The United States is a **beacon of hope**, but energy dependence is a **thorn in its back**, weakening national security and limiting its military’s full potential. At the same time, this reliance hinders the U.S. from addressing global challenges like freshwater scarcity, preventing effective solutions like saltwater desalination.

**Argument 1 is Nuclear Desalination**

As the global population skyrockets, our freshwater supply is **vanishing**. Despite water covering 70% of the Earth, only 3% is freshwater, and a staggering two-thirds of that is locked away in glaciers, making it inaccessible. The World Wildlife Organization warns that by this year, **two-thirds of the population will suffer from water shortages.**

But there is a groundbreaking solution: **nuclear desalination.** According to Yusuf from the International Atomic Energy Agency—an expert in marine conservation—**nuclear energy can** power desalination, a process that removes salt and minerals from seawater using either distillation or reverse osmosis. This means limitless access to freshwater, no longer dictated by unpredictable natural sources.

Furthermore, the **World Nuclear Association** details that nuclear plants recycle cooling water, meaning there is a net increase in the production of freshwater.

By voting **AFF**, you choose a future where nuclear energy solves water scarcity. Just weeks ago, the Intercultural Development Research Association confirmed that investing in nuclear energy creates **a safe, sustainable foundation for desalination plants.** Opponents argue it’s expensive, but the IDRA finds that desalination plants **offer long-term energy security and continuous operation, ultimately offsetting costs.**

And this isn’t just about the U.S.—it’s about global impact. **Right now, the U.S. is the only country with this technology,** but as More from The Pulse reports, the U.S. is leading efforts to expand it worldwide. **They just need the investment that we provide today.**

The stakes couldn’t be higher. The World Wildlife Organization reports that **1.1 billion people lack access to clean water, and another 2.7 billion experience water scarcity for at least one month a year.** This is a crisis we can’t ignore.

The choice is clear—**vote AFF and secure a future where water is no longer a luxury, but a right**

**Argument 2 is Military**

As the U.S. military expands, its energy needs surge—but our current power sources are failing. Right now, the military relies on two dangerous and outdated systems:

First, civilian power grids. According to Nevada Joan Lee et al. in 2024, these grids are fragile and exposed to cyberattacks, natural disasters, and accidents. In 2021, a winter storm affected Barksdale Air Force Base—the largest bomber base in the U.S.—leaving it without power. This proves just how unreliable civilian infrastructure is for national defense.

Second, fossil fuels. As Jeff Schogol, a Senior Pentagon Reporter, points out in 2022, more than 80% of our military cargo is fuel, making supply lines an easy target. Between 2003 and 2007, over 3,000 troops lost their lives protecting fuel convoys in Iraq and Afghanistan. Every gallon transported puts American lives at risk.

**The solution is simple: nuclear microreactors.** Nuclear microreactors solve both problems. Dr. Arielle J. Miller, from the Nuclear Energy Institute, confirms in 2024 that these compact, transportable reactors provide secure, independent power. No reliance on vulnerable grids. No need for dangerous fuel convoys.

**The Impact is Immediate and Massive**

1. **Stronger Military Readiness** – Right now, enemies can easily disrupt operations by attacking power sources or fuel routes. Lieutenant Colonel Timothy Renhan in 2021 explains that adversaries exploit these vulnerabilities. Nuclear microreactors make our forces self-sufficient and nearly attack-proof.
2. **A Greener Military** – The U.S. military emits more carbon than entire countries like Sweden and Norway. However, Jared Harlow, Deputy Director of the New York Coast Guard, noted in 2023 that nuclear microreactors have a promising future in helping the military reach net-zero emissions.

This isn’t just an upgrade—it’s a necessity. By adopting nuclear microreactors, we protect our troops, strengthen national security, and lead the way toward a cleaner, more resilient future. The choice is simple: secure our military’s energy independence today.

