

# The Trump administration is eager to sell nuclear reactors to Saudi Arabia. But why?

By Aileen Murphy, M. V. Ramana, April 16, 2019



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US government officials appear to be advancing a potential sale of nuclear power plants to Saudi Arabia. Late last month, Reuters reported that Energy Secretary Rick Perry approved **six secret authorizations** for companies to do preliminary work on a Saudi nuclear deal without congressional oversight. The Reuters article followed an **interim staff report** that US Rep. Elijah Cummings, chairman of the House Oversight Committee, released in February; the report cited whistleblowers who had warned that the White House was trying to rush the transfer of nuclear technology to the Kingdom.

Many experts have expressed concern about the terms of a US-Saudi nuclear cooperation agreement now apparently under negotiation. Some despair at the very idea of transferring such sensitive technology to a regime known to have been involved in the gruesome murder of a prominent US-based journalist and to have led a bloody war in Yemen.

Saudi Arabia has attempted to justify its nuclear power program as a way to shift its electrical system away from fossil fuels, in part because of climate change concerns and in part because it is economically useful for the Kingdom to sell its oil and gas on the international market, rather than use them to generate electricity.

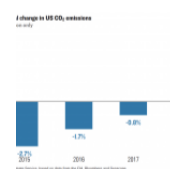
But for sun-baked Saudi Arabia, the economical and obvious switch is to solar energy, which also doesn't result in carbon emissions and can be used to reduce domestic consumption of oil and gas. The limited efforts in installing solar power capacity on the part of the Saudi government suggest that climate action and economics may not be the driving motivations for its extensive nuclear energy plan. Indeed, members of the Saudi regime have, on other occasions, made it clear that their interests in nuclear energy derive from the idea that it would help

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them acquire the capability to make nuclear weapons and match Iran, whose regional status is seen to have risen as a result of its uranium enrichment program, even though it is now apparently limited by the Iran nuclear deal.

The contrast between Saudi Arabia's solar potential and its focus on nuclear power raises a question: Why is the Trump administration so eager to provide nuclear technology to such a questionable partner? We offer some tentative answers to this question and argue that it would be best for the United States to stop trying to sell nuclear reactors to Saudi Arabia, and to use its considerable diplomatic capacity to encourage other countries to do the same.

**Outside inducement, inside interest.** Despite President Trump's outspoken interest in maintaining a close relationship with the Saudi leadership, the White House is not seeking a Saudi nuclear agreement entirely on its own volition. It is also responding to a major lobbying effort. In February, representatives from several nuclear energy firms, including NuScale, TerraPower, Westinghouse, and General Electric, **met with President Trump** reportedly with the aim of having the president "highlight the role US nuclear developers can play in providing power to other countries."

The motivation for nuclear reactor suppliers is understandable. Thanks in part to the multibillion-dollar cost of reactors, the nuclear energy market is slim. One can literally count the number of **new reactor construction projects** starting each year since 2010 on the fingers of one hand. Westinghouse, the leading company among those that lobbied Trump, has not signed a new reactor contract in more than a decade. The Middle East has been an **especially competitive market** for companies interested in building reactors in the Kingdom. If any reactors are sold, it will only be with the help of high-level support, probably involving national governments or even heads of state.

But the effort to sell US nuclear power plants has also garnered some **new players**: companies involving ex-members of the armed forces. For about two years now, there have been reports of former national security advisor Michael Flynn playing an important role in trying to start **nuclear exports to the Middle East**, especially Saudi Arabia. More recently, a host of articles have uncovered the role of the newly established IP3 Corporation (derived from International Peace, Power, and Prosperity), a company dominated by a number of **retired military officials**. The extent of IP3's lobbying became apparent only after the **House Oversight Committee report** was published.

The influence trail is murky, and the various conflicts of interest within the Trump administration render the picture even murkier. One example is the case of Westinghouse and Jared Kushner, son in law of and senior advisor to President Donald Trump and a close friend of Saudi Crown Prince Mohammad bin Salman. Westinghouse is the largest nuclear reactor supplier in the United States, but, thanks to cost escalations in multiple projects involving its AP1000 nuclear reactor design, the company filed for **bankruptcy protection** in 2017. It was then purchased by the Canadian company **Brookfield Business Partners**. Brookfield Business Partners is a subsidiary of Brookfield Asset Management Inc., which reached a deal in August 2018 with the Kushner family's real estate company to **lease a highly unprofitable building in New York**. The Kushner company had purchased 666 Fifth Avenue in New York for \$1.8 billion in 2007, just before the property markets collapsed. The company had been trying for years to offload this debt. Brookfield's deal might be just a coincidence, but the timing and the earlier foray into the nuclear business raise obvious conflict of interest questions.



