity for a variety of emerging large load consumers—and the data center industry, which is scrambling to procure firm scalable energy to sustain its explosive growth, now and well into the future. The stakes are fueled by real fear. In November, research firm Gartner projected that power required for AI data centers could reach 500 TWh per year by 2027, a 2.6x increase from 2023 levels. It warned that power shortages could restrict 40% of AI data centers by 2027 and drive up energy costs. The upfront cost of power is no longer the deciding factor for data centers, speakers at the Sustainable Data Centers Summit in Dallas, Texas, suggested in early February. “It’s crazy because we look at like the state of Oregon is about 6 GW, and you have these large hyperscalers [asking] ‘Can I get 6 GW too?’ ” said Mohammed Hassan, senior technical program manager for Amazon Web Services (AWS) Sustainability. Hassan suggested the industry has had to rethink how it approaches energy planning and procurement completely to align with incentives, address regulatory hurdles, and secure long-term reliability. “Solar and wind has taken off in the lead. But if you look at the needs of 2045, in trying to meet the Paris Agreement, solar and wind won’t be enough, so you have to look at what’s the next step.” At the conference, speakers pointed to potential alternatives that could perform over the short term: natural gas as a “bridge fuel,” carbon capture as a potential future solution, energy storage solutions for flexibility and to promote grid resilience, and renewable diesel as a cleaner backup power option. But to meet long-term goals, the industry is willing to bet on nuclear power for its many benefits—despite the significant challenges that remain.

Affirming solves, Kramer 24

Anna Kramer, 8-27-2024, "Nuclear Power Could Solve a U.S. Energy Crisis, If States Can Figure Out How to Pay for It," NOTUS, https://www.notus.org/policy/nuclear-power-energy-crisis-cost, accessed 3-27-2025 //RR

There's an obvious solution to the compounding energy problems in the United States, but even overwhelming bipartisan excitement can't overcome one critical obstacle: States say it's just too expensive. Nuclear power is a source of nearly unlimited, carbon-free, dependable energy that could significantly alleviate the stress on the United States' electrical grid and any subsequent spikes in electricity prices. This year, Congress passed nuclear reform with near unanimity, with only two senators and 13 House members in opposition. Yet state public utility commissioners are warning that without even more significant federal investment, **new nuclear plants are simply out of reach — or run the risk of seriously increasing consumers' costs**. "I'm urging commissioner colleagues from around the country to use great caution when considering nuclear," Tim Echols, one of Georgia's public service commissioners, said. Echols is an unlikely naysayer; he's a fan of nuclear power who helped ensure that the first new plant in the country in more than 20 years made it over the finish line in Georgia in 2023. Plant Vogtle will bring stable, dependable, nearly unlimited power to the state. **Still, Georgians will have to pay significantly more for electricity because the project went billions of dollars over budget**. "They are all somewhat aware of Vogtle's issues here in Georgia, and I want them to be successful in their efforts," Echols said. Echols and fellow state commissioner Nick Myers in Arizona have been arguing in private meetings and in editorials for the energy community that the Department of Energy and Congress should embrace the idea of a federal backstop to cover the cost overruns for future new nuclear plants. **Echols wants the government to allocate $50 billion of IRA funding for five reactors instead of passing the prices along in the electricity bills of the communities served by the nuclear plant. "Regulators don't want to pass the costs on to the ratepayers," Myers said**.

AI is the core of the tech race, Vasquez '23 finds

Christian Vasquez, 4-11-2023, "Top US cyber official warns AI may be the 'most powerful weapon of our time'", CyberScoop, https://cyberscoop.com/easterly-warning-weapons-artificial-intelligence-chatgpt///EEdoa04/11/24
Director of the Cybersecurity and Infrastructure Security Agency Jen Easterly warned that **artificial intelligence** may be **both the most "powerful capability of our time" and the "most powerful weapon of our time."** "Imagine a world in the not to distant future where how-to guides, AI-generated imagery, auto-generated shopping lists are available for terrorist and for criminals, providing the capability to develop things like cyber weapons, chemical weapons, bio weapons," Easterly said Friday at a security summit at Vanderbilt University in Nashville, Tennessee. "And that's not even the worst case scenario."

Kroenig 21 finds

(Dr. Matthew Kroenig is a professor of government and foreign service at Georgetown University and the director of the Scowcroft Strategy Initiative at the Atlantic Council. His most recent book is The Return of Great Power Rivalry: Democracy versus Autocracy from the Ancient World to the US and China (2020), Winter 2021, "Will Emerging Technology Cause Nuclear War?" Strategic Studies Quarterly, https://www.jstor.org/stable/pdf/48638052.pdf DOA: 3/7/23) LLO

How will states use such a newfound advantage? Technology rarely fundamentally changes the nature or objectives of states. More often, states use technology to advance preexisting geopolitical aims. Moreover, enhanced power can result in greater ambition. **Given the geopolitical landscape deof the international system will behave differently with new military technologies than will revisionist powers, such as Russia and China. The spread of new technology to the United States and its Allies and partners would likely serve, on balance, to reinforce the existing sources of stability in the prevailing international system. At the end of the Cold War, the United States**

and its Allies and partners achieved a technological military advantage over its great power rivals, with the US using its unipolar position to deepen and expand a rules-based system. They also employed their military dominance to counter perceived threats from rogue states and terrorist networks. **The United States, its Allies, and partners did not, however, engage in military aggression against great power, nuclear-armed rivals or their allies. In the future, these status quo powers are apt to use military advantages to reinforce their position in the international system and to deter attacks against Allies and partners in Europe and the Indo-Pacific.** These states might also employ military power to deal with threats posed by terrorist networks or by regional revisionist powers such as Iran and North Korea. **But it is extremely difficult to imagine scenarios in which Washington or its Allies or partners would use newfound military advantages provided by emerging technology to conduct an armed attack against Russia or China.** Similarly, **Moscow and Beijing would likely use any newfound military strength to advance their preexisting geopolitical aims. Given their very different positions in the international system, however, these states are likely to employ new military technologies in ways that are destabilizing. These states have made clear their dissatisfaction with the existing international system and their desire to revise it. Both countries have ongoing border disputes with multiple neighboring countries.** If Moscow developed new military technologies and operational concepts that shifted the balance of power in its favor, it would likely use this advantage to pursue revisionist aims. If Moscow acquired a newfound ability to more easily invade and occupy territory in Eastern Europe, for example (or if Putin believed Russia had such a capability), it is more likely Russia would be tempted to engage in aggression. **Likewise, if China acquired an enhanced ability through new technology to invade and occupy Taiwan or contested islands in the East or South China Seas, Beijing's leaders might also find this opportunity tempting. If new technology enhances either power's anti-access, area-denial network, then its leaders may be more confident in their ability to achieve a fait accompli attack against a neighbor and then block a US-led liberation. These are precisely the types of shifts in the balance of power that can lead to war.** As mentioned previously, the predominant scholarly theory on the causes of war—the bargaining model—maintains that imperfect information on the balance of power and the balance of resolve and credible commitment problems result in international conflict.52 **New technology can exacerbate these causal mechanisms by increasing uncertainty about, or causing rapid shifts in, the balance of power.** Indeed as noted above, new military technology and the development of new operational concepts have shifted the balance of power and resulted in military conflict throughout history. Some may argue emerging military technology is more likely to result in a new tech arms race than in conflict. This is possible. **But Moscow and Beijing may come to believe (correctly or not) that new technology provides them a usable military advantage over the United States and its Allies and partners. In so doing, they may underestimate Washington. If Moscow or Beijing attacked a vulnerable US Ally or partner in their near abroad, therefore, there would be a risk of major war with the potential for nuclear escalation.** The United States has formal treaty commitments with several frontline states as well as an ambiguous defense obligation to Taiwan. **If Russia or China were to attack these states, it is likely, or at least possible, that the United States would come to the defense of the victims. While many question the wisdom or credibility of America's global commitments, it would be difficult for the United States to simply back down. Abandoning a treaty ally could cause fears that America's global commitments would unravel. Any US president, therefore, would feel great pressure to come to an Ally's defense and expel Russian or Chinese forces. Once the United States and Russia or China are at war, there would be a risk of nuclear escalation.** As noted previously, experts assess the greatest risk of nuclear war today does not come from a bolt-out-of-the-blue strike but from nuclear escalation in a regional, conventional conflict.53 **Russian leaders may believe it is in their interest to use nuclear weapons early in a conflict with the United States and NATO.54** Russia possesses a large and diverse arsenal, including thousands of nonstrategic nuclear weapons, to support this nuclear strategy. In the 2018 Nuclear Posture Review, **Washington indicates it could**

retaliate against any Russian nuclear "de-escalation" strikes with limited nuclear strikes of its own using low-yield nuclear weapons.55 The purpose of US strategy is to deter Russian strikes. **If deterrence fails, however, there is a clear pathway to nuclear war between the United States and Russia. As Henry Kissinger pointed out decades ago, there is no guarantee that, once begun, a limited nuclear war stays limited.56 There are similar risks of nuclear escalation in the event of a US-China conflict.** China has traditionally possessed a relaxed nuclear posture with a small "lean and effective" deterrent and a formal "no first use" policy. **But China is relying more on its strategic forces. It is projected to double—if not triple or quadruple—the size of its nuclear arsenal in the coming decade.57 Chinese experts have acknowledged there is a narrow range of contingencies in which China might use nuclear weapons first.58** As in the case of Russia,**the US Nuclear Posture Review recognizes the possibility of limited Chinese nuclear attacks and also holds out the potential of a limited US reprisal with low-yield nuclear weapons as a deterrent.59 If the nuclear threshold is breached in a conflict between the United States and China, the risk of nuclear exchange is real. In short, if a coming revolution in military affairs provides a real or perceived battlefield advantage for Russia or China, such a development raises the likelihood of armed aggression against US regional allies, major power war, and an increased risk of nuclear escalation.**

Contention 3 is Exports

U.S. hegemony is coming to an end. PC '24

Policy Circle 24 (Policy Circle is a digital platform that offers in-depth coverage of public policy issues in governance, environment, and society. It was launched in 2020 by a group of policy experts who share a vision of promoting evidence-based policymaking and constructive policy dialogue. It also organises summits, roundtables, and online discussions to bring together policymakers, researchers, corporate executives, professionals, and other stakeholders to deliberate on policy issues. December 27, 2024 "End of American hegemony: Can the superpower reinvent power for the 21st century" Policy Circle, https://www.policycircle.org/world/end-of-american-hegemony/, DOA: 3/28/25) LLO

In 2010, a historian predicted that the American hegemony might end by 2025 — not with a bang but with a whimper — as domestic divisions deepened and rival powers rose to challenge its authority. Today, that prediction appears prophetic as America faces increasing pressures from within and outside. Even as the US retains military dominance and an economy capable of immense influence, **the structural underpinnings of its global power are eroding. This decline, though not necessarily terminal, signals a transition away from the so-called American Century. Historically, the US leveraged its unmatched economic strength, technological innovation, and cultural influence to dominate the post-World War II global order. However, the foundations of the American hegemony are crumbling. The US share of global GDP has steadily declined,** falling from 50% in the mid-20th century to approximately 15% today when adjusted for purchasing power parity. **The globalisation, initially championed by the US, has redistributed industrial power, with China emerging as a key beneficiary. China's rise**

has reoriented global economic networks, particularly in the Global South. In contrast to America's interventionist foreign policy, **China has cultivated influence through infrastructure investments, soft power campaigns**, and state-sponsored media. The United States, while still a major player, has failed to present an alternative vision that resonates with developing nations, where perceptions of Chinese leadership are increasingly favourable.