B

**Carded: C1 is Nuclear Desalination**

**People are facing water scarcity now!**

No author, “Water Scarcity”, **World Wild Life**, undated , Accessed March 25 2025 [<https://www.worldwildlife.org/threats/water-scarcity>] RaChEl

Water covers 70% of our planet, and it is easy to think that it will always be plentiful. However, freshwater—the stuff we drink, bathe in, irrigate our farm fields with—is incredibly rare. Only 3% of the world’s water is fresh water, and two-thirds of that is tucked away in frozen glaciers or otherwise unavailable for our use. As a result, some 1.1 billion people worldwide lack access to water, and a total of 2.7 billion find water scarce for at least one month of the year. Inadequate sanitation is also a problem for 2.4 billion people—they are exposed to diseases, such as cholera and typhoid fever, and other water-borne illnesses. Two million people, mostly children, die each year from diarrheal diseases alone. Many of the water systems that keep ecosystems thriving and feed a growing human population have become stressed. Rivers, lakes and aquifers are drying up or becoming too polluted to use. More than half the world’s wetlands have disappeared. Agriculture consumes more water than any other source and wastes much of that through inefficiencies. Climate change is altering patterns of weather and water around the world, causing shortages and droughts in some areas and floods in others. At the current consumption rate, this situation will only get worse. By 2025, two-thirds of the world’s population may face water shortages. And ecosystems around the world will suffer even more.

**But, nuclear energy helps with desalination**

Omar **Yusuf**, Omar Yusuf is a driven and dedicated early career marine researcher, conservationist, and diver from Mombasa, Kenya. He specializes in scientific diving, coral reef restoration, and ecological monitoring..“Harnessing Nuclear Power for Desalination to Secure Freshwater Resources”, International Atomic Energy Agency”, no date, Accessed March 27 2025 [<https://www.iaea.org/bulletin/harnessing-nuclear-power-for-desalination-to-secure-freshwater-resources>] RaChEl

Nuclear desalination plants, such as the one pictured here at the Karachi Nuclear Power Complex in Pakistan, have been demonstrated as a viable option to meet the growing demand for potable water. (Photo: Pakistan Atomic Energy Commission) Water sits at the centre of the climate crisis. Rising sea levels, increasingly frequent flooding and droughts, and declining glacial and snow cover are all projected to frustrate access to sources of potable water. Without solutions to mitigate these and other effects of climate change, water scarcity will increasingly pose a threat to quality of life on a global scale. The demand for fresh water for drinking and industrial use is not limited to landlocked countries, but also affects small island developing states and countries with large coastal territories. **“**As desalination is a very energy intensive technology, it is imperative to power it with large-scale, zero-carbon sources, such as nuclear energy, in order to continue providing essential access to clean water to an increasing number of people worldwide, while simultaneously addressing climate change and commitments to net zero. Francesco Ganda, Technical Lead, Non-Electric Applications, IAEA Nuclear power plants could offer a solution, while serving a dual purpose: producing low carbon electricity and turning seawater into fresh water. “The non-electric applications powered by nuclear energy, such as desalination, present sustainable solutions for a number of water-intensive endeavours — from the consumption needs of millions of households and the industrial applications of fresh water to agriculture and livestock rearing — that current and future generations will face,” said Francesco Ganda, Technical Lead for Non-Electric Applications at the IAEA. For nearly 30 years, the IAEA has supported countries’ efforts to improve supply, quality and access to clean water through nuclear desalination, a process that uses the heat and electricity produced by a nuclear power plant to remove salt and minerals from seawater through distillation or membrane separation, mostly reverse osmosis. Desalination using nuclear power is less carbon intensive and is cost competitive with alternative methods, such as fossil fuel-based techniques. India, Japan and Kazakhstan have the most experience in nuclear desalination, with hundreds of reactor-years of successful operations. This solution provides a viable, cost-effective path to potable water for thousands of communities. “Nuclear power plants could help meet the growing demand for potable water and provide hope to areas with acute water shortages in many arid and semi-arid zones,” Ganda added. In 1996, the IAEA established its first advisory group on nuclear desalination, which helped to stimulate discussion on nuclear desalination activities and provided a forum for countries to exchange their experiences in the application of nuclear power plants to desalinate water. Global interest in seawater desalination using nuclear energy has grown ever since. “More countries are seriously considering desalination powered by nuclear energy to address their water needs, while avoiding carbon emissions,” Ganda said. “As desalination is a very energy intensive technology, it is imperative to power it with large-scale, zero-carbon sources, such as nuclear energy, in order to continue providing essential access to clean water to an increasing number of people worldwide, while simultaneously addressing climate change and commitments to net zero. The IAEA is at the forefront of efforts to support countries in achieving these goals.” To foster and accelerate action in this scientific domain, the IAEA has developed and launched two software programs: the Desalination Economic Evaluation Program and the Desalination Thermodynamic Optimization Program. Both are designed to allow experts to conduct economic, thermodynamic and optimization analyses of different power sources when coupled with various desalination procedures.

