

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

**ADESNIK:** Good morning. Welcome. Thank you joining us today for our event on “Powering National Security: Exploring Energy Policy in the United States and Beyond”, hosted by the Foundation for Defense of Democracies, FDD. We're pleased to have you here for this conversation, some in person, some tuning in live, some listening to our podcast.

I'm David Adesnik, the vice president for research here at FDD. It's Tuesday, March 4th. Today's panel discussion on international energy and national security is also the official unveiling of a new FDD monograph, "Blackout: International Energy Policies Threaten U.S. National Security", authored by Dr. Brenda Shaffer, senior advisor for energy at FDD. "Blackout" is available online at [fdd.org](http://fdd.org), as well as here at FDD for our in-person guests today.

Brenda, congratulations.

"Blackout" explores the potential national security threats of enacting and implementing energy policies based on ideals for the future, as opposed to current realities, and it turns a critical eye toward U.S. and global energy policies. "Blackout" challenges much of today's received wisdom about energy trends and policy, especially the idea that a transition from fossil fuels to clean renewables is not just underway, but perhaps inevitable. Many of you may have seen a long essay this past weekend entitled "The Clean Energy Revolution Is Unstoppable" from the *Wall Street Journal*. After reading "Blackout", the response to that may be, "Unstoppable? It's barely started."

Dr. Shaffer's monograph also has a sharp focus on the national security impact of Western policies intended to promote a transition to clean renewables. In theory, accelerating the transition is supposed to enhance our security, yet the greatest beneficiary is likely the People's Republic of China, the world's top generator of carbon emissions. Beijing reaps the benefits of low-cost energy, while the US and others impose heavy costs on themselves.

We have an exceptionally well-qualified team of experts to explore these issues, so let me introduce them to you.

First, of course, is Dr. Brenda Shaffer, senior advisor for energy at FDD and author of this monograph, again, "Blackout". Foreign policy and international energy specialist, Dr. Shaffer is the author of several books from leading university presses. In particular, I want to highlight "Energy Politics" from the University of Pennsylvania Press and from MIT Press, "Borders and Brethren: Iran and the Challenge of Azerbaijani Identity."

In the interest of time, I won't regale you with the entire list, but I think you can see that Brenda's work covers the waterfront, from global trends and energy to the political dynamics of key energy-producing countries and regions, including Iran, the Caucasus, and the Black and Caspian Seas.

Also joining us today is Ken Moriyasu, the Washington correspondent for *Nikkei Asia*, the English-language arm of Japanese media group Nikkei. He has worked there for over two decades in various cities around the globe. He was the last journalist to interview Israel's Prime Minister Ariel Sharon in 2006, in January that year, one day before his stroke. Ken was also deeply involved in Nikkei's acquisition of the *Financial Times* in 2015, serving a speechwriter and translator for Nikkei Chairman Naotoshi Okada.

Michael Ratner is a specialist in energy policy at the Congressional Research Service. His CRS [Congressional Research Service] work has addressed U.S. liquefied natural gas exports, U.S. natural gas demand, alternatives to Russian natural gas for Europe, and China's use of natural gas, among other topics. With over 25 years of energy experience spanning both the public and private sector, Michael has worked in various segments of the energy industry, including investment banking, intelligence, project development, mergers and acquisitions, consulting, and journalism. Formerly, Michael was president of the National Capital Area Chapter of the U.S. Association for Energy Economics and was an adjunct professor at Johns Hopkins University.

March 4, 2025

Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner

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Moderating today's conversation is FDD President and Founder, Cliff May. Under his leadership, FDD has become one of the nation's most highly-regarded think tanks and a sought-after voice on a wide range of national security issues. Cliff has had a long and distinguished career in international relations, journalism, communications, and politics. A veteran news reporter, foreign correspondent and editor at the *New York Times*, among other publications, he's covered stories around the world, including the Middle East, Africa and Europe.

But before we dive into our discussion this morning, a few words about FDD. For more than 20 years, FDD has operated as a fiercely-independent, nonpartisan research institute exclusively focused on national security and foreign policy. As a point of pride and principle, we do not accept foreign government funding. For more on our work, please visit our website, [FDD.org](http://FDD.org), follow us on X and Instagram and subscribe to our YouTube channel. We're everywhere.

Thanks again for joining us today. Let's get started.

Cliff, over to you.

**MAY:** Thank you, David.

David mentioned a moment ago, there's a piece that ran in the review section of the *Wall Street Journal* over the weekend, and it's sort of what I would say is the conventional wisdom in almost all of the media you're likely to see. I'll repeat the title of it: "The Clean Energy Revolution Is Unstoppable", and the subhead – I'll give you that, as well: "The Trump administration is determined to promote fossil fuels, but the economic and technological forces driving solar, wind and other sources are now too powerful to resist."

Brenda, your monograph is essentially, one might say, a rebuttal of that thesis. Indeed, your first chapter is titled "There Is No Energy Transition Coming." You want to elaborate on that a little bit?

**SHAFFER:** Sure, thank you, Cliff. So you know, we hear all the time, and when there's any reference to an energy transition, it's "the energy transition", with a capital "T", and it – as if it's a fact, and it's presented to us as, like there's a train that's left the station and the question is, you know, "when does Croatia jump on? When does Panama jump on? When does Japan jump on?" But the – but this is a fact as was reflected in this review article in the *Wall Street Journal*.

But the reality is that first thing, if we look at the numbers, you know, from – if we take from the '70s, when governments, Western governments started to subsidize wind and solar and other renewable energy, firstly, we've only moved the dial from 85 percent fossil fuels today to about 82 percent. So that it's clearly in the numbers: there's no energy transition.

Second, this genera- – I believe this generation of renewable energy – wind, solar, geothermal, hydropower – cannot, no matter how much money and policy you throw at it, cannot replace fossil fuels and cannot become the dominant fuel sources for – especially for modern economies.

Why do I think they won't be able to deliver? First, they create an energy system that's more expensive than the one they replace, and the one – the reason that they're essentially more expensive no matter how much you'll see, you know, solar panels going down or wind towers' prices going down, which actually isn't the case right now, but –let's say this – there are times when this happens – is that essentially, renewable energy has to work on a parallel energy system of either coal, natural gas, or nuclear. So, you're running two systems at once, and that means, you know, you're – you have more – higher costs.