Accordingly China leads the world in nuclear exports, Cohen '24 finds

Cohen 24(Dr. Ariel Cohen, Ph.D. is a Senior Fellow at the Atlantic Council and the Founding Principal of International Market Analysis, a Washington, D.C.-based global risk advisory boutique. He is also Managing Director of the Energy, Growth, and Security Program (EGS) and a Senior Fellow with the International Tax and Investment Center (ITIC). 7 June 2024, "China And Russia Now Dominate The Global Nuclear Trade" Forbes, https://www.forbes.com/sites/arielcohen/2024/06/07/china-and-russia-now-dominate-the-global-nuclear-trade/, DOA: 3/5/25) LLO

Russia is not alone in surpassing the US. **China is also far ahead of the US in the nuclear energy industry. China's nuclear power industry has retained its domestic focus, with twenty-three power plants under construction in China as of July 2023.** This is due to increasing energy demand, as China continues to develop its economy. The United States is constructing a single nuclear power plant. **While China has refined its nuclear power production process, the last plant built in the US arrived 7 years late and 17 billion dollars over budget, as a testament to America's byzantine permitting and environmental review system. China has built upon this expertise also to begin supplying reactors abroad. The China National Nuclear Corporation and China General Nuclear Power Group have developed a third-generation reactor called Hualong One.** This new reactor began operations in 2021 in Fuqing**. In 2023, China began construction on the Chashma-5 nuclear power plant in Pakistan, which will use Hualong One reactors. Such actions contribute to China's capacity to construct infrastructure abroad and expand its influence.** The American nuclear power industry was once the world's envy, peaking with 112 operational reactors in 1990, with America on a path to carbon neutrality much earlier than current predictions. **34 years later, the United States has lost nearly a third of its operational nuclear reactors, has built almost no new ones, and its average reactor age is decades old. If nothing is done to rectify this, in the next 10-15 years, scores of nuclear reactors will have to be retired as their operational lifecycles end, and as a result, America will have to contend with nearly 20% of its electricity capacity evaporating.**

Affirming Solves, Tobin '24 finds

Webster and **Tobin 24**, *Senior Fellow in the Global Energy Center at The Atlantic Council, MA in International Relations from Johns Hopkins, **Assistant Director in the Atlantic Council Global Energy Center, BS from the University of Florida (*Joseph Webster, **William Tobin, February 12, 2024, "Beijing's influence on Latin America's energy mix is growing—especially in renewables," The Atlantic Council, https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/beijings-influence-on-latin-americas-energy-mix-is-growing-especially-in-renewables/)

Help to ensure that **Latin America** can credibly look **beyond** Beijing for **energy** partners, working with like-minded partners, especially in **renewable** energy supply chains. China's **near monopoly** along segments of the region's solar supply chain, for instance, is a **major risk** for Latin America, given that solar power will be an **important** driver of the **energy** transition. The **U**nited **S**tates must continue to **bolster** its own clean energy manufacturing capacity and develop its own **exports** of clean energy technologies and services to provide an **alternative** for **Latin American** markets. Whenever possible, it should encourage and **finance** renewable industrial development across the value chain in **Latin America**. Raise awareness of the risks of sole-supplier dependency in key markets, especially in the utilities sector, but also provide viable and credible alternatives. While imports of Chinese solar panels provide both opportunities and risks for the region, allowing **Chinese** companies to **capture** the entirety of the solar **value chain** will limit Latin America's **benefits** while potentially exposing the region to uncompetitive markets and geopolitical **risks**, even geopolitically motivated **electricity shutoffs**. When appropriate, the West should provide **support** for firms seeking to make investments in energy infrastructure in Latin American nations, particularly as an **alternative** to Chinese firms **seeking** to establish **monopolies**.

Domestic production is key to exports. Graham '19

Graham 19 (Thomas Graham is a retired diplomat who helped negotiate every international arms control and nonproliferation agreement from 1970 to 1977, co-chair of the Nuclear Energy and National Security Coalition, 5/29/19, "National security stakes of US nuclear energy" The Hill, https://thehill.com/opinion/national-security/445550-national-security-stakes-of-us-nuclear-energy/, DOA: 3/4/25) ST

We have dedicated our careers to controlling the destructive potential of nuclear weapons. But since the Atoms for Peace era, **U.S. leadership in supplying peaceful nuclear energy technology, equipment, and fuel to the world has been important for world development and therefore critical for the United States to establish and enforce standards for nuclear safety, security and nonproliferation**. But in recent decades, the U.S. share of international commercial nuclear energy markets has diminished, and so with it has the United States' ability to influence global standards in peaceful nuclear energy. The critical moment for U.S. leadership in nuclear energy is when a country is developing nuclear energy for the first time. **The supplier country and the developing country typically forge a relationship that endures for the 80- to 100-year** life of the nuclear program. Unlike a coal or gas plant**, nuclear reactors need specialized fuel and maintenance. Once established, the bilateral commercial relationship is not easily dislodged by a rival nation, providing the supplier profound and lasting influence on the partner's nuclear policies and practices. Russia and China have identified nuclear energy as a strategic export, to be leveraged for geopolitical influence as well as for economic gain.** According to a recent analysis, **Russia is the supplier of more nuclear technology than**

the next four largest suppliers combined, and China is quickly emerging as a rival. If the United States fails to compete in commercial markets, it will cede leadership to these countries on nuclear safety, security and nonproliferation, as well as foreign policy influence. As the competition intensifies to deliver **the next generation of nuclear power technologies**, U.S. nuclear leadership is approaching a watershed opportunity. Simpler, scalable, and less expensive, small and advanced reactors **are commercially attractive to an expanded range of markets** — particularly in Africa, Asia and the Middle East. The United States has the world's best training and development programs, unmatched regulatory experience, and multiple small and advanced reactor designs; we should be the easy choice for the next generation of nuclear technology. But early U.S. engagement in these important geopolitical regions is critical. Without it, **Russia and China will lock up future nuclear markets through MOUs and other bilateral agreements.** And for addressing the national security risks of climate change, nuclear energy is not just an option but a necessity. Developing nations that are planning to meet power and water needs for large and growing populations must have reliable, demonstrated, zero-emission nuclear power in order to meet global climate goals as well. Advanced reactors are integral to these goals. In the United States, nuclear energy is responsible for a fifth of the United States' total electricity and more than 55 percent of our emissions-free energy, but the pace of domestic construction of new natural gas plants far exceeds the few nuclear plants under development, and the existing fleet is retiring prematurely at an alarming rate. Which brings us back to the domestic nuclear industry**. U.S. global competitiveness and leadership are inextricably linked to a strong domestic nuclear program. Without a healthy domestic fleet of plants, the U.S. supply chain will weaken against international rivals. Russia has brought six new plants online in the past five years and has six more plants currently under construction. In the same period, China has brought 28 new plants online and has 11 others under construction. These domestic projects provide Russia and China with a robust supply chain, an experienced workforce, and economies of scale that make them more competitive in bidding on international projects. Unless we continue to innovate and build new plants, we will cease to be relevant elsewhere.** Even our own domestic energy security is supported by nuclear power. The nuclear plants operating today are the most robust elements of U.S. critical infrastructure, offering a level of protection against natural and adversarial threats that is unmatched by other plants. Because the nation's grid supplies power to 99 percent of U.S. military installations, large scale disruptions affect the nation's ability to defend itself. **We can regain U.S. leadership in nuclear energy. The key steps are to maintain the domestic reactor fleet, with its reservoir of know-how, and to assist American entrepreneurs in developing the next generation of the technology**.

It's Now or never. Berg '25

Berg 3-27, Director of the Americas Program at CSIS, Head of the Future of Venezuela Initiative (Ryan C. Berg, March 27, 2025, "China Won't Be the Obvious Winner in Latin America," Foreign Policy, https://foreignpolicy.com/2025/03/27/china-latin-america-trump-united-states-competition/)

These are sound reasons to **doubt** that the **Trump** administration's **policies** in LAC are driving the region's countries into **China's arms** in the **short** or medium **term**; however, there **remain** important longer-term **risks**. Perhaps the biggest long-term risk revolves around the **Trump** administration's reexamination and recalibration of global **commitments**, as well as the drastic reduction of programming at USAID. To be sure, while in Central America on his first trip as America's chief diplomat, Secretary of State Marco Rubio cited waivers at each of his stops for

important USAID programming to continue. Nevertheless, the abrupt devolution of **USAID**, as well as statements distancing the United States from global commitments to allies, may undermine **LAC** countries' desire to **align** with the **U**nited **S**tates long term. If the Trump administration does not leverage its review of foreign aid to **replace** canceled programming **with something** that—as it promised—aligns with the **U**nited **S**tates' foreign-policy **goals**, it may **lose** the opportunity to keep the **U**nited **S**tates differentiated **from China**. Still, LAC governments do not desire replacements for every closed USAID program, and China's traditional assistance in LAC is not of a kind that would substitute lost USAID money that regional governments do want replaced.