**Nuclear plants recycle water, meaning that there is a net positive increase in freshwater World Nuclear Association 20** - World Nuclear Association, “Cooling Power Plants,” October 1, 2020 [<https://world-nuclear.org/information-library/current-and-future-generation/cooling-power-plants#:~:text=Direct%20or%20once%2Dthrough%20wet%20cooling&text=The%20amount%20of%20water%20required,(7.8%20GL/d)>.] Accessed 4/11/25 Anthony

If a coal or nuclear plant is next to a large volume of water (big river, lake or sea), cooling can be achieved by simply running water through the plant and discharging it at a slightly higher temperature. There is then hardly any use in the sense of consumption or depletion on site, though some evaporation will occur as it cools downstream. **The amount of water required will be greater than with the recirculating set-up, but the water is withdrawn and returned, not consumed by evaporation**. In the UK the water withrawal requirement for a 1600 MWe nuclear unit is about 90 cubic metres per second (7.8 GL/d).

**And, investment solves**

No author “Can Nuclear Energy Transform Freshwater Access?”, Intercultural Development Research Association (**IDRA**), January 11, **2025**, Accessed March 27 2025 [Article URL] RaChEl

​​Imagine a world where the sun blazes overhead and the rivers dry. This is the reality for millions of people across the globe, particularly in arid regions where access to freshwater is becoming increasingly scarce. The United Nations projects that by 2025, two-thirds of the global population could be living under water-stressed conditions. As traditional freshwater sources dwindle, innovative solutions are essential to secure this vital resource for agriculture, drinking, and industry. One promising approach is nuclear-powered desalination, which transforms seawater into potable water using advanced technologies such as multi-effect distillation (MED) and reverse osmosis (RO). By harnessing the immense energy produced through nuclear fission, we can address the growing demand for freshwater while promoting sustainable energy practices. **The Science Behind Nuclear Power** Nuclear power generates heat through the process of nuclear fission, where atomic nuclei split apart, releasing significant energy. This heat can be converted into electricity or used directly in thermal processes. For desalination, nuclear reactors can provide: Nuclear energy can efficiently power desalination plants, providing a reliable source of freshwater. Nuclear energy enhances various water treatment processes, improving efficiency and lowering operational costs. Integrating nuclear reactors with electrolysis systems allows for sustainable hydrogen production, further diversifying energy sources. The integration of nuclear power into desalination processes is particularly advantageous due to its ability to provide both thermal energy and electricity. For instance, MED uses multiple stages of evaporation and condensation to extract freshwater from seawater, while RO employs semi-permeable membranes to filter out salt and impurities. The feasibility of integrated nuclear desalination plants has been proven with over 150 reactor-years of experience, chiefly in Kazakhstan, India and Japan. Japan serves as a prime example of how nuclear energy can be harnessed to address freshwater scarcity. Following the Fukushima disaster in 2011, Japan recognized the need to diversify its energy sources while enhancing its water security. The Oarai Multi-purpose Reactor has been crucial in experimental desalination studies, demonstrating how nuclear technology can produce freshwater efficiently. Similarly, India’s Kalpakkam nuclear desalination plant produces approximately 6,300 cubic meters of freshwater daily, employing a hybrid process that combines RO and multi-stage flash distillation. This success story illustrates what can be achieved when countries invest in nuclear desalination technologies. What Could Be Achieved Globally? If nations worldwide were to adopt similar approaches to Japan’s nuclear desalination initiatives, the potential benefits could be transformative. Such as, Increased Freshwater Supply Countries with limited freshwater resources could significantly enhance their water supply. For instance, if countries like Egypt or Saudi Arabia implemented nuclear desalination plants along their coastlines, they could alleviate water shortages affecting agriculture and urban areas. Economic Benefits While initial investments in nuclear infrastructure are high, the long-term savings from lower operational costs could offset these expenses. Nuclear desalination systems can operate continuously, providing a reliable source of freshwater at competitive prices, potentially as low as 70-90 cents per cubic meter, comparable to fossil fuel-based methods. Environmental Sustainability Nuclear desalination has a much lower carbon footprint compared to traditional fossil fuel-powered plants. By reducing greenhouse gas emissions associated with water production, countries can align their water management strategies with global climate goals. Energy Independence Countries reliant on imported fossil fuels for energy could enhance their energy security by integrating nuclear power into their water supply systems. This shift would not only provide a stable source of energy but also reduce vulnerability to fluctuating fuel prices. Global Collaboration and Knowledge Sharing Nations can learn from Japan’s successes and challenges in nuclear desalination by fostering international partnerships. Organizations like the International Atomic Energy Agency (IAEA) have been instrumental in supporting countries’ efforts to enhance their water supply through nuclear technologies. **The Role of IDRA: Leading the Charge** The International Desalination Association (IDRA) stands at the forefront of promoting innovative solutions for global water challenges. With a commitment to advancing desalination and water reuse technologies, IDRA connects experts and policymakers across more than 60 countries, facilitating collaboration and knowledge sharing. IDRA’s efforts aim to bridge the gap between freshwater demand and supply through innovative technologies. The IDRA events and knowledge sharing activities serve as a premier platform for stakeholders to discuss advancements in desalination and water reuse solutions. As we confront the pressing issue of freshwater scarcity, harnessing nuclear power for sustainable water solutions offers a beacon of hope. By employing efficient desalination methods like MED and RO powered by nuclear energy, we can transform our approach to managing water resources in regions facing severe shortages.