Second, you're – you – and that essentially, renewable energy today doesn't replace fossil fuels, it relies on that – what's called a base load, which is quite essential for electricity production, of one of these consistent fuels.

A third reason that today's generation of renewable energy can't replace fossil fuels is that they have low energy density, which means when you take a form of energy and transform it into something else, you lose something along the way.

March 4, 2025

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*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

So, like, let's say even if you take crude oil and you take it to a refinery and you make from that diesel and gasoline, you're losing some of the energy, but it's even greater when you take something like wind and solar, create electricity from that, at – transmit that electricity over distances, you know, power machinery, and certainly if you turn it into products like hydrogen, where you're transforming it again and you're losing more of the energy. So that's the – the lack – you know, the lack of efficiency.

Fourth, today's generation of renewable energy – and this is really critical, to remember this term – are not energy dense. With – every time where there was an energy transition, we went from, you know, more dense fuels, which means in the space and weight you have, you're packing in more energy. So, this is important for costs, it's important for storage, but it's also important for anything that goes in the air or in ships, because weight and mass really matters.

We also have no renewable replacement for commercial fertilizers. A – 80 percent of the world's people are fed by fertilizer produced from natural gas, and you can't produce that, you know, in any other way and feed the world today. And our militaries need very dense fuels, like you have in fossil fuels, which today's renewables can't supply.

So, it – and then the last point is land usage. So, in contrast to their image that today's renewable energy is so green, it has a huge land footprint, in contrast to nuclear or to natural gas and – which are – which use – have a lot less land usages.

So, in the end of the day, energy transitions always transition to something cheaper, better, and denser, and today's renewable energy doesn't fit that definition.

**MAY:** All right. A lot to unpack there. Before we do, maybe start with Ken, and I want to – your readers – are they getting the *Wall Street Journal* view of this inevitable revolutionary transition or are – are you – or are they – seeing a reality more like the one described by Brenda?

**MORIYASU:** Ah, so, Japan is a resource-poor country. So, for many decades, we had two priorities. One is to cut the dependence on the Middle East, and two, cut the dependence on fossil fuel and diversify using nuclear energy and, down the road, renewable energy.

But what happened in the last 10 years is, first, the Fukushima disaster happened. And the nuclear – the ratio of nuclear energy was about 20 percent, but that went down to, like, five percent. Well, it went to zero initially, but then we're right back to five percent. But – so the dependence on fossil fuel is 72 percent right now. That hasn't changed.

And when it comes to the Middle East, we always had a 90 percent dependence on the Middle East: UAE, Saudi Arabia, Qatar. What we tried in – up to 2021 was to diversify to Russia, and that wasn't a very good idea.

So, through cutting down dependence on Russia, the dependence on the Middle East, it's actually 95 percent now. So, despite the lofty goals we had for many decades, the reality – there is a world we'd like to live in, but we are really facing the world that is. And we're having to adapt to that.

The new reality that's in front of Japan is that there's a new American president who's offering to sell us LNG [Liquid Natural Gas], saying that, "From Alaska to Japan, there are no chokepoints. It's half the distance from Qatar. So why not buy from us?" And I think Japanese companies would love to buy LNG from America, but there is no pipeline that brings the gas from the Arctic Seas in the north of Alaska to the ice-free ports in the south. That's 800 miles and it costs \$44 billion.

So, when – if it comes to Japan paying for that pipeline, then there'll be hesitation because there's political unpredictability if there is a regime change four years later, and the more environmentally conscious American president says, "no more drilling in Alaska", then that goes all down the drain.

March 4, 2025

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So, Japan has to balance its options.

**MAY:** Tricky. All right – and Michael, well, when members of Congress are coming to you for guidance on the transition, the revolution energy, what are you telling them?

**RATNER:** Well, fortunately – first, I'd say thank you for inviting me today, being a part of this panel.

You – fortunately, working for CRS, I only have to really – facts. I don't have to give necessarily analysis or – definitely not predictions of what's going to happen in the future. But there's always a lot of interest on the Hill on energy issues. And it – you know, to answer your question, it depends who you're talking to. You know, one side views it in a certain way, the other side views it in another way, and never the twain shall meet, sort of. But it – it's of interest.

Last go around with the first Trump administration, he was very good for my portfolio. He knows what LNG is. He knows that Russia supplies gas...

**MAY:** Liquid Natural Gas. Most people know, but just in case.

**RATNER:** ... he – you know, he knows Russia was selling gas to Europe. And so, I expect to be busy for the next four years, so.

**MAY:** I want to talk just for a second then about the idea of energy transitions because there have been many energy transitions in history, and we should look at them as compared to this one. So, for example, 1,000 years ago, millions of people were getting most of their energy for heating, for cooking from dung and from wood. And now, in the modern era, am I wrong to say that many more people, billions of people, are getting their energy from dung and wood? I'm – I know that 'cause I lived in Africa, where there is a very basic form of energy.

And what that would suggest to me – tell me if you agree – is that energy transitions are not like, "OK, we stop with one and now move on to the other." They overlap. You're still sailing ships even though there are some on – ships that are powered by coal and then by oil, and then there are nuclear submarines, but it doesn't – it doesn't obviate any more than television obviated radio.

It just – it adds a – in other words, most transitions are adding a new source of energy and then – tell me if I'm wrong – the market sort of sorts out, "OK, well, this is cheaper for me, this is more efficient for me. I would rather put gas in my car at the gas station in five minutes than plug my car in for two hours, or maybe I will 'cause I can do it overnight at my house."

Explain – talk about the grand history of energy transitions for a moment.

**SHAFFER:** Great. So yeah, Cliff, I'd concur with your vision of the history of energy transitions. And I think, you know, we have to – it's important to remember that up to about 150 years ago all of the energy in use was renewable energy.

And that wasn't necessarily a good thing. As Cliff can say, if you've ever gone to a place, not where there's electricity outage, not where there's a blackout, but actually where there's no electricity supply, OK? Like there's no regular electricity supply. And what – if it's places I think of, places I've seen in Tanzania, Uganda, I think even West Africa, Mongolia, parts of Kazakhstan, it's not this clean beautiful picture of people in harmony with animals and nature.