The other long-term risk involves sustaining U.S. economic engagement. While the BlackRock deal is a massive win for the Trump administration, the **U**nited **S**tates should **find a way** to institutionalize or regularize this kind of approach, lest it be a **one-off** event. China's relative silence in the wake of the deal's announcement has since given way to fulminations, suggesting Beijing fears what is at stake. Hutchison Port Holdings was the single largest Chinese company owning and operating ports, and in the words of one scholar, "the transaction will strip out nearly a third of China's overseas port network and establish a U.S. firm as the controlling interest of a huge and strategic network of foreign port assets." China's directive to several of its agencies, including the State Administration for Market Regulation, to examine the deal for any security breaches or shortcomings suggests that Beijing is keen to prevent this deal from becoming a replicable model elsewhere in competition with the United States.

Historically, however, the United States has struggled to entice the interest of its private sector in investing in many parts of LAC. The Biden administration launched the Americas Partnership for Economic Prosperity (APEP), a framework meant to engage LAC on economic issues. Despite three years of work, APEP remained underdeveloped, only convening its first meeting in November 2023. The Trump administration canceled APEP, replacing it with the America Crece (Americas Grow) program, a revival of the private sector-led investment program launched in the first Trump administration. Much of the administration's long-term **success** in LAC may **hinge on** the success of America Crece or a more institutionalized approach to leveraging the **private sector** in competition with **China**. Messaging and establishing red lines are **easier** than **following through** on a hopeful vision for the region's economic potential that helps **LAC** escape the **middle-income** trap, firm up supply chains, and experience more inclusive growth. Advisors have spoken of the necessity of a "golden age of the Americas" to complement the Trump administration's focus on domestic reshoring. A **sustained** approach will be needed to ensure **follow-through**.

Far from **losing** ground **to China** in LAC, if the Trump administration can **prevent** these long-term **risks** from materializing and **build on** the gains of the recent BlackRock deal in the short and medium term, it should be able to realize its vision of competing more effectively with China in the region.

Decline causes transition wars and lashout. Kim 19

Kim 19 [Min-Hyung Kim, Department of Political Science and International Relations, Kyung Hee University, Seoul, South Korea, 2-4-2019, A real driver of US–China trade conflict: The Sino–US competition for global hegemony and its implications for the future, No Publication,

https://www.emerald.com/insight/content/doi/10.1108/itpd-02-2019-003/full/html, accessed 2-11-2025.] //aayush

Since the end of the Second World War, **the USA has undoubtedly been a global hegemon**. With its preponderant military and economic strength, it has created a liberal international economic order and maintained it by promoting global free trade. **USA sudden turn to protectionism under the banner of "America First" in the Trump administration illustrates "US fear" that its hegemony or Pax Americana is declining vis-à-vis China's growing power**. It also demonstrates that **the USA now seeks to deter China from overtaking its hegemony so as to keep US hegemony as long as possible**. Currently, the USA and China are waging a trade war. What is important to note here is that **the driving force of the trade war between the world's two largest economies is more political than economic**. That is to say, **as China's economic and political influence in the world vis-à-vis that of the USA increases, US fear about China's power also grows. Under these circumstances, Washington makes every effort to assert its global dominance by deterring China's challenge to its hegemony**[13]. **It is this** sort of "US **fear**" **about hegemonic power transition from Washington to Beijing that brought about US policies against the BRI, the AIIB, and Made in China 2015**. The fear of hegemonic power transition is indeed a **driving force for the US-launched trade war**. Understood this way, **the trade war between the USA and China may be a harbinger of a much larger-scale conflict between the two parties**, since as PTT predicts, **war is more likely to occur when the power gap between a declining hegemon and a rising challenger is getting closed**. **As China's economic**, technological, military **and political rise continues down the road, the USA will try to contain it in order to maintain its global hegemony**. The obvious consequence of this seesaw game is the **intensification of the Sino–US competition over global hegemony**. The USA and China, the two most powerful states in the world, **appear as if they were on a collision course.** What this means is that **so long as US fear about China's overtaking US hegemony persists, a similar type of conflict between the two hegemonic powers is likely to occur in the future** even if the current trade war is over.

Such conflict goes nuclear. Beres 21

Beres 21 [Louis Rene Beres is a Emeritus Professor of Political Science and International Law at Purdue. Beres has worked on matters with Department of Defense agencies, The Defense Nuclear Agency, the JFK Special Warfare Center; with Arms Control and Disarmament Agency; Defense Advanced Research Projects Agency; and with Nuclear Control Institute Beres has written twelve books and several hundred scholarly articles and monographs. He also lectures widely on matters of terrorism, strategy and international law - – "Controlling Nuclear Risks: A Basic Obligation of U.S, Law and Policy" – Jurist – March 10th - #E&F - https://www.jurist.org/commentary/2021/03/louis-rene-us-nuclear-policy-biden/]

"Cold War II" represents a comprehensive systemic structure within which virtually all contemporary world politics and world law could be meaningfully categorized and assessed. Current "Great Power" dispositions to war, however they might most usefully be ascertained, offer auspicious analytic background for still-wider **nuclear interactions**. What next? Planning ahead, what explanatory theories and scenarios could best guide the Biden administration in its multiple and foreseeable interactions with North Korea, Iran, China and Russia? Before

answering this many-sided question with conceptual clarity and adequate specificity, a "correct" answer – any correct answer – will depend upon a more considered awareness of intersections and overlaps. Accordingly, some of these intersections and overlaps will be synergistic. By definition therefore, the consequential "whole" of any one particular interaction will be greater than the simple sum of its constituent "parts." Going forward, the new American president's advisors will have to consider one overarching assumption. This is the inherently problematic expectation of adversarial rationality. Depending upon the outcome of such consideration, the judgments they make about this will be decidedly different and more-or-less urgent. It now follows further that a primary "order of business" for American strategic analysts and planners will be reaching informed judgments about each specified adversary's determinable ordering of preferences. Unequivocally, only those adversaries who would value national survival more highly than any other preference or combination of preferences would be acting rationally. But what about the others? For scholars and policy-makers, further basic questions must now be considered. First, what are the operational meanings of relevant terminologies and/or vocabularies? In the formal study of international relations and military strategy, decisional irrationality never means quite the same as madness. Nonetheless, certain residual warnings about madness should still warrant serious US policy consideration. This is because both "ordinary" irrationality and full-scale madness could exert more-or-less comparable effects upon any examined country's national security decision-making processes. There is nothing here for the intellectually faint-hearted. This is not about "attitude" (the term Trump used to describe what he had regarded as most important to any negotiation), but about fully science-based "preparation". Sometimes, for the United States, understanding and anticipating these ascertainable effects could display existential importance. In all such prospective considerations, words could matter a great deal. In normal strategic parlance, "irrationality" identifies a decisional foundation wherein national self-preservation is not summa, not the very highest and ultimate preference. This preference ordering would have decidedly significant policy implications. An irrational decision-maker in Pyongyang, Tehran or elsewhere need not be determinably "mad" to become troubling for policy analysts in Washington. Such an adversary would need "only" to be more conspicuously concerned about certain discernible preferences or values than about its own collective self-preservation. An example would be those preferences expressed for feasible outcomes other than national survival. Normally, any such national behavior would be unexpected and counter-intuitive, but it would still not be unprecedented or inconceivable. Identifying the specific criteria or correlates of any such considered survival imperatives could prove irremediably subjective and/or simply indecipherable. Whether a particular American adversary were sometime deemed irrational or "mad," US military planners would still have to input a generally similar calculation. Here, an analytic premise would be that the particular adversary "in play" might not be suitably deterred from launching a military attack by any American threats of retaliatory destruction, even where such threats would be fully credible and presumptively massive. Moreover, any such failure of US military deterrence could include both conventional and nuclear retaliatory threats. In fashioning America's nuclear strategy vis-à-vis nuclear and not-yet-nuclear adversaries, US military planners must include a mechanism to determine whether a designated adversary (e.g., North Korea or Iran) will more likely be rational or irrational. Operationally, this means ascertaining whether the identifiably relevant foe will value its collective survival (whether as sovereign state or organized terror group) more highly than any other preference or combination of preferences. Always, this early judgment must be based upon defensibly sound analytic or intellectual principles. In principle, at least, it should never be affected in any tangible way by what particular analysts might themselves simply "want to believe". A further analytic distinction is needed here between inadvertent nuclear war and accidental nuclear war. By definition, an accidental nuclear war would be inadvertent, but reciprocally, an inadvertent nuclear war need not always be accidental. False warnings, for example, which could be spawned by mechanical, electrical or computer malfunction (or by hacking) would not signify the origins of inadvertent nuclear war. Conceptually, they would fit under the more clarifying narratives of accidental nuclear war. **Most worrisome**, in such concerns, would be avoiding nuclear war caused by miscalculation. In striving for "escalation dominance," competitive nuclear powers caught up with multiple bewildering complexities in extremis atomicum could sometime find themselves embroiled in an **inadvertent nuclear exchange**. Ominously, any such **unendurable outcome** could arise suddenly **and irremediably**, though neither side had actually wanted such a war.