**This spreads global**

M **More**, “US to Deploy Molten Salt Reactors to Turn Wastewater into Freshwater”, The Pulse, February 9, **2025**, Accessed March 27 2025 [<https://www.ecoportal.net/en/all-we-need-is-salt-america-first/1663/>] RaChEl

According to a report from the Congressional Research Service, [**more than 400 municipal desalination plants**](https://crsreports.congress.gov/product/pdf/IN/IN12378) are already hard at work turning saltwater into water fit for human consumption, and more are expected to come online in the next few years. Desalination is a key technology that helps unlock untapped water sources for American communities in dry climates. But there is a problem limiting the growth of desalination—these plants [**suck up a lot of energy**](https://www.amtaorg.com/wp-content/uploads/07_Membrane_Desalination_Power_Usage_Put_In_Perspective.pdf) compared to typical water resources. However, the United States [can now boast](https://www.ecoportal.net/en/all-we-need-is-salt-america-first/1663/) of being the only country that has been able to couple nuclear power with desalination. Better yet, the nuclear reactor itself desalinates the water. Natura Resources, an advanced nuclear reactor developer, [**has successfully used**](https://www.world-nuclear-news.org/articles/texas-partnership-evaluates-smr-use-for-water-desalination#:~:text=In%20September%20last%20year%2C%20the,the%20second%20for%20any%20advanced) a [**molten salt reactor**](https://interestingengineering.com/energy/nuclear-energy-water-desalination-texas) to desalinate water. The company has now entered into [**an agreement**](https://www.world-nuclear-news.org/articles/texas-partnership-evaluates-smr-use-for-water-desalination#:~:text=In%20September%20last%20year%2C%20the,the%20second%20for%20any%20advanced) with Texas Tech University and Abilene Christian University to test incorporating these reactors into larger desalination plants. However, to understand how massive the development of this reactor is, it’s essential to look at the current state of nuclear power generation. Nuclear power is a clean energy source that is relatively affordable to generate. However, [**building a traditional nuclear power plant**](https://bipartisanpolicy.org/blog/how-to-streamline-nuclear-power-plant-construction/) (and navigating the [**bureaucratic red tape**](https://c3newsmag.com/bureaucratic-red-tape-is-blocking-a-u-s-nuclear-renaissance/) that slows the process) is still expensive. Dozens of conventional nuclear power plants are [**already in operation**](https://www.nei.org/resources/fact-sheets/u-s-nuclear-plants#:~:text=Across%20the%20United%20States%2C%2094,homes%20and%20anchor%20local%20communities.) across the country, but with [**aging infrastructure**](https://www.eia.gov/tools/faqs/faq.php?id=228&t=3) and a [**growing demand**](https://www.iea.org/news/a-new-era-for-nuclear-energy-beckons-as-projects-policies-and-investments-increase) for clean power, these plants are simply not enough.  [***>>>READ: Federal Government Signs Billion Dollar Nuclear Deal***](https://c3newsmag.com/federal-government-signs-billion-dollar-nuclear-deal/) Innovation is helping solve some of the key problems stifling the growth of nuclear power in the United States. One particularly exciting development is the [**advanced small modular reactor**](https://www.iaea.org/newscenter/news/what-are-small-modular-reactors-smrs#:~:text=Small%20modular%20reactors%20(SMRs)%20are,of%20traditional%20nuclear%20power%20reactors.) (SMR). SMRs are much smaller than traditional nuclear power plants and, thanks to their use of cooling agents like liquid metal or light water, may be deployed in areas without the abundant water typically needed to cool a nuclear power system. While there are **no operational SMRs in the** U**nited** S**tates**, the time and cost required to build these small reactors will be substantially less than in building a traditional plant. [**Molten salt reactors**](https://www.iaea.org/topics/molten-salt-reactors) (MSRs) are a form of SMR that uses molten salt as its cooling agent. These reactors operate at a higher temperature, which increases energy generation efficiency, but at a lower pressure, which can help reduce system malfunctions and improve safety. They produce far less nuclear waste than traditional plants and can even be designed to burn through nuclear waste produced by other plants. And, as in the case of the Texas partnership, they can even desalinate water. The extreme heat from the MSR evaporates either seawater or brackish water, leaving salt and other contaminants behind. (Unfortunately, molten salt reactors don’t use this sort of salt in the cooling mix, so salt left behind is not instantly put to good use.)  [***>>>READ: Five of the World’s Leading Fusion Energy Technologies***](https://c3newsmag.com/five-of-the-worlds-leading-fusion-energy-technologies/) A hybrid nuclear and desalination plant can be positioned along coastlines to create potable water from seawater. It can also be used where brackish wastewater may occur, [**including the water**](https://interestingengineering.com/energy/nuclear-energy-water-desalination-texas) produced by oil and gas wells during extraction. Innovation like this could advance the use of small reactor technology and desalination plants, which would benefit the United States and other nations desperately in need of clean water and affordable energy.