But it's actually a smoke-filled environment where energy use is a direct threat to health, mainly to women and children because the source of energy is in the home, you know, burning dung or other biofuels or sticks. And women and children are exposed out – you know, most of the day to the smoke. And they have a short life expectancy, a lot of respiratory diseases, losing of sight and things.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

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*Introductory remarks by David Adesnik*

And so, when you think about, like, denying public finance to fossil fuels, know that you're not pushing these people into renewables because they don't have a renew – most places they don't have a renewable answer. You're leaving them left with dung and smoke and wood.

And it's kind of almost paradoxical that the sort of moral – the people that consider themselves very moral, “we don't support fossil fuels, we're denying finance to fossil – dirty fossil fuels”, are actually – that doesn't really affect the developed world because the market will always – you don't need public finance for a power plant in the United States or Europe. But all you're doing is denying finance to the world's poorest and that they'll just be stuck with the worst form of energy possible.

So, I think we also need to remember that people need energy no matter what, whatever state their economies – or, I mean, they need to cook food, they need heat, they need protection from animals, you know, through the – through electricity or through fire. They need to purify water. So, if you deny finance for fossil fuels you're just condemning these people to very difficult lifestyle.

I can say that Chris Wright, our new Secretary of Energy, he spent a lot of his own personal philanthropy and his passion on replacing what's called “traditional biofuels”, which is a metaphor for this dung and wood, with clean cooking, clean stoves, but are, you know, mostly powered by propane, which is, you know, a fossil fuel. But ask of someone in Tanzania, do they want one of these stoves, ask someone in Ghana, they'll be very happy to have that stove instead of the wood and dung.

**MAY:** And of all the transitions – energy transitions that have taken place over 1,000 years, never before has one before pushed, motivated essentially by government mandates and subsidies and prohibitions, to the best of my knowledge. Am I wrong on that?

**SHAFFER:** Right, so maybe in some times you had some, let's say, like Manhattan Project-type government development of innovation. But this idea of prohibitions, you know, for instance, you didn't have to kill horses to get people to accept the car, right? They wanted it. Right? You didn't have to kill horses and donkeys. And that's what we're trying – we doing – trying to do something in the West, “let's suppress fossil fuels, let's produce less, let's make it, you know, let's tax them out of business and force people into renewable energy.”

Well, what you – what we've seen in the last four years, what we've been doing is just making energy more expensive, more scarce, and we're making our electricity less stable. And if something was so good – you know, it's also in contrast to what was written in this *Wall Street Journal* piece, the wind, solar, hydropower are far – nuclear even, are far from new. Hydropower has been commercial from over 100 years. Solar and wind from the 1970s widely commercial. Nuclear from the 1950s. If these technologies were so wonderful, wouldn't 50, 70 years be enough that they would – they would have a wide following?

**MAY:** Well, I want to get back to nuclear, because I think it does have promise that actually the government has prevented. But I don't want to get there yet.

There are terms that are used interchangeably, Michael: renewable energy, green energy, clean energy. Are they really synonymous?

**RATNER:** No. You know, you have to look at the, particularly when you talk about renewable fuels. And one of the points I'd like to make to what Brenda had said was, you know, if you look at the US in particular, you know, from 2000 say, on, you know, we were viewed as a growing natural gas importer, a growing energy consumer, and then the market kind of worked: because prices went up, we developed new technologies to extract natural gas.

March 4, 2025

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*Introductory remarks by David Adesnik*

And then prices in the US went down. That natural gas was also cleaner burning than other fossil fuels and our emissions went down. And if I recall correctly, I think we're the only – over the last 10, 15 years, we're the only major economy that has seen a decrease in our emissions, where the rest of the world has seen an increase in their emissions.

So, to me, the market has worked, if it's allowed to work. And that's always the big question. To get to your point, you know, or your question of, are all the renewables and green energy, are they the same? Are they all good? Are they all bad? They all come with pluses and minuses.

Brenda talked about, you know, land mass and how much land you need for solar panels and stuff. And that does – that affects your environment. You know, and if you're going to have to mine for rare earths and all this stuff, again, that's going to take energy, and initially, what's that energy going to be? It's going to be fossil fuels. So, there are a number of people who – you know – even if you think that there's a transition going on, there's going to be a need for, and possibly and increase, in fossil fuel consumption, you know.

And one other point I'll put out there, one of the things, when I look at data it's not just about percent, did it go up by X percent or down by X percent? You know, we could have a situation where, say in 2050 the percent of fossil fuels is way down compared to what it was. But on the flipside, the absolute number may be higher, you know. And so, you got to kind of look at these more holistically to see where you're going.

**MAY:** And let me just draw this out a little bit more. So, let's talk about dung some more. Dung is clearly a renewable resource. That's fairly obvious. Would you call it a clean resource or a green resource? So, when these terms are used interchangeably, I think it clouds the situation. Another example I'll give you, if your electric vehicle contains a battery, and they all do, and that battery has cobalt in it, and I think they still all do. The chances are that cobalt has been mined in Africa, probably in the Democratic Republic of Congo. And it's – and it – the Chinese pretty much control the – control the cobalt mining there and take it.

And a lot of it is what's called “artisan mining”, which sounds lovely, but it really means children, usually without gloves, are going into the mines and picking up these rocks which are toxic and putting them in bags and then selling them for \$1 a bag to the Chinese. These children then go home, and they probably don't have running water. They almost certainly don't have electricity.

And the mining of it is – you – is use – probably using fossil fuels, although it's using child labor as well, and it's doing tremendous damage to the environment of the Democratic Republic of Congo.

So, you – again, I love that – I think EVs [Electric Vehicles] are wonderful. I – my daughter and son-in-law have a Tesla, they enjoy it. It's a fun car to drive, no question about it. But the idea that in some way it is clean and green, I don't think it really is.

Go ahead, Ken.

**MORIYASU:** Yeah, yeah, yeah, I want to just add one thing about the electric vehicles. In Japan, EVs are not really considered that green because you have to generate the electricity somewhere. And in Japan, like I said, 72 percent of that electricity comes from fossil fuels. So, you burn the coal or burn the gas to make the electricity to run the EVs, so that's not very green.