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Many reasons for the US interest in selling reactors to Saudi Arabia have been put forward. Some involve the economic health of the US nuclear industry. Some involve national security; it has been argued that Russia, China, or other countries will supply the Kingdom with reactors, if the United States does not, providing few or none of the proliferation controls that a US agreement might include. Still, the conflict of interest questions must be answered, before a true appraisal of US security interests in providing reactors to Saudi Arabia can be made.

**Nuclear energy makes little economic sense in Saudi Arabia.** If interest in nuclear deal-making is tangled and conflict-ridden on the American side, the nature of Saudi interest in nuclear power seems to lie hidden in plain sight. According to a royal decree issued in 2010, the “development of atomic energy is essential to meet the Kingdom’s growing requirements for energy to generate electricity, produce desalinated water, and reduce reliance on depleting hydrocarbon resources.” Now, fossil fuels produce the vast majority of Saudi Arabia’s electricity. While switching away from these fuels makes enormous sense, **switching to nuclear energy does not.**

As a desert kingdom, Saudi Arabia has some of the best solar energy resources in the world. **Studies show** that “photovoltaic technologies would perform well at any location” in the country because of high levels of solar irradiance. Despite government rhetoric to the contrary, the country has not been pursuing solar energy fast enough. As of 2017, Saudi Arabia had a total of **92 megawatts** of installed renewable energy capacity, 89 megawatts of solar photovoltaics and three megawatts of wind. According to the 2017 version of **BP’s Statistical Review of World Energy**, Saudi Arabia generated a mere 0.04 percent of its electricity from solar energy in 2017, up from 0.01 percent in 2012. The United Kingdom generated a comparable amount of electricity overall in 2017, but solar energy contributed 3.4 percent of this total, even though that country is much further north than Saudi Arabia.

Solar energy has both lower investment costs and lower generation costs than nuclear power. The Wall Street consulting company Lazard publishes annual figures for these costs for different technologies. In 2018, the **Lazard estimate** for the construction cost of a nuclear plant in the United States was over \$9,000 per kilowatt and each megawatt-hour of electricity produced cost around \$150. In contrast, a utility-scale solar plant in the United States would cost around \$1,100 per kilowatt and each megawatt-hour of electricity would cost around \$40.

Such comparisons have been carried out for other countries too; solar energy is typically the better choice. The Institute for Energy Economics and Financial Analysis **estimated in 2016** that if India were to import a nuclear power plant from Westinghouse, electricity from this reactor would cost at least three times more than electricity from solar photovoltaics. The economic case in Saudi Arabia is likely to be even more favorable for solar power.

When confronted with the economic superiority of solar energy, some nuclear power advocates argue that the comparison is not relevant because solar energy is intermittent, i.e., it can only be generated when the sun is shining. But this argument is misleading, especially in the case of Saudi Arabia, for three reasons. First, intermittency begins to affect cost of maintaining the reliability of the grid even mildly only when the fraction of electricity being generated by such intermittent sources of energy becomes significant, say around 20 percent. Given that solar energy generated a mere 0.04 percent of all the electricity generated in Saudi Arabia, its capacity can expand by a factor of about 500 before any investment has to be made in balancing for intermittency. Second, for the

will be generating electricity from natural gas



and diesel based plants, and these are flexible enough for their outputs to be increased and decreased according to whether solar plants are not producing or generating electricity at any given time. Thus, the fraction of solar can be considerably higher before intermittency begins to pose an economic problem. Finally, the **costs of storage technologies, such as batteries**, are falling rapidly and might already be becoming cheap enough that solar energy will be economically competitive even after the addition of storage.

Given this clear economic advantage for solar energy, the question to ask is: If Saudi officials are indeed interested in reducing reliance on hydrocarbons and meet growing electricity requirements, why are they not aggressively investing in solar energy?