A2 Accidents

1. **Accidents are physically impossible EPRI 'ND**

No Author (No Quals), xx-xx-xxxx, "Nuclear Power Plant Safety," EPRI, https://ant.epri.com/article/nuclear-power-plant-safety, accessed 4-3-2025 //RP

Most notably, **operating reactors are contained in a large, strong building of thick reinforced concrete, which is designed and certified to completely prevent the spread of radiation in case of a reactor accident**. The containment building also **protects and isolates the reactor from external events such as hurricanes, earthquakes, tornadoes, tsunamis, and even airplane impacts**. This reinforced structure is the third and ultimate physical safety barrier around the nuclear reactor.**Nuclear plants are contained on dedicated pieces of land. Environmental radioactivity-measuring devices are placed in and around the plant to monitor and ensure that no radioactivity is escaping from the reactor vessel or reactor building. The land is guarded to prevent clandestine intruders to the nuclear facility, and operates with a local network disconnected from the internet, eliminating the risk of cyberattacks.** Operational Safety at Nuclear Power Plants No technology is perfect, but risks can be lowered to acceptable levels; for example, most people would consider airplanes safe even though a handful of crashes occur every year. **For nuclear plants, different systems are in place to eliminate risks of potential failure as much as possible, and even in the exceedingly unlikely event of failure, additional standards reduce damage and radioactivity spread as much as possible.** In addition to the three physical barriers already mentioned, here are some of the design standards that ensure that nuclear reactors operate as safely as possible. **Negative Reactivity Coefficient First and foremost, a "runaway chain reaction" is not physically possible with today's reactor designs. Modern nuclear reactors have a negative reactivity coefficient, meaning if fuel temperature rises, the reaction slows down. A reactor with excess fissions will either return to critical equilibrium or shut itself down entirely, even without human intervention — an inherent safety measure in its design.** Scram Mechanisms Complete shutdown of a nuclear reactor is always just a button away, and sometimes, it takes no human action at all.**Nuclear facilities are equipped with hundreds of sensors which, if triggered, cause a complete reactor shutdown. In the event of a severe earthquake, for example, the control rods are inserted automatically and the reaction stops**. Containment Ultimately, in a worst-case scenario, physical barriers prevent the spread of radioactivity. First, **nuclear fuel and radioactive fission products are held inside the fuel cladding, which is designed to withstand temperatures of thousands of degrees Celsius. Next, the reactor core is contained inside the pressure vessel, which is similarly designed to withstand high temperatures and pressures. Last, the containment building is capable of withstanding extreme external events. For radioactivity to escape a nuclear plant, all three barriers would need to fail.** In that worst-case scenario, every plant has a planned, tested, and rehearsed emergency preparedness plan that would minimize all risks to human health. **While it is not**

2. Can't solve existing reactors or global targets

WNA '25 (No Author, "Nuclear Power in the World Today," World Nuclear Association, 3-21-2025, https://world-nuclear.org/information-library/current-and-future-generation/nuclear-power-in the-worl d-today)//Shwillett

The first commercial nuclear power stations started operation in the 1950s. Nuclear energy now provides about 9% of the world's electricity from about **440** power **reactors**. Nuclear provides about one-quarter of the world's low-carbon electricity. Nuclear is the world's second largest source of low-carbon power.Over **50 countries** utilize nuclear energy in about 220 research reactors. In addition to research, these reactors are used for the production of medical and industrial isotopes, as well as for training. Nuclear technology uses the energy released by splitting the atoms of certain elements. It was first developed in the 1940s, and during the Second World War research initially focused on producing bombs. In

the 1950s attention turned to the peaceful use of nuclear fission, controlling it for power generation. For more information, see page on History of Nuclear Energy. Civil nuclear power can now boast around 20,000 reactor years of operating experience, and nuclear power plants are operational in **31 countries**(plus Taiwan) **worldwide**. In fact, through regional transmission grids, many more countries depend in part on nuclear-generated power, particularly in **Europe**. When the commercial nuclear industry began in the 1960s, there were clear boundaries between the industries of the East and West. Today, the nuclear industry is characterized by international commerce. A reactor under construction in Asia today may have components supplied from South Korea, Canada, Japan, France, Germany, Russia, and other countries. Similarly, uranium from Australia or Namibia may end up in a reactor in the UAE, having been converted in France, enriched in the Netherlands, deconverted in the UK and fabricated in South Korea. The uses of nuclear technology extend well beyond the provision of low-carbon energy. It helps control the **spread** of **disease**, assists doctors in their **diagnosis** and **treatment** of patients, and powers our most ambitious missions to **explore space**. These varied uses position nuclear technologies at the heart of the world's eff

3. Other agencies plus state regulation checks back for unproven designs. Alex Shultz, 1-30-2025, "Artificial intelligence is bringing nuclear power back from the dead — maybe even in California", CalMatters, https://calmatters.org/economy/technology/2025/01/artificial-intelligence-is-bringing-nuclear-power-back-from-the-dead-maybe-even-in-california///EEdoa04/12/25

If you've used ChatGPT to write a breakup text or figure out how to not burn the Christmas roast, you might've actually helped create jobs and profits in California, where the artificial intelligence tool was born. Unfortunately you've probably also contributed to climate change. Artificial intelligence is an energy hog, and every query to ChatGPT is like running a lightbulb for 20 minutes, a research scientist recently told NPR. Artificial intelligence is so wasteful, in fact, that its rapid spread could endanger California's goal of eliminating all carbon emissions by 2045 — even as AI companies may be flooding the state treasury with tax revenue. The conundrum has legislators considering what was once unthinkable: Bringing back nuclear power as a driver of innovation and economic growth, sort of like it was the 1960s all over again. Some lawmakers are pushing for exemptions to the state's 49-year-old moratorium on the construction of new nuclear power plants; they're also mulling a possible future for the once-left-for-dead Diablo Canyon on the Central Coast, the state's last operational plant whose operator, Pacific Gas & Electric, says it is prepared for the possibility of the plant staying open longer. **Those are some of the signs of a subtle shift among state legislators and agencies, who just a few years ago seemed assured in their determination to close the book on nuclear power in California.** They are being encouraged by a few outside influences: Sweating their own emissions goals, the state's Big Tech companies have begun national efforts to rejuvenate the carbon-neutral energy source. And last summer, federal lawmakers overwhelmingly passed a bill, signed by President Biden, to accelerate the development of nuclear reactors and new technologies. "There have been a couple times where there's been momentum, where people use the word 'renaissance'" around nuclear energy, said Maureen Zawalick, PG&E vice president of business and technical services. "But nothing like it is now, where there's bipartisan support, a significant amount of federal funding, programs and incentives." Democratic State Sen. Henry Stern, a member of the Senate Energy Committee and an environmental attorney, was mentored by anti-nuclear advocates/environmentalists and has been a critic of Diablo Canyon and PG&E. But he, too, believes "there's going to be broader and broader bipartisan support to just put this stuff on the table," he said, referencing certain forms of nuclear energy in the state. Taking a news break? Taking a news break? We get it. Our weekly bulletin of essential California headlines ensures you don't miss the important stuff. We get it. Our weekly bulletin of essential California headlines ensures you don't miss the important stuff. Email addres. By clicking subscribe, you agree to the terms. It's possible artificial intelligence could grow more energy efficient, reducing the need for new power plants. Energy stocks recently sold off after a Chinese company, DeepSeek, unveiled a powerful AI model it said was produced with a fraction of the resources used by its American rivals. The accuracy of those claims, and how DeepSeek might change industry practices, are hotly debated. **"There's going to be broader and broader bipartisan support to just put this stuff on the table."State Sen. Henry Stern, member of senate energy committee, environmental attorney Even assuming AI continues to stoke demand for electricity, nuclear power remains anathema to much of the statehouse,** which in the last legislative session kept a measure to partially lift the moratorium bottled up in committee. Reactors are consistent sources of energy but also

incredibly expensive to build and maintain, requiring **stringent regulatory oversigh**t, staffing, and upkeep. Disposing of radioactive waste is a time-intensive process with potential environmental harms, and there are always concerns of catastrophic outcomes at nuclear facilities: reactor meltdowns, cyberattacks, and other security threats. Building new facilities in the state means lifting the moratorium and clearing **not only the federal Nuclear Regulatory Commission but also, a thicket of California agencies like the Public Utilities Commissio**n, **Water Resources Control Board and, depending on site location, potentially the Coastal Commission and State Lands Commission.** These are among the reasons nuclear power skeptics are dubious of a comeback. Critics similarly question the merits of an emerging, allegedly safer form of nuclear power known as small modular reactors, and whether tech companies are committed in their push for nuclear, or if they'll lose interest once they face the inevitable headwinds."Nuclear is desperate to seem relevant, new, and improved," said Sharon Squassoni, a research professor at George Washington University who specializes in the risks posed by nuclear weapons and nuclear energy. Of the use of nuclear power to power AI she added that "it's a marriage that looks good on paper." Big Tech ushers in a round of nuclear hype Renewed interest in nuclear harkens back to earlier times. President Richard Nixon once called for the construction of 1,000 nuclear reactors in the United States by the year 2000. **That moonshot missed by roughly 900 reactors, and there are approximately 90 commercial reactors today.** Tech companies have signaled that they'd like to boost those numbers—and they've already taken steps outside of California to harness nuclear power. Citing the need to add "carbon-free electricity and capacity in the grids where we operate," Microsoft signed a deal in late September to eventually get one of the reactors at Three Mile Island in southeastern Pennsylvania, site of a partial meltdown in 1979, back up and running. In mid-October, Amazon and Google separately announced agreements with energy companies—one of which, Kairos Power, is based in California—that are in the business of designing small modular reactors. "The grid needs new electricity sources to support AI technologies that are powering major scientific advances, improving services for businesses and customers, and driving national competitiveness and economic growth," Google wrote in a statement about its deal with Kairos Power Meta announced in early December that it was seeking proposals from nuclear energy developers who could help in the pursuit of "AI innovation and sustainability objectives."Big tech's ambitions for new plants are especially focused on small modular reactors. The idea behind the reactors is that they'd function as mini-reactors, producing up to roughly one-third of the energy as a conventional facility, but with **factory-designed components** that could be shipped to a predetermined location. This would, in theory, cut down on costs, allow for more flexible siting, and reduce the lengthy construction period typical for larger nuclear reactors. **The International Atomic Energy Agency characterized proposed designs as simpler and safer than already-running reactors, and more recently, the Department of Energy accepted applications to help fund the design and development of these smaller reactors. The problem is that small reactors exist more in the abstract than in reality. "They're totally unproven. They exist basically on a computer," said Allison Macfarlane, former chair of the Nuclear Regulatory Commission under the Obama administration. "Nuclear reactors aren't like software or social media products. They're not fungible in the same way…. You can't apply the tech bro mentality to these nuclear facilities, but that is what is happening."**

A2 NRC

1. NRC been gutted for years

Gilinsky '24 [Victor Gilinsky, commissioner @ the US Nuclear Regulatory Commission during the Ford, Carter, and Reagan administrations. 11-21-2024, "Congress wants to turn the nuclear regulator into the US industry's cheerleader—again", Bulletin of the Atomic Scientists, https://thebulletin.org/2024/11/congress-wants-to-turn-the-nuclear-regulator-into-the-us-industrys-ch e erleader-again/, doa 3-8-2025] //ALuo

The US Congress **overwhelmingly approved** the **ADVANCE Act in July** to **accelerate licensing** of "advanced" reactors. These consist mainly of fast reactors, which **radically differ** from those operating today, and include "fusion machines." There were **no public hearings** on the act, and it shows **every sign** of having been written by **interested parties** and with **little vetting.** The Energy Department and the US nuclear industry are promoting fast reactor demonstration projects, the prime being TerraPower's Natrium project in Wyoming. The project **broke ground** in June but still awaits a full construction permit.