**Therefore, investment saves millions**

No author, “Water Scarcity”, **World Wide Life**, undated , Accessed March 27 2025 [<https://www.worldwildlife.org/threats/water-scarcity>] RaChEl

As a result, some 1.1 billion people worldwide lack access to water, and a total of 2.7 billion find water scarce for at least one month of the year. Inadequate sanitation is also a problem for 2.4 billion people—they are exposed to diseases, such as cholera and typhoid fever, and other water-borne illnesses. Two million people, mostly children, die each year from diarrheal diseases alone. Many of the water systems that keep ecosystems thriving and feed a growing human population have become stressed. Rivers, lakes and aquifers are drying up or becoming too polluted to use. More than half the world’s wetlands have disappeared. Agriculture consumes more water than any other source and wastes much of that through inefficiencies. Climate change is altering patterns of weather and water around the world, causing shortages and droughts in some areas and floods in others. At the current consumption rate, this situation will only get worse. By 2025, two-thirds of the world’s population may face water shortages. And ecosystems around the world will suffer even more.

**Military Lay Carded:**

**Right now, the military heavily relies on energy grid systems**

**Lee et al. 24** - [Nevada Joan Lee](https://www.stimson.org/ppl/nevada-joan-lee/), a Research Associate for the Reimagining US Grand Strategy Program at the Stimson Center, [Lieutenant Colonel Benjamin Poole](https://www.stimson.org/ppl/lieutenant-colonel-benjamin-poole/), [Christopher Preble](https://www.stimson.org/ppl/christopher-preble/), [Grand Strategy](https://www.stimson.org/research/security-strategy/grand-strategy/), Stimson, December 17, 2024