**Another reason for Saudi interest in nuclear technology.** Saudi officials have made it clear on more than one occasion that there is another reason for being interested in nuclear energy technology, which was not captured by the royal decree on the Saudi nuclear program: the relationship of that program to nuclear weapons. In March 2018, **Prince Mohammed bin Salman told CBS News**, “Saudi Arabia does not want to acquire any nuclear bomb, but without a doubt if Iran developed a nuclear bomb, we will follow suit as soon as possible.” The key phrase is “as soon as possible.” Developing nuclear weapons quickly will require that Saudi Arabia put in place the necessary wherewithal. This is where nuclear energy seems to come in.

The relationship between nuclear energy and weapons was clearly understood at the very dawn of the nuclear age. The 1946 Acheson-Lilienthal plan warned:

“The development of atomic energy for peaceful purposes and the development of atomic energy for bombs are in much of their course interchangeable and interdependent. From this it follows that although nations may agree not to use in bombs the atomic energy developed within their borders the only assurance that a conversion to destructive purposes would not be made would be the pledged word and the good faith of the nation itself. This fact puts an enormous pressure upon national good faith.”

Following some of the recent actions of Saudi Arabia and the history of officials explicitly indicating that, under some circumstances, they would develop nuclear weapons, there is no reason to place such faith in the regime.

The ostensible rationale for Saudi nuclear weapon interests—Iran—offers an example of the lack of faith. Iranian officials, all the way to the Supreme Leader Ayatollah Ali Khamenei, claim that the country is not developing nuclear weapons. Yet, successive US administrations have refused to trust the Iranians and have spent enormous diplomatic and political capital seeking to curb Iran’s nuclear program. In the case of Saudi Arabia, there is good reason to expect that the country is acquiring nuclear infrastructure precisely to advance its nuclear weapons ambitions.

Why exactly is there a linkage between nuclear energy and nuclear weapon capacity? There are two separate elements, the technical and the institutional. Any nuclear power plant that is under consideration in Saudi Arabia will need to be fueled with uranium that is typically enriched in the uranium-235 component. Saudi officials would like to acquire not just nuclear power plants but have also hinted at the possibility that they want the technology to enrich uranium. It was also been reported that “Western and Israeli intelligence services” observed “signs that” Saudi Arabia’s interest “extends into nuclear enrichment.”

Just as with Iran, the same enrichment technology can be used to produce fuel in nuclear weapons.

Further, all nuclear reactors produce plutonium, which, if separated from spent reactor fuel, can also be used to make nuclear weapons. In principle, this plutonium could be placed under International Atomic Energy Agency safeguards. Whether Saudi Arabia will agree to such safeguards is not yet determined; the country has not even instituted safeguards on the small research reactor it is constructing. Regardless of whether or not Saudi Arabia agrees to safeguards, there is always the possibility that a country could withdraw from these safeguards, as happened with North Korea.

Saudi Arabia's acquisition of nuclear power plants could also contribute to its nuclear weapons quest by providing a reason for training personnel in the many skills that are involved in both pursuits. Finally, there is an extensive literature in political science demonstrating the importance of atomic energy institutions to creating bureaucratic momentum to developing nuclear weapons.

The bottom line: If Saudi Arabia—or any other country, for that matter—acquires nuclear power plants, it will have gained some capability to make nuclear weapons, unless enrichment of uranium and reprocessing technologies are somehow regulated. Whether that capability is turned into actual weapons depends largely on political inclination. On that there is no need for speculation, thanks to numerous pronouncements by Saudi leaders.

**Three reasons to question.** Three aspects of the proposed sale of nuclear reactors to Saudi Arabia demand attention. The first, which has received much media attention, involves the opaque tangle of shady talks and negotiations between the Trump administration and the Kingdom, in the realm of nuclear energy and in other areas. Second, it is clear that nuclear energy makes little economic sense for Saudi Arabia, suggesting that there are other motives for its nuclear power program. Third, one of these motives need no longer be the subject of speculation: Saudi Arabia's leaders have clearly stated their interest in potentially developing nuclear weapons. The acquisition of nuclear power and associated technology could well aid that process.

Given these questions, neither the United States nor any other country should be exporting nuclear power plants to Saudi Arabia. This will not just be in the interest of the United States, but also in the economic interest of the Saudis. To the extent that there is concern that other countries like Russia and China might step in and sell nuclear reactors to Saudi Arabia, the obvious corollary is that the United States should use its considerable diplomatic capacity to discourage such efforts. Success is, of course, not guaranteed, but not trying is the surest way to fail.

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