No commercial reactors of this type are operating today. TerraPower foresees selling hundreds of such reactors for domestic use and export. The new law is largely directed at clearing the way for the rapid licensing of such reactors by the Nuclear Regulatory Commission (NRC). It does so in part by providing additional resources but also—more ominously—by **weakening** the agency's **safety reviews** and inspections in the **name of efficiency**. **Efficiency over safety**. The act's **insidious approach** is, first, to direct the NRC to modify its "mission statement" to add a provision that its licensing and safety reviews will "**not unnecessarily limit** the benefits of **nuclear energy** to society." The addition sounds innocuous: No one is going to defend unnecessary work. But the message is clear. To make sure it works its way down to the daily decisions made by NRC's safety engineers, the act then gives the commissioners one year to supply Congress with a report on what guidance they will provide to the professional engineering staff to "ensure effective performance" under the new mission. In a bureaucracy, you get what you incentivize for: Congress wants the commissioners to make clear to safety reviewers that every hour they will take is an hour that society will be deprived of nuclear energy (and someone's grandmother will sit in the dark). This sort of pressure **spells trouble.** The safety of complex systems with **inherent dangers** is a subtle trade and **requires unbiased attention** to avoid serious errors. That is especially true of newly commercialized technology. NRC safety reviews and inspections are especially critical in protecting the public because, with nuclear power, there is no customer feedback loop like there is with, say, commercial flying. If people get worried about flying, they can vote for more safety by not buying tickets. Once a nuclear plant is turned on, there is realistically not much the public can do. The Energy Department's web page said the new law would help to "build new reactors at a clip that we haven't seen since the 1970s." But the department seems to forget that the 1970s spurt of licensing—encouraged by the commissioners of the old Atomic Energy Commission—resulted in light-water power reactors with many safety problems. These problems were then left for the newly independent NRC to resolve, taking years and leading to considerable expense. Weaker definition of safety. For Congress to address the mission statement of a federal agency is itself strange. Mission statements, like "vision" statements, are products of business schools and management consultants and are typically brief generalities that hardly anyone pays much attention to. The Energy Department says its mission is "to ensure the security and prosperity of the United States by addressing its energy, environmental, and nuclear challenges." Congress could have told the department to speed up the reactor development process, but it didn't. Instead, it acted on the assumption that the stumbling block to a nuclear future lies in the NRC licensing system. The ADVANCE Act acknowledges the need for the NRC to continue to enforce the safety requirements of the Atomic Energy Act while pursuing the goal of "efficiency." But in doing so, the new act does not cite the Atomic Energy Act's original safety standard of "adequate protection" (Section 182), but rather a watered-down version of "reasonable assurance of adequate protection." In the law, words matter. The commission has been using that weaker standard of safety **for some years**—not legitimately, in my view. The new act now **validates it**. The NRC lamely claims that the additional three words are just explanatory—needed to avoid the implication that "adequate protection" would mean perfect safety—and do not affect the basic standard. But the commissioners don't dare apply that logic to the security part of the NRC's responsibilities, which, if they did, would read: "to promote reasonable assurance of the common defense and security." There is no question that the addition changes the meaning.

A2 Trump

1. Trump improves Nuclear Safety and existing regulation solves back, Streb From April Finds

Audrey Strebb, 4-11-2025, "'Just getting started': Energy experts say Trump admin could fuel 'nuclear renaissance'", Lion, https://readlion.com/just-getting-started-energy-experts-say-trump-admin-could-fuel-nuclear-renaissan c e//?EEdoa05/12/25

Immediately after returning to the White House, President Donald Trump signed an executive order on "unleashing American energy," aiming to bolster domestic fossil fuel production, which the U.S. primarily relies on, and cut "undue burdens" on the nuclear energy sector. While the move signaled increased

attention on the industry's development, several policy experts told the Daily Caller News Foundation that many obstacles must be addressed before nuclear power can become a major source of energy in the U.S. "In this country, we've made it so difficult that it's almost impossible to build a nuclear power plant," JD Foster, former chief economist at the Office of Management and Budget who would routinely sit in on meetings regarding nuclear regulatory policy, told the DCNF. "The **Nuclear Regulatory Agency is one of the slowest moving entities in the universe when it comes to assessing new technologies and nuclear power."** Foster and others in the nuclear energy arena pointed to several hurdles for the industry, including a long and stringent permitting process, a measly specialized workforce, nuclear waste management, federal regulations and public fears surrounding radiation. Although former Presidents Joe Biden and Barack Obama pursued an expansion of nuclear technology for its effective and reliable energy output, the U.S. still remains primarily reliant on fossil fuels. Biden, for example, signed the bipartisan ADVANCE Act into law in June 2024, which was designed to bring down the costs of nuclear licensing, create new opportunities for old industrial sites to host reactors and allocate additional resources to the NRC. Despite this, nearly all nuclear power currently produced in the U.S. comes from reactors built between 1967 and 1990, according to the World Nuclear Association. **Trump, who has a long track record of supporting nuclear energy development during his first term, has indicated that he is open to exploring avenues to expand the industry's innovation.** Less than one month after returning to office, Trump **established the National Energy Dominance Council** and tasked its advisors with informing him on how to bring small modular reactors (SMRs), which have the capacity to continuously power 300,000 homes, online. Trump's Department of Energy (DOE) Secretary Chris Wright has also expressed a desire to increase development of nuclear energy technology. "The long-awaited American nuclear renaissance must launch during President Trump's administration," Wright stated on Feb. 5 in his first secretarial order. **"As global energy demand continues to grow, America must lead the commercialization of affordable and abundant nuclear energy. As such, the Department will work diligently and creatively to enable the rapid deployment and export of next-generation nuclear technology." "Nuclear is going to take hold,"** Wright also said in a Fox Business interview shared by the DOE's X account on

April 2. "But it's not going to come tomorrow, I wish it was." This envisioned "nuclear renaissance" lags behind a "huge" permitting problem, according to Foster. The length of time needed to complete the permitting process varies, with the NRC application review process taking up to five years in some cases, according to the U.S. Energy Information Administration. "**The** [Nuclear Regulatory Commission] **NRC has improved its licensing efficiency** over the past few years," a public affairs officer for the NRC wrote to the DCNF. The official pointed to the reduction in time needed to reach a licensing decision and a "drastically streamlined" application process that resulted in a nuclear reactor construction permit being issued within 18 months. The NRC also referenced their announcement that they are **ahead of schedule for the "safety portion of** our **review** for TerraPower's construction permit application." "The agency is creating

simplified licensing regulations for fusion power systems, focused on the most relevant safety considerations," the NRC spokesperson wrote. "We're continuing to build on these efficiency gains**, following the requirements Congress laid out** last year **in the ADVANCE Act."**

A2 Wright

1. **Multiple Oversights solves back, history proves, Energy secretary doesn't have much power**

Sheila Olson, 1-30-2025, "What Does the Secretary of Energy Do?", Investopedia, https://www.investopedia.com/insights/what-does-secretary-energy-do///EEdoa04/12/25

Why Was James Schlesinger Dismissed As Secretary? Schlesinger was in **frequent contention with Secretary of State** Henry Kissinger **as well as with several instrumental members of Congress** and President Ford. He was reportedly very vocal about it. One of his significant objections to Kissinger was that the Secretary of State supported SALT. Schlesinger served from July 1973 until November 1975.20 Historical Office, Office of the Secretary of Defense. "James R. Schlesinger."

A2 Impact

1. **Empirics disprove, Mcfarlan does not say reactors have more critical mass, or that anything about reactors makes explosions/meltdowns more risk then Langengen '24**

Tone Langengen (Senior Policy Advisor, Climate & Energy Policy; Tony Blair Institute), Jeegar Kakkad (Senior Manager; Tony Blair Institute), Benedict Macon-Cooney (Chief Policy Strategist; Tony Blair Institute), 12-02-2024, "A New Nuclear Age," Tony Blair Institute for Global Change, https://institute.global/insights/climate-and-energy/a-new-nuclear-age#the-rise-and-fall-of-nuclear-power, accessed 4-3-2025 //RP

A new nuclear age is beginning, and with it a true understanding that we can no longer afford to ignore the potential of this powerful technology. The history of nuclear power provides a stark example of how the **politics around key solutions to progress can become warped, ultimately resulting in less good outcomes**. Analysis by the International Energy Agency[1]Link to footnote and Intergovernmental Panel on Climate Change[2]Link to footnote suggests that**rapid expansion of nuclear power is needed to meet global climate goals**. In fact, evidence suggests **baseload sources of energy like nuclear power facilitate integration of renewable sources and help deliver low-cost electricity systems.** Yet, from early promise and enthusiasm in the 1960s and 1970s, nuclear energy began to face considerable opposition from protestors worried about public health and environmental impacts. This was fuelled by understandable

concern about accidents at Three Mile Island, Chernobyl and, most recently, Fukushima, driving public opposition and reducing governments' commitment to nuclear power. **The reality is that nuclear energy is a safe form of energy, with significant benefits in terms of reducing emissions and creating balanced, low-cost energy systems. Public perception of the risk of nuclear power is not commensurate with the actual risk**. **In the entire history of nuclear energy, there have been only two major accidents (those at Chernobyl and Fukushima) and their effects, while serious, have been significantly over-estimated**. The result is that nuclear energy has never become the ubiquitous power source many had projected, with countries instead turning towards alternatives such as coal and gas. **The world is now paying a price for letting lingering concerns about safety and ideological opposition deter governments from harnessing a key solution to powering economies in a clean way:** If the ambitious approach to nuclear deployment had continued, the world would have saved 28.9 gigatonnes (Gt) of carbon dioxide (CO_2) since 1991. This is 3.1 per cent of the energy-related emissions in this period, about one year of energy-related emissions, or the equivalent of shutting down 903 coal-power plants (of 380 megawatts) for the entire period. **Last year, global energy-related emissions would have been 6 per cent lower, saving 2.1 Gt of CO_2. This would be the same as taking about 460 million cars from the road for a year or removing the combined total 2023 emissions of Canada, South Korea, Australia and Mexico**. Political leaders aspiring to meet rising energy demands, reduce energy costs and provide security and growth now have a choice to make. Whether they choose to build nuclear is entirely within their gift. **Many are showing their willingness to move past false alarm and ideology, making judgement based upon fact-based assessment of risk. And they are moving fast towards the future.**