[<https://www.stimson.org/2024/military-bases-and-the-green-transition/>] Accessed 3/8/25 Anthony**Introduction** Modern **militarie**srequire considerable amounts of **energy** — and these **requirements** are likely to **grow** more onerous **in the future.** **New weapons**, including the drones and electronic warfare systems already being used in conflicts, **need more energy than previous generations.** More energy-intensive weapons, like [directed energy weapons](https://www.gao.gov/products/gao-23-106717), are likely to come into wider use in the coming years because they are significantly cheaper than more traditional methods of delivering ordnance. Militaries should, therefore, ensure access to adequate energy supplies. Most **military** bases**, however, rely on civilian energy infrastructure, which is vulnerable to cyber and physical attacks, natural disasters, and accidents.** The Pentagon has also [recognized climate change as a threat not only on its own,](https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.pdf) but also as a [“threat multiplier.”](https://www.defense.gov/News/News-Stories/Article/Article/603440/hagel-to-address-threat-multiplier-of-climate-change/) Climate change can provoke and intensify some threats already challenging U.S. national security and the safety of U.S. citizens, such as terrorism and infectious diseases. By **establishing alternatives to** its current **reliance on** civilian **energy grids**, most of which are powered by fossil fuels, DOD can **kill two birds with one stone: reduce carbon emissions** to mitigate the effects of climate change **and increase the energy resilience of bases** and in-theater operations. **DOD Current Energy Vulnerabilities If DOD does not diversify** its **power** supplies for base and in-theater operations, **any disturbance to the** civilian **grid** could **harm military operations**. Unless power plants and transmission grids are built to operate in extreme conditions, major, unprecedented weather events can greatly disrupt energy generation and distribution. In cold weather, for example, turbines in transmission plants, well water needed for oil and gas plants, and hydraulic lines can freeze — halting power production and damaging infrastructure. Moreover, because **burying transmission lines is exorbitantly expensive —** [some experts estimate **as high as $5 million per mile** for high-voltage lines](https://www.govtech.com/fs/infrastructure/despite-being-safer-underground-power-lines-are-very-expensive.html#:~:text=And%20burying%20high%2Dvoltage%20transmission,per%20mile%2C%20according%20to%20PG%26E.) — **most** of the United States’ civilian **power grid remains above ground,** making it particularly **susceptible to harsh weather.** To make matters worse, when extreme weather events occur in areas not acclimatized to that weather, power demand skyrockets, overtaxing grids, causing blackouts, and damaging existing infrastructure. This occurred **in February 2021**, when an unprecedented winter storm hit the American South. The storm [disrupted power across Texas](https://energy.utexas.edu/research/ercot-blackout-2021) and brought snow and freezing temperatures to places woefully unprepared for such weather. Just across the border, in northwest Louisiana, **Barksdale Air Force Base — the world’s largest bomber base — was blanketed by** [10 inches of **snow**](https://www.barksdale.af.mil/News/Article/2521885/engineers-lead-the-way-in-winter-storm-recovery/)and sleet. Temperatures around Barksdale fell as low as [1 degree Fahrenheit](https://710keel.com/shreveport-snow-storm/) — [40 degrees below average](https://weatherspark.com/m/10189/2/Average-Weather-in-February-in-Shreveport-Louisiana-United-States#:~:text=Daily%20high%20temperatures%20increase%20by,or%20exceeding%2060%C2%B0F.). Frozen tree limbs fell on power transmission lines in the surrounding area, **cutting power to the base**. To fix the infrastructure damage (which included frozen water pipes and impassable roads), the civil engineering squadron at Barksdale moved to [24-hour operations for a full week](https://www.barksdale.af.mil/News/Article/2521885/engineers-lead-the-way-in-winter-storm-recovery/). **If Barksdale had diversified its energy infrastructure** beforehand, including building alternatives to civilian energy infrastructure, **operations would have returned to normal much sooner.**

**Further, this reliance on fossil fuels hinders its capabilities**

**Lee et al. 24** - [Nevada Joan Lee](https://www.stimson.org/ppl/nevada-joan-lee/), a Research Associate for the Reimagining US Grand Strategy Program at the Stimson Center, [Lieutenant Colonel Benjamin Poole](https://www.stimson.org/ppl/lieutenant-colonel-benjamin-poole/), [Christopher Preble](https://www.stimson.org/ppl/christopher-preble/), [Grand Strategy](https://www.stimson.org/research/security-strategy/grand-strategy/), Stimson, December 17, 2024

Even though the United States has focused on domestic sourcing of energy, as long as the **U.S. military relies** up**on fossil fuels** to power its bases, **any disruption** to global fossil fuel supplies will **drive up costs and divert resources from other warfighting priorities.** That is precisely what has occurred during the last few years. [**High energy prices** in Europe and Asia **following the Russian invasion of Ukraine**](https://www.iea.org/topics/global-energy-crisis) **— and again with the** [**Houthi shipping attacks** (and U.S. retaliation) **on the Red Sea** — have **forced the U.S. miliary to pay more for its energy** than anticipated.](https://www.bbc.com/news/business-67947795) Even though DOD has been working to reduce its oil consumption, it is now paying more for oil than in previous years. In 2019, the Defense Logistics Agency (the DOD agency that handles fuel distribution for the U.S. military and civilian contractors) distributed approximately [94.2 million barrels of oil, valued at $12.1 billion; in 2023, the same agency distributed 79.5 million barrels, worth $13.3 billion](https://www.dla.mil/Portals/104/Documents/Energy/Publications/DLAEnergyFactBook2023_final_hyperlinked_2.pdf?ver=V60WCASoAoI0M7smH1qJ6g%3d%3d).