And Brenda taught me when Americans shift to EVs, that's moving away from fuel, petroleum, to natural gas, because that's what the electricity is made of. But in China, if you shift from combustion engines to EVs, you shift from fuel to coal because 60 percent of their energy is made from coal. So that's not a very clean shift either, right?

**SHAFFER:** They're – basically, EVs in China are coal-fired cars.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

**MAY:** Coal-fired car. Well – and this is an important point, that coal – using coal as a power source – you explained this to me in the past – is much more polluting than using natural gas, largely because of the particulates that come from coal use. Is that correct?

**SHAFFER:** Right, yeah.

**MAY:** China is building – you may have the numbers – coal-powered power – coal-fired power plants hand over fist in last couple of years. I mean, you know the numbers, dozens and dozens of coal-fired power plants creating large amounts of CO2 emissions. Do you have any – I think there – you have that in your book somewhere.

**SHAFFER:** Right, right. So, you know, we have – it – China, for some reason – and especially, it – they cooperate with a lot of American and international environmental organizations, has this image of, you know, the real savior for green, the real promoter of green, but at – you know, but actually, its coal, which is the dirtiest of the fuels – its coal demand is increasing every year. You know, 2024 – again, going back to the idea of energy transition, coal – it was a world record for coal demand last year in China and – and globally.

And we've – essentially now have two worlds of energy. We have the West, you know, mainly Europe, its allies in Asia, and Australia, the United States, depending on the administration, basically going to more expensive and less reliable electricity in order to reduce carbon emissions.

And even the new game, which is, you know, to reduce natural gas consumption, which, again, doesn't create air pollution and, you know, has always been the – we've always tried to encourage transfer from coal to natural gas because of the air pollution issues, while at the same time China, Russia, Iran, North Korea are continuing to use, and in the case of Russia and Iran, you know, produce fossil fuels, China to produce coal, and, you know, have not even made an attempt to, you know – the – China's only committed to peak its emissions in 2030, its carbon emissions, and to – you know, to get to net zero in 2060. But who knows what...

(CROSSTALK)

... any of us will be around then, you know, to discuss this – and has made no commitments on methane, the main element in natural gas.

So we are – you know, we are trying to, in the United – we are the – United States is the largest producer of natural gas in the world. We've had different Congresses, different administrations, that have tried to really suppress production of natural gas, while at the same time, you know, the US adversaries are roaring ahead with use of fossil fuels, canceling out anything on the climate front but also, you know, we're ending up with expensive and unreliable electricity while our adversaries have the cheapest electricity, and the most reliable electricity, with the exception of Iran with its energy crisis, but we could about it a little later.

**MAY:** All right. Let's move – natural kind of segue here – to the nexus between energy security and national security. You have a [monograph] chapter entitled, "Energy in U.S. National Security Policy." So, I – maybe just state your thesis for why energy security and national security are closely linked, at the very least.

**SHAFFER:** Right. So, on every level, you know, obviously, economic prosperity is a important element of power of – and military power, power overall. And specifically, you know, military power, we have the issue of what's called "operational energy", the ability to supply energy for your military.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

So, if you don't have the energy piece down, you have, you know, huge problems for national security. And if you look at the history of the 20th century, you know, mostly the US has won its wars – whether it's World War I, World War II, a lot was determined by the availability of energy and supplies, in contrast to US adversaries, that the US was able to – you know, either they ran out, or that the US was either to choke off some of, you know, their energy supply. So, energy supplies are critical also in military outcomes.

And in contrast to the whole 20th century, when the United States has an – has truly enjoyed in the military sphere energy dominance and has had uninterrupted energy to fuel its militaries, if you look at the doctrines of Russia, China, and Iran, they're actively looking at how to disrupt American energy. Like, they understand that this is a – an American vulnerability.

And, you know, if there's asymmetric warfare between Iran and, let's say, the United States, OK, so maybe the – you know, the – Iran doesn't have an Air Force that – it can combat the United States or a Navy that it can – but it can turn out the lights in the Super Bowl, it can get you stuck in elevators in New York through cyberattacks. And they understand that Americans will not have a big taste for war if we're having disruptions even to our domestic electricity.

So – and the fact that we're putting so much on electricity, which, you know, flies in the face of energy security diversification, is really a danger. You know, not only as Ken was pointing out about the ability to produce so much electricity, which we don't really have a solution to, but electricity is a lot – you know, is quite disruptable compared to more diverse sets of, you know, liquid fuels and solids and things like this.

So we're really – you know, in the next war that the United States is involved, we might – you know, you might find yourself stuck in an elevator, and this will be used to break American morale. And I think we are very vulnerable.

**MAY:** Let me see if I have this part of it right – if – let's suppose you're in Texas, and you're in a place where they're – they have wind power and solar power but those are intermittent, so as you say, they also have to have some kind of fossil fuel to back that up. Now, you've spent on the – on having wind power, on having solar power, but you don't actually have more power; you just have different sources of power simultaneously, right?

**SHAFFER:** Yeah.

**MAY:** Now, if you wonder – if you agree, and I think you will, that the demand for electricity is escalating usually, and will do so beyond what anybody has ever imagined if we are going to pursue artificial intelligence, because the amount of electricity is enor- – required for A.I. is enormous. And if you agree with no less an authority than Vladimir Putin, that whoever controls artificial intelligence controls the future, then it would seem to be a national security absolute priority to increase your supply of electricity wherever you possibly can, which means that using renewables is not supporting the national security priority, vastly increasing the amount of electricity available on the US mainland. Is that wrong?

**SHAFFER:** So go – well, going back to your analysis on the energy transition, I think that, you know, we should be fuel-neutral. If people want to – if they think that – they're looking at a certain location and they say, OK, what best suits my needs for – costs needs reliability, you know, security of supply needs, the whole syst- – you know, whole system, environmental, when I mean, air – you know, air pollution, public health needs, what's the best balance? And they find that, hey, in this specific location, wind would add some robustness to the system, or lower cost, no one should be against that, right? Unless they're – unless the environmental impact of the wind towers, which I do see is huge. But the – we should be...

**MAY:** Environmental impact of the wind towers for good or for bad?

**SHAFFER:** For bad, for bad. I mean, especially if you're a bird or a bat, you know, it's like they're basically bird-choppers, right? So – and eyesores and for people who go to live...