A2 Saudi Arabia

1. Saudi prolif Now, current Trump agreements are literally prolif, triggers cascade, Eid '25

Nour Eid, 1-6-2025, "What a second Trump administration may mean for the Saudi nuclear program", Bulletin of the Atomic Scientists, https://thebulletin.org/2025/01/what-a-second-trump-administration-may-mean-for-the-saudi-nuclear-program///EEdoa05/12/25

Saudi Arabia's first nuclear research reactor(center) in King Abdulaziz City for Science and Technology in the outskirts of Riyad**h is nearing completion** but has yet to be started. In September 2024, Saudi Arabia's Minister of Energy Prince Abdulaziz bin Salman Al-Saud announced the kingdom would sign the full Comprehensive Safeguards Agreement and the Small Quantities Protocol—the most basic safeguards agreements the International Atomic Energy Agency has been asking for years. However, the kingdom continues to refuse to sign the Additional Protocol, which would allow the agency to conduct a more thorough oversight. (Credit: Google Earth) Share **Donald Trump's return to the White House could mean the end of the nonproliferation regime:** As the Iranian-Israeli confrontation intensifies, and the **threat of an Iranian nuclear breakout looms, the Kingdom of Saudi Arabia could see in a second Trump administration an opportunity to finally get the nuclear cooperation** the Saudis have been yearning for. **Riyadh has been very clear on the kind of nuclear partnership it expects**, and it is no secret that its favored option is cooperation with South Korea, similar under a 123 agreement (a nuclear cooperation document that establishes the legal basis and prerequisites for nuclear deals with the United States) allowing it to enrich uranium domestically. The problem, however, lies in the last bit of the sentence. The United States currently insists on an agreement that requires the Saudis forgo enrichment and reprocessing

capabilities—**two pathways to building a bomb. The reelection of Trump might be the Saudis' chance to tip the balance in their favor. S**audi Arabia's nuclear rationale. Many reasons explain the kingdom's desire to develop its nuclear know-how. First, the Saudis argue that it is their right, under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), to enrich uranium for domestic energy purposes. They refuse to be subjected to double standards, given that India and Japan received "blanket consents" to seek enrichment or reprocessing capabilities under their respective 123 agreements. **Adding insult to injury, in Saudi eyes: Its main rival, Iran, was allowed to enrich uranium under the 2015 Joint Comprehensive Plan of Action (JCPOA), also known as the Iran nuclear deal. The Saudis aim to benefit from the same privileges by developing an indigenous nuclear program.**

2. Five alternative reasons for U.S. Saudi Arabia Cooperation.

a. Checking Iran and terror groups, El-Fekki '25

Amira El-Fekki, 3-21-2025, "US sells advanced rockets to Saudi Arabia as Houthi conflict escalates", Newsweek, https://www.newsweek.com/us-sells-advanced-rockets-saudi-arabia-houthi-conflict-escalates-2048535 / /EEdoa04/12/25

The State Department has approved the sale of high precision weapons in foreign military sales to Saudi Arabia at an estimated cost of **$100 million,** the Defense Security Cooperation Agency said. Newsweek has contacted the Saudi Defense Ministry for comment. Why It Matters The U.S. and Saudi Arabia are key allies, with the kingdom serving as a partner for political stability in the Gulf and Middle East. **The U.S. is currently engaged in a military campaign against the Houthis, an Iranian-backed group in Yemen, which Saudi Arabia has been fighting since 2015. Saudi Arabia's role gained prominence during Trump's first and second terms,** with the kingdom recently emerging as a U.S. ally and **mediator in efforts** to end the war between Russia and Ukraine.

b. Mediation, El-Fekki '25

Amira El-Fekki, 3-21-2025, "US sells advanced rockets to Saudi Arabia as Houthi conflict escalates", Newsweek, https://www.newsweek.com/us-sells-advanced-rockets-saudi-arabia-houthi-conflict-escalates-2048535 / /EEdoa04/12/25

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c. REE deposits, Schneider

Schneider, "Under the Microscope", Sahm,

https://www.sahmcapital.com/news/content/%D8%AA%D8%AD%D8%AA-%D8%A7%D9%84%D9%85%D8%AC%D9%87%D8%B1-%D9%85%D8%B9%D8%A7%D8%AF%D9%86-%D8%A7%D9%84%D8%B3%D8%B9
%D9%88%D8%AF%D9%8A%D8%A9-%D8%AA%D8%A8%D8%AD%D8%AB-%D8%B9%D9%86-%D8%B4%D8%B1%D9%8A%D9%83-%D8%A3%D8%AC%D9%86%D8%A8%D9%8A-%D9%81%D9%8A-%D9%85%D8%AC%D8%A7%D9%84-%D9%85%D8%B9%D8%A7%D9%84%D8%AC%D8%A9-%D8%A7%D9%84%D9%85%D8%B9%D8%A7%D8%AF%D9%86-%D8%A7%D9%84%D9%86%D8%A7%D8%AF%D8%B1%D8%A9-2025-04-08//EEdoa04/12/25

Saudi Arabian Mining Co. (Maaden) is considering **selecting** at least one of four **foreign companies to form a partnership to process rare earths as part of the kingdom's drive** to become a major global minerals hub, three sources familiar with the matter said. The sources explained that the nominated companies are US-based MB Materials, China's Shenghe Resources, Australia's Lynas Rare Earths, and Canada's New Performance Materials. Sources said the Saudi company intends to select at least one partner by the end of June to help develop a plan to build a rare earth processing facility, as well as a magnet facility within the kingdom at a later date. The selection process, the details of which have not been previously disclosed, highlights how metal processing has become a pressing necessity for technology-focused economies seeking to enter the fields of artificial intelligence, electric vehicles, and others. Saudi Arabia's growing mining industry is a key pillar of Vision 2030, launched by Crown Prince Mohammed bin Salman, to reduce dependence on oil. **The Kingdom and its mining companies are looking into projects to mine and process lithium, copper, zinc, rare earth minerals, and other metals, which are used in the manufacture of magnets that convert electrical energy into kinetic energy in electric vehicles and are also used in mobile phones and other devices.** Maaden and MB Materials declined to comment, while Shinge Resources and New Performance Materials did not immediately respond to requests for comment. Lynas said it is focusing on rare earth processing projects in Australia, Malaysia, and the **United States and "regularly holds discussions** with emerging rare earth companies around the world." Once selected, the new partner will study with Ma'aden the best ways to extract and process the vast reserves of these minerals in Saudi Arabia. One source said there is a timetable expected to be completed by next December. Of the four companies, Shengyi Resources and New Performance Materials have extensive experience in rare earth processing and magnet production, while MB Materials is currently expanding its operations in both fields in the United States. Lynas processes rare earths in Malaysia and is building a refinery in Texas. Traditional methods for processing rare earth minerals can be polluting, expensive, and time-consuming, prompting scientists to search for better methods. Rare earth processing companies must handle 17 different minerals, each with roughly the same size and atomic weight, depending on the geological characteristics of the earth's crust where they are found. This makes the separation process complex. These rare minerals must be extracted in a specific order, a logistical challenge that could prevent Maaden and any future partner from selecting the elements they might want. MB Materials, which supplies rare earths to Xingyi from its California mine for processing in China, invested in a rare earths processing facility in Vietnam with Xingyi in 2023. The two companies announced earlier this year their intention to end that partnership. * China's upper hand China began rapidly expanding in this sector during the 1980s, and the International Energy Agency says it now controls nearly 90 percent of global rare earth mining capacity. Geologists with the state-controlled China Geological Survey have been mapping Saudi Arabia's mineral reserves since 2023. China's prowess in the minerals sector has helped propel its economy to second place globally, a fact recognized by the United States and other countries and is **working to counteract, especially after Beijing banned exports of rare earth processing** technology in 2023. Last week, Beijing imposed restrictions on exports of rare earth minerals, magnets, and other finished products. Last month, US President Donald Trump used wartime powers to increase US mineral extraction, among other things. Last year, Saudi officials doubled their estimate of the kingdom's mineral reserves to $2.5 trillion, an increase largely due to the addition of rare earths. One source said that Saudi Arabia's goal is to process these rare earths into a form that can be used in the electronics industry within the Kingdom, and that it does not want to export the supply chain elsewhere. * Extensive investments This move is just part of Saudi Arabia's latest efforts to address the mineral supply chain. The National Initiative for Global Supply Chains, a government program within the Saudi government's National Investment Strategy, announced last November that it would invest SAR 35 billion ($9.32 billion) in copper smelters and refineries for India's Vedanta and in a zinc smelter for China's Zijin. The Saudi government's sovereign wealth fund is the largest shareholder in California-based electric vehicle manufacturer Lucid, which opened its first factory outside the United States in Saudi Arabia in 2023. Australian company Hastings Technology Metals also signed a non-binding memorandum of understanding with the National Investment Strategy to build a potential rare earths facility. Likewise, last year, the American company Critical Metals signed

a non-binding memorandum of understanding to explore the possibility of establishing a lithium refinery in Saudi Arabia with the Riyadh-based Obeikan Group. Maaden, controlled by Saudi Arabia's sovereign wealth fund, announced last May that it had successfully extracted lithium from seawater and was working to make the process commercially viable.

d. Great Power Compeition, Chivvis '23

Christopher S. Chivvis (Chris Chivvis is a senior fellow and director of the American Statecraft Program at the Carnegie Endowment for International Peace. He has more than two decades of experience working on U.S. foreign policy and national security challenges. He most recently served as the U.S. national intelligence officer for Europe.) , 11-6-2023, "Saudi Arabia in the Emerging World Order," Carnegie Endowment for International Peace, https://carnegieendowment.org/research/2023/11/saudi-arabia-in-the-emerging-world-order?lang=en, accessed 4-12-2025 //RP