**US military reliance on fossil fuels hinders its capabilities Schogol 22 -** Jeff Schogol, Task and Purpose, April 29, 2022, “How the US military’s reliance on fossil fuels puts troops in danger” **[**[https://\taskandpurpose.com/news/military-fossil-fuels-troops-danger/](https://taskandpurpose.com/news/military-fossil-fuels-troops-danger/)] Accessed 3/8/24 Anthony

On April 9, 2004, a convoy that included 17 fuel trucks left the U.S. military base at Balad, Iraq, headed for Baghdad. [Insurgents ambushed the Americans](https://taskandpurpose.com/news/unsung-heroes-pfc-fought-way-one-iraq-wars-deadliest-ambushes-went-back/) in a well-prepared kill zone and two soldiers and five defense contractors were killed. Another four Americans were missing, including Army Spc. Keith Maupin, whose remains were discovered four years later.

The grim battle was not an isolated incident. **NATO estimated that 3,000 U.S. troops were killed or wounded from 2003 to 2007 by attacks on water and fuel convoys in Iraq and Afghanistan**, according to the RAND Corporation, a nonprofit research organization. **By May 2007, about 80% of all the cargo that the U.S. military transported in war zones was fuel,** [Bryan Bender, then a reporter for the Boston Globe](https://archive.boston.com/news/nation/washington/articles/2007/05/01/pentagon_study_says_oil_reliance_strains_military/), [revealed at the time.](https://archive.boston.com/news/nation/washington/articles/2007/05/01/pentagon_study_says_oil_reliance_strains_military/) These data points show how fossil fuels are the U.S. military’s Achilles’ Heel, and until the Defense Department develops new sources of renewable energy, American troops will continue to fight and die while transporting and protecting fuel supplies.An argument could be made that **finding alternatives to fossil fuels would make the U.S. military a more lethal force because American troops could spend more time attacking the enemy rather than defending fuel for vehicles, generators, and aircraft.** Based on lessons learned from the invasion of Iraq, [retired Marine Gen. James Mattis](https://taskandpurpose.com/news/mattis-leadership-combat/) told Navy researchers at Marine Corps Combat Development Command in 2005 to find ways to [“unleash us from the tether of fuel.”](https://www.atlanticcouncil.org/content-series/defense-industrialist/unleash-us-from-the-tether-of-fuel/) “It is an amazingly complex effort to maintain the fuel lines,” [Mattis told the House Armed Services Committee in March 2011](https://www.govinfo.gov/content/pkg/CHRG-112hhrg65114/html/CHRG-112hhrg65114.htm), when he was head of U.S. Central Command. “And it also **gives the enemy an ability to choose the time and place of attacking us.”Every time that U.S. troops transport fuel to forward forces, they become vulnerable,** said retired Army Lt. Col. Dwyane Butler, an expert on military logistics with the RAND Corporation. Additionally, any place where the military stores fuel must also be protected.

## **Investment in nuclear microreactors is the solution** **Miller 24** - Dr. Arielle J. Miller, TECHNICAL ADVISOR, NEW NUCLEAR AND REGULATORY SERVICES, Nuclear Energy Institute, February 29, 2024, “Why is the Department of Defense So Interested in New-Gen Nuclear,” [<https://www.nei.org/news/2024/why-is-dod-interested-in-next-gen-nuclear>] Accessed 3/20/25 Anthony

## They are specifically interested in **microreactors**, as these next-generation reactors **can provide energy resilience and isolation from the** local **civilian grid while keeping the local grid safe from cyber-attacks**. Microreactors **can easily be transported and are** a **great** solution **for powering bases in remote places** like Alaska or even on islands. And **when deployed overseas,** microreactors can also **mitigate logistical challenges**. For example, fossil fuel convoys have historically been targeted by our adversaries. During the first 10 years of the wars in Iraq and Afghanistan, **more than half of the total American casualties were from the transport of fuel** and water to the battlefield. By deploying **microreactors** we can **use nuclear energy to power the bases, removing the need for fossil fuel** here, and enable the electrification of our armed forces **and** further reduce the need for **fuel convoys.**The [Army G-4](https://apps.dtic.mil/sti/pdfs/AD1064604.pdf) and the Defense Science Board have underscored the necessity of microreactors at forward operating bases, emphasizing resource utilization, infinite sustainment, and disaster relief as crucial needs.