**MAY:** Well, that's not very green or clean, if you're...

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

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*Introductory remarks by David Adesnik*

**SHAFFER:** It's not very green or clean. Yeah, it's maybe clean, which is low-carbon, but not really, because all the fossil fuels that go into producing them and maintaining them, right? So, we shouldn't be anti-fossil fuels; we should be fuel-neutral, and like you said, let the market sort it out.

And with the problem with the market is the – in the last 10 years – and this is kind of, it goes to your A.I. question – in the last 10 years, Wall Street, you know, the – BlackRock, the largest private-equity and public-equity firms have dried up investments in fossil fuels. They've joined all these net-zero and the banks have – the insurance companies.

Suddenly, when there's recognition that they need energy for their stuff with the A.I., right, for their investments, suddenly, did you notice everyone's cha- – turn – changing their tune? Like, even this was before the election. Suddenly, BlackRock likes nuclear, likes natural gas, is looking for power, right?

So, this really shows, like, whether you are in the camp, just know, like, how insincere a lot of the actors are. They'll join whatever the trend is. If the trend is energy transition, if the trend is – then they'll join it, and then the minute they have other needs and they see there's not a cost for it, they're going to go back.

So, the same thing with, like, let's say the climate camp on nuclear, which you alluded to. If they were so – really concerned about the climate, they would be pro-nuclear, right? They would – like, where you have this carbon-free, reliable energy source. But yet, most the camps, you know, and especially in Europe, are antinuclear. So...

**MAY:** And like the Germans have closed down their...

**SHAFFER:** Yeah.

**MAY:** ... their nuclear power facilities.

**SHAFFER:** Right.

**MAY:** And by the way, they've been bringing coal up...

**SHAFFER:** Yeah.

**MAY:** ... from South Africa.

**SHAFFER:** Yeah. And wood pallets from South Carolina, you know, shipping them across. Then you have, it counts as renewable energy because it's wood.

And so, yeah, the – I think, by the way, with the nuclear and the trend right now is everyone thinks, well, because of the demands for A.I. and electricity, that we're going to see a nuclear renaissance. But I think it's still a problem. One is cost. It's still nuclear energy – is a lot more expensive than most of the competitors; and two, it'll take too long. They have energy demands now already. Two years from now, three years from now, nuclear power, except for maybe sort of retooling plants that have closed, you know, takes at least 10 years. It might be too late. It might be...

**MAY:** Michael, when people use the term "carbon", are they really referring to carbon dioxide?

**RATNER:** Yeah, in a lot of cases, I would say.

**MAY:** There are those who would say that carbon dioxide is a pollutant. Is it a pollutant?

**RATNER:** I think it depends how you want to look at it.

**MAY:** Well, is it not true that carbon dioxide is what we're exhaling right now?

**RATNER:** Yeah.

**MAY:** So, we're polluting the atmosphere, I suppose you could think. But it's also plant food, isn't it?

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

**RATNER:** Yup.

**MAY:** Yeah, the more car- – if you were – have the greenhouse and you pour carbon dioxide into the greenhouse, you get – the plants grow better, rather – right?

**RATNER:** Yeah.

**MAY:** So, in that case, carbon dioxide is green.

**RATNER:** No, I had a friend who started a company doing – basically attaching a greenhouse to a power plant in order to – and running the emissions through the greenhouse in order to boost production. There's an interesting concept.

**MAY:** It's a very interesting concept, right? It's not recycling; it's cycling. It's use...

**RATNER:** Right.

**MAY:** It's using the product for something else...

**RATNER:** Right.

**MAY:** ... and it's probably better. Then you have bigger plants. You have more fruit. You have more vegetables and more flowers, whatever it is you're growing in the greenhouse, so that's a good thing.

Now, that doesn't say that there isn't a credible theory that at a certain level, carbon dioxide in the atmosphere...

**RATNER:** Right.

**MAY:** ... holds heat in the atmosphere, and therefore, contributes to global warming.

**RATNER:** Yeah, and I think that's the basis. I mean, one of the, I would say, discrepancies in the conversation is, you know, we're here talking about an energy transition, whether it's real or not real, but being driven by the – this view that the climate is changing, CO2 emissions and other greenhouse gases are contributing to that, mostly man-made, and that's within our ability to control so that we should stop. And the way to fix it is with an energy transition.

And I agree, you know, with what Brenda's been saying, that you almost – you can't force it, and the market's not there, and we're going to shift from, you know, a lower cost to a higher cost and things like that. And people just don't go for it, you know? I mean, and you see it somewhat with electric cars and hybrid cars and things like that. You know, people want the choice, and like – and as Brenda said, you know, if it works economically to build a solar farm outside of Phoenix, great. But it has to be – it has to compete.

**MAY:** Right.

**RATNER:** And recognizing that that solar farm is not as green as you may think it is.

**MAY:** One might argue – this is going to be a strange argument – that if Martians were about to attack the Earth and take it over, maybe you don't worry so much about the Houthis. Now, what am I – why – why have I said that?

(LAUGHTER)

**MAY:** Here's the reason: Because if you believe that global warming is an existential threat to life on the planet, then maybe you sacrifice national security. But if you don't believe it, if you believe that, OK, it's going to get a degree or two degrees hotter, but all the people in – who are moving to Miami now, I was just down there, are not going to suddenly move to Halifax because it's too damn hot in Miami. Then it's not an existential threat; then maybe you don't want to sacrifice national security. In other words, if the Martians are attacking you better worry about the Houthis, because they're doing terrible damage to international trade.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

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*Introductory remarks by David Adesnik*

So, the question is, is climate change due to CO2 and other gases an existential threat? People like Bjorn Lomborg, who if you haven't read you should, he is not a climate denier, he's not a climate change skeptic. Or Steve Koonin, who was in the Obama administration...

**SHAFFER:** Yes.

**MAY:** ...in science, has said, no, no, no it is. This is a challenge. This is a problem. This is something to address but huge hyperbole suggests it's an existential threat. We would – the climate has changed many times over the centuries. It's gotten warmer, it's gotten cooler another degree or two. Discuss that? Do you agree with what I'm saying, that this is – that it's – is it pretty clear from the evidence that this is not an existential threat to life on earth?