When he visited Riyadh in July 2022, **Biden told Arab leaders that the United States is not leaving the Middle East. "We will not walk away and leave a vacuum, to be filled by China, Russia, or Iran . . . The U.S. is not going anywhere**."9 The possibility of a deeper relationship with Saudi Arabia that would include a U.S. security guarantee has been hotly debated in Washington. Regardless, Washington has sought to de-prioritize the region overall, focusing its attention instead on the war in Ukraine and competition with China in the Pacific.10 Meanwhile, **China has stepped up its engagement in the Middle East, most visibly by brokering a detente between Saudi Arabia and Iran in March 2023. While China has become increasingly intertwined with the economic and diplomatic issues in Saudi Arabia's backyard, its overall political influence in the region remains minor relative to the historical position the United States** has held in the Middle East. As Saudi Arabia asserts its active neutrality regarding Ukraine, so too does it pursue close ties to China. "I don't see our relationship with the U.S. [and] with China as being mutually exclusive. I think, in fact, they complement each other," Saudi Minister of Investment Khalid Al-Falih told reporters in June 2023.11 Since 2011, China has been the Kingdom's top trading partner and a top importer of crude oil. Recently, the two rising powers are expanding their ties beyond trade. In 2022, Riyadh and Beijing elevated their relationship to a comprehensive strategic partnership during a visit that China celebrated as "an epoch-making milestone in the history of the development of China-Arab relations."12 The Saudi-China relationship has transformed from a rigid, oil-based structure to a more comprehensive partnership involving infrastructure projects and advanced technology transfers. **Saudi leaders believe Chinese investment and expertise can help them diversify their economy away from hydrocarbons.** When asked about Western criticism of the growing Saudi-China ties, Saudi Energy Minister Prince Abdulaziz bin Salman said he "ignores it" because "as a businessperson . . . you will go where opportunity comes your way."13

e. Arms Sales and the MIC, Ek-Fekki '25

Amira El-Fekki, 3-21-2025, "US sells advanced rockets to Saudi Arabia as Houthi conflict escalates", Newsweek, https://www.newsweek.com/us-sells-advanced-rockets-saudi-arabia-houthi-conflict-escalates-2048535 / /EEdoa04/12/25

The State Department has approved the sale of high precision weapons in foreign military sales to Saudi Arabia at an estimated cost of **$100 million,** the Defense Security Cooperation Agency said. Newsweek has contacted the Saudi Defense Ministry for comment. Why It Matters The U.S. and Saudi Arabia are key allies, with the kingdom serving as a partner for political stability in the Gulf and Middle East. The U.S. is currently **engaged in a military campaign against the Houthis,** an Iranian-backed group in Yemen, which Saudi Arabia has been fighting since 2015. Saudi Arabia's role gained prominence during Trump's first and second terms, with the kingdom recently emerging as a U.S. ally and mediator in efforts to end the war between Russia and Ukraine.

A2 Poland

1. **Energy programs make prolif less likely by increasing oversight. Miller ’17**

[Nicholas; Associate Professor in the Department of Government @ Dartmouth; November 1; MIT; “Why Nuclear Energy Programs Rarely Lead to Proliferation,” https://direct.mit.edu/isec/article-abstract/42/2/40/12176/Why-Nuclear-Energy-Programs-Rarely-Lead-t o?redirectedFrom=fulltext, accessible at: https://sci-hub.ru/https://doi.org/10.1162/ISEC_a_00293; DOA: 3-23-2025] tristan **brackets r og**

How Nuclear **Energy** Programs **Restrain Proliferation**

As the conventional wisdom emphasizes, a nuclear energy program increases the technical capability of a state to build nuclear weapons. However, policymakers in states that favor nonproliferation—most prominently, the United States—have long been aware of this fact and have worked hard to weaken this linkage. As a result of their actions, a variety of **political restraints** have been put in **place** to **counterbalance** the **ability** of energy **programs** to make **proliferation** technically **easier**. The remainder of this section elaborates two such restraints.

higher likelihood of detection and nonproliferation pressure

States with **nuclear** energy **programs** face **increased** international **scrutiny** and therefore **pressure not** to **proliferate**. From the time a country announces its intention to build nuclear power reactors, the **possibility** of this being **cover** for a **weapons program** becomes **apparent**, particularly if the country is located in an unstable security environment. As Harold Feiveson wrote in 2009, “It is **well understood** that one of the **factors** leading several countries now without nuclear power programs to **express interest** in nuclear power is the **foundation** thatsuch **programs** could **give** them to **develop weapons**.”35

Once a country formally launches a nuclear energy program, its **activities** are likely to **trigger** outside **intelligence gathering**, for three reasons: energy programs (1) involve **regular acquisitions** of material and technology from **foreign arms**, providing more **collection opportunities** for **intelligence agencies** and allowing the program to be **infiltrated**; (2) offer **observable targets**—such as reactors, research centers, and nuclear **scientists**—for intelligence **agencies** to **focus on**; and (3) generally come with **safeguards** on relevant **facilities**, either because of the recipient country’s membership in the NPT or **supplier requirements**. These factors do not make it impossible for a country to use an energy program to develop a nuclear weapons program, but they do make it more likely that the latter program will be detected. In monitoring nuclear energy programs and detecting nuclear weapons research, both national intelligence agencies and the IAEA play important and, increasingly synergistic, roles.36

International **scrutiny** is likely to be particularly **harsh**, both in the **media** and from **intelligence agencies**, when the energy program involves efforts to acquire enrichment or reprocessing facilities. After all, these are technologies required for **producing** missile materials for **bombs**, and enrichment and reprocessing programs are **hard** to **justify** economically for **small** nuclear energy **programs**.37 This sort of scrutiny explains the vigorous response of the United States to the proposed export of reprocessing and enrichment technology to Brazil, Iran, Pakistan, South Korea, and Taiwan in the 1970s—which in every case was
publicly justified with reference to nuclear energy programs. In each,the United States was partially or entirely **successful** in **preventing** the **exports** or **increasing safeguards**, thus **complicating** the path to the **bomb** for the nuclear aspirants.38

States that **want** to **acquire** nuclear **weapons** while minimizing the chances of detection and nonproliferation pressure are likely **better off** adopting a more **covert approach**, **without** an **energy** program. As Scott Kemp has demonstrated, a country with relatively modest technological skills could indigenously build and operate gas centrifuges to produce

highly enriched uranium. Such an operation would not require a nuclear reactor or an energy program, would produce virtually no technical signatures, and would therefore be relatively easy to conceal; indeed, most countries that developed gas centrifuges indigenously did so without being detected.39 Or, as Richard Rhodes has argued, "[T]here are **better**, **faster**, **surer**, **cheaper**, and secret **alternative means** to proliferation" than using **power reactors**.40 Such a "hiding" strategy, Vipin Narang argues, may permit a state to "present its development of nuclear weapons as a fait accompli," allowing it to "reap all the benefits of a nuclear deterrent while avoiding the external duress of the proliferation process."41 Although enrichment programs are easier to conceal than plutonium-based programs, either can be attempted secretly without a public energy program, as the cases of Israel, North Korea, and Syria illustrate. Even if a covert program is unlikely to remain secret to the point of acquisition,the aspiring proliferator may nonetheless seek to delay detection, thereby reducing opportunities for preventive action. Certainly elements of any nuclear weapons program are likely to be covert, including in countries using an energy program as cover. For example, a country pursuing nuclear weapons with an energy program is still likely to do weapons design work in secret, may build additional covert facilities based on technology in overt facilities, and might seek to secretly divert materials for use in weapons. Nonetheless, countries engaged in this kind of tactical secrecy display qualitative differences from those without energy programs that conceal all or most of their key nuclear facilities.

Several historical cases illustrate the viability of this more covert proliferation pathway. Following Israel's attack on Iraq's Osirak reactor in 1981, Iraq managed to acquire enrichment technology largely without the knowledge of the international community. As a result, Baghdad was likely only a few years away from achieving a rudimentary nuclear weapons capability when its nuclear program was dismantled in the aftermath of the 1990–91 Gulf War, which was not primarily a nonproliferation intervention.42 Interestingly, part of the reason U.S. intelligence officials underestimated Iraq's program was be cause they wrongly assumed that Baghdad would follow the energy program route. A 1983 Central Intelligence Agency report found "no identifiable nuclear weapon program in Iraq" and judged that achieving a nuclear weapons capability by the 1990s "[would depend] critically on the foreign supply of a nuclear reactor—preferably a power reactor—of substantial size fairly soon."43

By the time U.S. intelligence officials became convinced that North Korea was pursuing nuclear weapons in 1989,44 Pyongyang had already secretly constructed a reactor for plutonium production and begun work on a reprocessing facility.45 The United States first detected the construction of the reactor in 1982,46 two years after construction had begun.47 It was not until 1984, however, that Washington realized that it was a larger reactor better suited to plutonium production.48 When the United States was ultimately able to mobilize international action against North Korea in 1992, IAEA analysis concluded that North Korea had probably already produced enough plutonium for one or two bombs.49 Finally, without the cover of a nuclear energy program, Israel was able to secretly build a reactor and reprocessing facility with French help starting in the late 1950s.50 U.S. intelligence did not learn of the Israeli weapons program until a few years later,51 and tended to underestimate the progress of the program through the 1960s.52

heightened costs from nonproliferation sanctions

Nuclear energy **programs**impose another political restraint on states by **increas**ing the potential **costs** of **nonproliferation sanctions**, which are likely to **disrupt** the **international trade** and fuel **supplies essential** to most nuclear **energy programs**. Sanctions are especially threatening to the majority of nuclear energy programs that rely on LWR technology. As Richard Lester and Robert Rosner note, "[N]uclear power is one of the most **highly globalized** of all industries. The nuclear power plant supply industry is dominated by a **small number** of **large** global **suppliers** of light water reactor equipment and technology."53 Christopher Lawrence likewise argues that the LWR fuel cycle "is one of the most globalized technologies in existence."54 Only twelve countries currently produce fuel rods for light water reactors,55 compared to thirty-one countries with operational nuclear energy programs.56 At the same time, most nuclear power reactors are designed and constructed by a few American, Chinese, French, Russian, and South Korean firms.57 Eleven out of twelve LWR fuel **producers** and all have major reactor-supplying countries are **members** of the Nuclear Suppliers Group (**NSG**), an organization founded in the 1970s that calls for **IAEA safeguards** on exports and a **commitment** to **peaceful uses** of imported materials.58 For countries operating light water power reactors, the choice is either to develop enrichment technology—and risk international suspicion and pressure, as described above—orto import enriched uranium fuel, thus rendering the energy program vulnerable to disruptions in supply.