**Civilian grids are subject to exploitation by adversaries Renhan 21** - Lieutenant Colonel Timothy Renhan, National Defense University Press, October 14, 2021, “Realizing Energy Independence on U.S. Military Bases” [<https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-103/jfq-103_62-65_Renahan.pdf?ver=sQI3ZQ2RqerA6g8Aqkwbdg%3D%3D>] Accessed 3/30/25 Anthony

## DOD has publicly identified that a significant vulnerability to U.S. military bases is the local energy infrastructure. The military installations themselves are currently positioning physical and cyber security measures, but illicit actors do not need to penetrate the bases. Targeting the external power distribution system that provides a base its electricity is just as damaging as targeting the base itself. In 2019, more than 12 utilities companies across the country were targeted via cyber attack. This pattern of sustained pressure by illicit actors on infrastructure, including electrical nodes, is predicted to continue—if not increase. The Department of Energy reports that grids have been tested by external threats for years. **In 2014 alone, the energy sector reported 46** individual **incidents**, a **significant number** of them being **advanced persistent threats**.Near-peer **competitors such as Russia and China seek to manipulate our aging infrastructure to gain advantage in future** possible **conflict and destabilize** day-to-day **capability.** Nonstate actors, such as **terrorist and transnational criminal organizations, are also working to attack grid facilities** as a way **to challenge perceptions of U.S. governance and stability.** Complicating the issue is the way power is managed and regulated: The Federal Energy Regulatory Commission has “jurisdiction over the reliability of the bulk power grid,” but the states have responsibility for electrical distribution. Such division of labor creates an issue of security standards across energy platforms and can expose cracks in mutually supporting security strategies.

## **Competitors can take out fuel supply lines easily** **Schogol 22 continues -** Jeff Schogol, Task and Purpose, April 29, 2022, “How the US military’s reliance on fossil fuels puts troops in danger” **[**[https://\taskandpurpose.com/news/military-fossil-fuels-troops-danger/](https://taskandpurpose.com/news/military-fossil-fuels-troops-danger/)] Accessed 3/8/24 Anthony

## Moreover, **any adversary will** likely **send its most capable forces to disrupt the U.S. military’s logistics, while the fuel handlers** and other American service members **assigned to protect fuel** storage areas **typically do not serve in ground combat specialties**, Butler told Task & Purpose.“If we can’t figure out a way to get more efficient at the point of use, or with the consumption, [of fuel] then we are putting people in harm’s way,” Butler said.**In a war against Russia or China,** the U.S. military’s **fuel storage sites, tankers, and aerial refuelers would be likely targets for enemy** ballistic and cruise **missiles**. And while advanced aircraft such as the F-35 are stealthy, the aerial refueling tankers they depend on are not, and the loss of those tankers would **severely limit the range of all U.S. aircraft.**

**The US military is a serious emitter** **Harvey 24** - Chelsea Harvey, a reporter from Scientific American, Scientific American, June 1, 2024, “Warfares Climate Emissions Are Huge But Uncounted” **[**<https://www.scientificamerican.com/article/warfares-climate-emissions-are-huge-but-uncounted/#:~:text=U.S.%20military%20emissions%20are%20the,700%20U.S.%20military%20bases%20worldwide>.] Accessed 3/30/25 Anthony

**U.S. military emissions are the largest of any country worldwide, rivaling the entire annual carbon output of some smaller nations, like Norway or Sweden.** They have a wide range of origins, including both military operations and the maintenance of more than 700 U.S. military bases worldwide. “If you look at us and add up installations and operations, **the U.S. is the single-largest [military] energy user, and therefore the U.S. is the largest single institutional emitter,”** said Neta Crawford, a political scientist at the University of Oxford, speaking on Wednesday’s panel.

**Nuclear microreactors are the key to reducing emissions**

**Harlow 23** - Jared Harlow, Deputy Commander of the New York Coast Guard, Defense News, March 16, 2023, “Why the US Military Should Build Modular Nuclear Reactors” [<https://www.defensenews.com/opinion/commentary/2023/03/16/why-the-us-military-should-build-modular-nuclear-reactors/>] Accessed 3/30/25 Anthony

The 2022 National Security Strategy identified [climate change as an existential challenge](https://www.defensenews.com/smr/energy-and-environment/), and the Defense Department’s Climate Adaptation Plan calls for reducing carbon emissions across the services. The Department of Defense is the largest energy user in the U.S. government and uses approximately 29 million megawatts of electricity annually. Despite being such a large energy consumer, [only 6.5%](https://www.acq.osd.mil/eie/Downloads/IE/FY%202021%20AEMRR.pdf) of the electricity the DoD uses comes from renewable energy sources, which lags well behind the [national average of about 20%](https://www.energy.gov/eere/renewable-energy). **To address the existential challenge of climate change and reduce carbon dioxide emissions, the U.S. military should build and operate modular nuclear reactors to power its** domestic **bases.** Along with reducing its impact on climate change, this would also prepare the military services to operate forward-deployed nuclear reactors in support of combat operations.