**SHAFFER:** Well, I think first thing, I'm suspect of anything that we're not allowed to debate. So, if you're so confident in your argument why would you try to suppress views, or not allow – you know, scientists that have these views, they lose their jobs, they lose all their funding, they're ostracized, like you said these words skeptic denier, you know, sort of like religious language instead of, you know, any science – Koonin called his book, "Unsettled."

Science is never settled. It's – the whole point of science is that it's dynamic and there's no reason that we shouldn't be discussing these issues. But I would say more specifically, why I'm suspect of the sort of the majority body of the climate literature, is that it sources not universities, it's not national laboratories. It's the United Nations.

Well, I don't trust the United Nations on UNRWA [United Nations Relief and Works Agency]; I don't trust United Nations on human rights. I don't trust the United Nations on the World Health Organization. Why would I think that a bunch of U.N. bureaucrats are correctly reading the science, whatever that is, correlated and producing it?

I mean, even if you take the IPCC [Intergovernmental Panel on Climate Change], this is the main body of the UN that correlates the research on climate, even if you took their reports at face value, what gets then to the executive summary and what gets into the mouthpieces of the secretary generals, the UN, is completely contradicts, you know, their own data.

Like, let's say things on something that's very important, is the issue of extreme weather, because that really scares people, right? If you really think that wildfires and floods and hurricanes are all because you – because of how – what car you drive, that really scares people. That's the kind of thing you're saying, yes? I'll – if the Martians are coming, we'll forget about the Houthis, right?

But if you look at the IPCC reports themselves, they say that extreme weather can be part of the future. But it's connected to other things like flood planning and forest management. But if you hear the U.N. officials, they'll tell you, you know, every event they're attributing to climate change. And you know, specifically, you've had U.N. officials constantly say we are the science.

I mean, I don't even know a scientist who would say that. You know, they would say the-

**MAY:** [Anthony] Fauci would.

**SHAFFER:** Fauci, the only – well, he's not a scientist. But I mean, I don't think an active scientist in a laboratory would ever say, we are the – "I'm Livermore lab and we are the science." I could never imagine that kind of – but the UN, which are unelected, un – you know – uncertified, they're non-scientists, they'll tell you they – and they also cooperate with Google and other social media trying to suppress – openly they say this, suppress other views on how extreme the climate threat is.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

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*Introductory remarks by David Adesnik*

**MAY:** I – Michael, you might know this because you're looking for the facts. I've heard some reputable climate scientists, I think Roger Pielke, Jr., is one of them who has said, look, the U.N. figures, the facts and the data's not bad, but then the data gets somewhat twisted, obscured for the executive summary and then a lot of times can – or the journalists or the U.N. secretary general takes that and twists it further. And by the times it gets to the public, it's not at all what the data do show or do not show for real.

Either of you want to – you guys, Michael start, and Ken follow behind.

**RATNER:** Sure. And as an analyst, I look at data and to me, more data the better, particularly if it's credible data that I can analyze. And that's, I think, been a big problem in more recent times that the data has come into question. You know, say from – I don't – honestly, don't necessarily look at U.N. data. I have colleagues who do that. But I do look at IEA [International Energy Agency] data. And they've changed some of their scenarios, which now they're looking to change back to basic information.

And if you don't have that data, you can't make good decisions. And I would hesitate to even say, you shouldn't make any decisions based on bad data, you know. And so, I think it's very important for groups to put out there all the data transparently, you know, particularly in the energy field. There is no other commodity that gets scrutinized as much as oil, you know, coal, gas, yes, and other forms of energy, yes.

But, you know, putting out that data, you know, more data the better. And like I said, people will jump on it, and people will question it and things like that. And back a number of years ago, you know, EIA or the U.S. Energy Information Administration, you know, put out stuff on renewables. You know, they were trying to shift their data collection on renewable, you know, to gather more information on renewables. And there was a lot of consternation out there, is that good data? Is it not? What does it say? And where are they getting it from? And it causes more market uncertainty than you get price fluctuation.

**MAY:** You know, and Ken, but you talk of this, but also one part of it, and I've been an journalist, it's hard if you're a journalist and your competitors are – have screaming headlines that say, you know, “monster hurricanes coming due to climate change.” And you tell your editors, “actually that's not the right story...” It's much – because they're getting – they've got the good headline, and you don't.

**MORIYASU:** Well, as a journalist, I think it's important to cut through the propaganda and really try to understand what's motivating the parties to say what they say. And I want to talk about the UN and how China sees the UN.

China often uses the UN as a counter-talking point to the U.S.-led order. China always says, you know, they're – when America talks about the rules-based international order, they're actually talking about the U.S.-led order, the only true rules-based order is the United Nations-led order. That's their talking point.

But you have to see why China talks about the UN. It's because the UN – China is very comfortable with the U.N. Security Council structure. There's five major countries, each of them have a veto. And their co-interests are protected and there's no interference between the five major players. This is the world view that China's very comfortable with. They don't like a U.S.-led order where China is a tier two country having to take orders from the US. So that – I think that's the reason why China talks about the UN, not because they – they agree with the spirit of the U.N. Charter, like they say.

If this could be a segue to China, there's one thing I want to say. I think the Trump administration's strategy on China is wrong. If you listen to Mike Waltz, he has said that China is a key part of settling the Middle East crisis.

If you look at the issues with Hamas and Hezbollah today, the core is Iran. The fact that Iran can fund Hamas and Hezbollah is a source of the problem. And the way to solve it is to stop Iran's money. Where does Iran get their money from? 90 percent of its oil sales go to China. In 2023, according to CRS, it was \$70 billion moved from China to Iran.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

So, Mike Waltz's idea is, if we're going to sit down and talk with China to convince them not to buy Iranian oil, and by doing that we can solve all of the problems, Iran will be weak; it won't be able to support Hamas and Hezbollah. Hamas and Hezbollah won't be able to sustain their activities, and we'll have a good working relationship with China.

The reason why I think this is not a good strategy is because it doesn't understand China's motivations. The – what is the number one co-interest for China? It's not Taiwan, it's not Xinjiang; it's the survival of the Communist Party, CCP survival. And their worst-case scenario is to have the economy stop, its energy resources stopped, not being able to get, you know, the Malacca Strait stopped, the Strait of Hormuz blocked.