As early as 1957, U.S. policymakers were aware that exports for nuclear energy programs provide leverage that can be used to enforce nonproliferation regulations. As one National Security Council report argued, "U.S. preeminence and influence in peaceful uses of atomic energy overseas and nuclear technology will enhance general acceptance of effective safeguards to minimize diversion of nuclear material to weapons purposes."59 A 1974 government study on nonproliferation likewise contended, "[A] vigorous US program of commercial nuclear cooperation with other nations can help maintain influence over foreign programs through proper safeguards, dependence on external supply, and the confidence of a constructive association in peaceful programs."60 The Soviet Union similarly used fuel supplies and safeguards to maintain control over its clients' nuclear programs.61

As George Quester wrote in 1977, many **countries** will "be **ready** to **accommodate** to the **halting** of weapons **proliferation** in various ways, as long as it seems that this is **required** to speed or maintain the

availability of such American imports" for their energy **programs**.62 According to Steven Miller and Scott Sagan, "The **leaders** and bureaucratic **organizations** that run successful nuclear power enterprises will **want** to **maintain strong ties** to the global nuclear power **industry**, to international capital and technology markets, and to global **regulatory agencies**—and hence will be more **likely** to **cooperate** with the nuclear nonproliferation regime."63 U.S. and international nonproliferation policy has been guided by this logic for decades and has tightened over time. In 1978, the United States made nuclear exports conditional on a country's acceptance of safeguards on all of its nuclear facilities, including those not provided by the United States.64 The NSG followed suit in 1992.65 Although the U.S. position in the nuclear marketplace has substantially eroded in recent decades,66 the United States continues to play a pivotal role in setting the rules in the NSG, which sets guidelines for other key suppliers.

2. Agreements are embedded with anti-proliferation measures.

Kimball '21 [Daryl; Executive Director @ the ACA; May 19; Arms Control; "The U.S. Atomic Energy Act Section 123 At a Glance," https://www.armscontrol.org/factsheets/us-atomic-energy-act-section-123-glance; DOA: 3-8-2025] tristan

The nine **nonproliferation criteria** for **section 123 agreements** are as follows:

Nuclear material and equipment transferred to the country must **remain under safeguards** in perpetuity.

Non-**nuclear**-**weapon states** partners must have **full**-**scope IAEA safeguards**, essentially covering **all** major **nuclear facilities**.

A **guarantee** that **transferred** nuclear **material**, equipment, and technology will not have **any role** in nuclear **weapons development** or any other military purpose, except in the case of cooperation with nuclear-weapon states.

In the event that a **non**-**nuclear**-**weapon state** partner **detonates** a **nuclear device** using nuclear material produced or **violates** an IAEA **safeguards agreement**, the United States has the **right** to **demand** the **return** of any **transfers**.

U.S. **consent** is **required** for any **re**-**transfer** of **material** or classified data.

Nuclear **material** transferred or produced as a result of the agreement is **subject** to adequate **physical security**.

U.S. prior **consent** rights to the **enrichment** or **reprocessing** of **nuclear material** obtained or produced as a result of the agreement.

3. Domestic production triggers regardless, PS '25

Poland'S State, 2025-04-01, "New agreement enables continued development of Polish plant," World Nuclear News, https://www.world-nuclear-news.org/articles/new-agreement-enables-continued-development-of-poli s h-plant, Date Accessed: 2025-04-05T00:07:14.503Z //RX

Polskie Elektrownie Jądrowe **and** the **Westinghouse**-Bechtel Consortium have agreed the terms and conditions of an Engineering Development Agreement for Poland's first nuclear power plant after a previous agreement expired.

New agreement enables **continued development of Polish plant**

(Image: PEJ)

In November 2022, the then Polish government selected Westinghouse AP1000 reactor technology for construction at the Lubiatowo-Kopalino site in the Choczewo municipality in Pomerania in northern Poland. In September 2023, Westinghouse, Bechtel and Polskie Elektrownie Jądrowe (PEJ) - a special-purpose vehicle 100% owned by Poland's State Treasury - signed an 18-month engineering services contract under which Westinghouse and Bechtel will finalise a site-specific design for a plant featuring three AP1000 reactors.

However, that contract expired at the end of March without a new agreement being concluded.

PEJ has now announced that an Engineering Development Agreement (EDA) - the so-called 'bridge agreement' - has been signed, establishing the framework for cooperation between PEJ and the Westinghouse-Bechtel Consortium for the upcoming months.

"The EDA opens the next stage in the construction of Poland's first nuclear power plant and enables continuation of project work, which will facilitate obtaining the necessary administrative decisions, licences and permits, etc, and initiate a further phase of in-depth geological surveys at the project site," it said.

PEJ added: "The agreement reached and the compromise worked out provide a solid and sustainable foundation for the continuation of partnership under the project. The Engineering Development Agreement will be signed after completing the governance process. Hence, the planned project work to inform the documents for Poland's first nuclear power plant required by applicable laws continue according to the adopted schedule."

"Today we are one step further in implementing the project of building the first Polish nuclear power plant," said Wojciech Wrochna, Government Plenipotentiary for Strategic Energy Infrastructure, Secretary of State in the Ministry of Industry. "The completion of negotiations between Polskie Elektrownie Jądrowe and the consortium of Westinghouse and Bechtel is a confirmation of our common determination to implement this undertaking.

"The signing of the so-called bridge agreement opens the next stage of our cooperation, which will allow for the effective implementation of the design process and then the construction of this facility, which is key to energy security."

Polish Prime Minister Donald Tusk said: "Negotiations on the bridge agreement with contractors have been completed and I would like to thank Minister Marzena Czarnecka and the team that worked on a better form of agreement. The first piece of good news: we are continuing the construction of the nuclear power plant. The second piece of good news: we have reached an agreement with our American partners in such a way that this agreement is much better from our point of view.

In late March, President Andrzej Duda signed a bill that designates funds from the national budget for the construction of Poland's first nuclear power plant. **Under the bill, PEJ is set to receive PLN60.2 billion (USD15.5 billion) in public funding between 2025 and 2030.** The remaining funding will be obtained from financial institutions, primarily foreign institutions supporting exports originating from equipment suppliers' countries, including export credit agencies, in particular the American export credit agency Export-Import Bank of the United States.

4. Litany of reasons Poland can’t/proliferate, Dowell ‘25

Stuart Dowell, 02/25/25, "Poland's nuclear dilema: should and can it build its own deterrent?", No Publication, https://polandwatch.substack.com/p/polands-nuclear-dilema-should-and//EEdoa04/12/25

At the same time, it has heavily invested in its conventional forces, including missile defence and air superiority. Japan, despite being the only country ever attacked with nuclear bombs, has built a powerful high-tech military while rejecting nuclear weapons altogether. Poland’s situation is most similar to South Korea’s. Both countries face an aggressive, nuclear-armed neighbour, and both must decide whether to trust their alliances or go nuclear themselves. According to Do Rzeczy, even if Poland decided to build nuclear weapons, it wouldn’t be easy. **Poland is a signatory of the Non-Proliferation Treaty (NPT),** which it joined in 1968. This agreement bans Poland from developing or acquiring nuclear weapons. Unlike the US, UK, and France, Poland is classified as a non-nuclear weapon state and is subject to inspections by the

International Atomic Energy Agency. The only way for Poland to legally build nuclear weapons would be to withdraw from the NPT, something only North Korea has done. If Poland were to take this step, it would likely face s**evere consequences, including sanctions** from the EU and the US, which could **harm its economy and political standin**g. NATO allies have consistently opposed nuclear proliferation, making it unlikely that Poland could maintain its current alliances if it pursued nuclear weapons. That would likely lead to diplomatic fallout, sanctions, and a loss of EU funding. It could also **damage** Poland's **security cooperation** with its allies. Bezprawnik highlights that on top of the legal issues, Poland simply **doesn't have the necessary infrastructure** to build a nuclear bomb. **Weapons-grade uranium or plutonium is needed to make nuclear weapons, and Poland doesn't produce either.** The country's civilian nuclear energy programme is still in its early stages. Poland has plans to build its first nuclear power plants in partnership with the United States and South Korea, with the first reactors expected to come online in the 2030s. **However, these projects are focused entirely on energy production, not military applications. There are no operational nuclear power plants, let alone facilities for enriching uranium or producing plutonium. Even if Poland accelerated its nuclear energy programme, shifting to weapons development would require a completely different infrastructure, along with extensive expertise that Poland does not currently possess. The United States spent over $8 billion modernizing its B61 nuclear bomb, and France spends 14% of its defense budget just on maintaining its nuclear arsenal. Poland would need a comparable level of financial and technical investment, which would divert resources from other defense priorities. Developing that capability would take decades and cost billions.**

5. **Russian encirclement and fears of hegemonic expansion are non-unique, should have triggered under Biden, CBS '24** CBS, 11-18-2024, "Biden lifts restriction on Ukraine's use of U.S.-provided weapons deep inside Russian territory", CBS, https://www.cbsnews.com/news/biden-ukraine-us-weapons-russia-restriction///EEdoa04/12/25 President Biden has given the OK to **lift restrictions that will allow Ukraine to use U.S.-provided long-range weapons to strike deep into Russian territory**, a U.S. official confirmed to CBS News on Sunday. The move is a significant change to U.S. policy in the ongoing Ukraine-Russia conflict. The easing of restrictions would allow Kyiv to use the Army Tactical Missile System, or ATACMS, to hit targets inside Russia. The move also comes as some 10,000 North Korean troops were sent to Kursk near Ukraine's northern border to help Russian forces retake territory.