So, it's diversifying its oil sources, and that's why this new axis that Brenda talks about with Russia and Iran, it's solving all its problems. So why would China agree to the Trump administration's proposal to stop this source from Iran?

**MAY:** I wanted to point out one other thing. It is – that – you quote, you have in your book on the UN, that the UN – it is one thing to create the data well enough that Michael thinks it's good or not, but then the UN goes and takes policy positions based on its interpretation of the data. And a quote from your book, "A major cornerstone of the UN work on climate change is advocacy for the transfer of funds from the industrialized West to the developing world to address climate change and adopt renewable energy."

What's my problem with that? Well, a couple of things. One is if you're talking about Africa, where I lived for a number of years. If you're a farmer there, you don't need to plug in a hybrid. It's not going to work for you. You need a tractor, and it needs to run on diesel. There's no substitute. And then you need a truck, runs on gasoline or diesel, to get your products to market before they rot. That's the only way to reach it. If you wait for wind power, or solar power, and the grid, you're going to stay a subsistence farmer for the rest of your life and so will your children.

And what the UN has – tends to have is, "Well, let's just take money from the West and send it to the rulers of African countries," which they use to buy a Mercedes. Whether they're plug-in or not, I don't know. That's probably not great policy and it's not going to get Africa out of poverty. And Africa's a place where millions and millions of people do not have basic electricity, and if you don't have electricity, just – should be obvious – you are poor. That's a – I mean, that's pretty much the definition, right?

So, the – just so I – and it's a source – you mentioned the UN ends up taking a cut of all this and it ends up with more funding for the UN as well, coming up with these policies such as wealth transfer. Is that correct?

**SHAFFER:** Right. So, I mean, that's why this – every four years, pulling out of the Paris Climate Agreement, re-joining the Paris Climate Agreement, that's not a sustainable policy.

And, you know – and similar to what both Mike and Ken said about, you know, US pausing LNG exports and renewing them, and we're always seen as unreliable, you know, supplier, but in the case of the UN – I mean, it's why should the United States – if they want to export climate know-how or renewable energy, let's – you know, let's say I agree with your analysis that that's not what the developing world needs, but let's say they wanted to do it. Do it directly and not do it through the United Nations, which takes a cut, and when you have, you know, no accountability.

But also, it's not going to be enough, you know, just to pull out of the Paris Climate Agreement. The Trump administration really needs to cut these billions that go to the UN, you know, climate bureaucracy, this whole class of people that have a huge interest in creating the climate crisis. They're – you know, they fed off it, they live off it.

And, you know, nothing could be more – going back to what Ken said about, you know, China versus the United States on different policies, nothing could be more sort of blatant than the new policy on natural gas.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

So natural gas – like, for years, if you're in the energy field, natural gas is the solution. If you want to have a clean fuel that doesn't create air pollution, natural gas is the answer. And, you know – and the US was able to have this big drop in emission – carbon emissions by simply the market transferring from coal-fired plants to natural gas; not government, not subsidies, just this – like, it was cheaper and cleaner, so what – you know, why not do it, right?

Suddenly, 2018, 2019, the United Nations, the International Energy Agency, the World Bank, everyone's on board that natural gas now is this super climate – you know, climate-warming greenhouse gas, with no change in science, you know, no new breakthrough report. And suddenly, it's like it's not just against coal or oil, it's all fossil fuels are bad.

And so, where did they focus on the – when – the methane issues, on the reduction of methane, which is on natural gas, which is four percent of global methane emissions. So even if you believe that it's a super warmer, it's still very small, but it's the main source of American electricity. But they didn't do anything to stop – and this is our favorite – it – yeah – China's production, cultivation, and consumption of rice, which is 10 percent of global emissions.

I remember once we were in a conference in Japan and I was talking about this thesis, and Ken said to me, "You're not telling people not to eat rice." I said, "Exactly. It's just as ridiculous to tell Americans not to turn on the lights as telling Chinese not to burn – not to eat rice."

But, I mean, rice is a much...

(CROSSTALK)

**MAY:** ... if the Chinese change from rice to potatoes, would that slow global warming?

(LAUGHTER)

**SHAFFER:** I mean, it's just as a ridiculous policy to ask Asia to stop eating rice that we'd ask Americans not to use electricity.

**MAY:** All right. I'm going to go to your questions in four minutes, at 12:00 exactly. I'm going to ask two questions together. Be concise on these.

One, there's a chapter in your book that contrasts the West's energy policies with what we at FDD call the "Axis of Aggressors", which would be China, Russia, Iran, and North Korea. Just describe briefly what it shows, and then just touch on – you got – you know, read the monograph for all of the recommendations, and maybe just touch on your recommendations. Those two together and then we'll go to your questions.

Start thinking of your questions. We'll have somebody come around with a microphone. I see Michael back there has got one. OK.

**SHAFFER:** So basically, we've created two energy and climate worlds. We have the United States, Europe, its allies that are reducing carbon emissions through creating more expensive and less reliable electricity. They're – many of the states are reducing methane emissions, so they're not even getting the benefits of natural gas. They've made all these legal commitments, like in this case of the UK it's become, like, U.K. national law to have – to go to net zero on both carbon emissions and methane emissions, while the opposite camp – China, Russia, Iran, North Korea – is, you know, surging away with using fossil fuels, with producing fossil fuels, has only made – Russia and China made commitments on carbon emissions, which are much later than the West, and none of them have made commitments on methane emissions.

So, anything – even if the West today do- – you know, stopped all its natural gas use, it would do nothing to – you know, to balance the surge in emissions from the other camp.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

**MAY:** Any want to comment on that or should we maybe go on to – and you just – OK. And let's go to your questions at this point. We'll go ahead.

**WILHELM:** Thank you all. The conversation is fascinating. Lesley Wilhelm, Navy Operational Energy, though my opinions are my own. So in a world where U.S. liquefied natural gas ma- – brings us a phenomenal opportunity for global diplomacy and other added benefits as we reduce the global cost for energy, we in many ways reduce the power of our adversaries, particularly Russian oil and gas, and sort of diminish the power of their war machine.

At the same time, one of the things that we struggle with, I think, in the Navy is in a world where we're advising our – our allies toward imported fuels, during a conflict scenario, this becomes a bit of a liability, and I think who runs escort on their ships? And do we have to divide our resources between escorting ships to provide liquefied natural gas, or even diesel fuel for a lot of our allies who still are – have electricity, who's reliant upon diesel generators? How do we choose?

And sort of aside from the climate lens, how are we advising countries which would probably benefit from an organic source? You know, say, our Philippine ally is probably feeling the sting of this as their Malampaya gas field is diminishing, so they lose that organic source, and as they have to choose between having imported coal from Indonesia or imported liquefied natural gas, you know, largely from US and perhaps mitigated through Japan. How are we making these hard choices in advising our allies? Thank you.

**MAY:** Oh, that's a tough question. We've got to have an answer.

**SHAFFER:** You guys want to start?

**MORIYASU:** You can start.

(LAUGHTER)

**SHAFFER:** OK. OK, it's an excellent question. Thank you – thank you so much. So, a lot to unpack there.

First thing, it's very good the Navy is thinking about that, especially if – since probably future American engagements are highly likely to take place in Asia and not in Europe, and we've benefited all the years from dedicated energy infrastructure in Europe because we have NATO, so we have, you know, essentially something I'm sure you know, but for the audience, is the Central European Pipeline System. We have dedicated storage, energy storage for – of NATO members. So, fighting a war energy-wise in Europe is easy for the United States.

Try to do that in Asia, when your allies don't have dedicated storage. They're not physically connected because they're islands. They're not – you don't have the treaty obligations for energy so it's a completely different situation.

At the same time, there are ways to mitigate the need for open seas for energy supplies. I mean, one is storage. It's very basic, you know, especially LNG. It's very – you know, it's much easier to store than natural gas. But – and if you're just noticing, like, right now, there's a – sort of a new energy crisis in Europe in terms of price, the cold winter in Europe, cold winter in Asia, so LNG prices are going up. And what's the first thing the EU did, was redu- – was remove the storage stipulation, storage requirement, which is, like, the last thing they should do. It's like the – because – they want to lower costs, right? If you have to fill your storage and fill your power and supply your power plants at the same time, like, storage really can solve all of these disruption problems. You could even use Russian gas reliably if you stored oi- – you know, gas for enough time.

Power plants can be dual-fuel. A lot of countries that have, like, I know – Israel does this. When you have potential disruptions, so you have power plants that can go from natural gas to liquid fuels, diesel, heavy oil – within, like, 12 hours, and you store that oil.

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

So, I think – yeah, I think that there are solutions that are more than just – ha – you know, that we have to bring dedicated ships, or we have to protect ships, but it requires money, and it requires thinking.

**MORIYASU:** Yeah, just one point. I think if we are talking about a conflict scenario, the situation is just as vulnerable for China as well, because they depend so much on imported energy. That's why it's more impor- – it's really crucial to break this alliance, this axis between China and Russia, because that really opens up so many options for China.

**MAY:** Let me just add on that. Breaking – I rather fear that the Trump administration believes that it can break the no-limits alliance between Russia and China, and I – I'm very doubtful that there is any way to do that. It is very much in the interest of Russia and China to beco- – and Tehran and North Korea, because their common goal is to displace American preeminence and power in the world. As you said, they don't want an American-led world order. That's vital for them for their territorial ambitions, Russia to restore the empire, China to expand its empire in Asia and beyond. I just don't see it easy that, you know, that Putin's going to say, "Oh, so Trump will give me some beach resorts on the Baltic Sea? Well, in that case, I'm going to break with China." It's not going to – I just don't think it's going to happen.

All right, next question. Yeah?

**MEIZLISH:** Hi. Max Meizlish with FDD. I have two questions, and so I – I'll leave it to you to select which one, maybe, you want to answer. One is on A.I. It was mentioned that the United States will be in great competition with China, Russia, others on A.I., and I'm just curious if there are specific policies that are needed within the context of energy to support U.S. innovation in A.I. beyond whatever you would typically expect from progress and innovation in the United States.

So, from my inexpert view, it seems that there is a significant demand from A.I., and I'm not quite clear as to what special policies the United States should have in place to accommodate for that.

And then the second question is more to Cliff's point about cooperation with Russia and China, and you know, I look at sanctions, and economic statecraft more broadly, and see that the United States has had some pretty good success in actually using sanctions as a tool to prevent the development of certain Arctic infrastructure and cooperation between Russia and China. And I'm just curious, what type of other policies could the United States take to do its best to split that cooperation in the Arctic specifically?

**SHAFFER:** Go ahead, either of you.

**RATNER:** Both out of my area, I guess. No, I mean, I think when it comes to A.I., it's been interesting 'cause it's a very recent phenomenon. And all of a sudden, we're going to have data centers that we need in order to utilize A.I. and that we're going to need all this new electricity.

You know, as Brenda alluded in – in her earlier comments, you know, nuclear takes time to build. The one thing that I've seen – you know, natural gas-fired power plants, you can build in 36 months, you know? There is an issue with, can you get the gas turbines that you need in a timely way?

So, I think that it – it's going to be an interesting time that's going to cause a bit more chaos into our marketplace of what's going to get built, how quickly can it get built. You know, regardless of what policymakers may say, things take time, particularly to, you know, build enough gas turbines to meet that demand. You know, small modular nuclear reactors, people talk about, but they're not there yet. And can you actually get this done? And it'll be an interesting thing to watch as an energy analyst, do they get it done?

**MAY:** ... I want to just add – 'cause this – I don't understand. And we talk – these small modular nuclear – and we talk about how much time – most of the time, it takes is because of regulations that are in the way. Is that not the case?

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

Because we know that small modular nuclear reactors, we have the technology for it. They're not that complex. We know that you can have a small nuclear plant that presents power. We've been using them for years. They're called nuclear submarines.

So, if you've got an A.I. center and you say there's no way that Columbus, Ohio is going to provide me the electricity I need, maybe you – if the regulations get out of the way, you could put in a small – takes a very – little bit of land. No emissions whatsoever. And you put in a small nuclear power plant, similar to what you have in a nuclear submarine, and you power it.

What am I missing?

**SHAFFER:** Well, first thing...

**RATNER:** It's got to happen.

(LAUGHTER)

**SHAFFER:** Yeah. It's a good concept. We can always talk about, like, we love technologies that don't exist yet. So, like everyone – you go to, you know, the EU, talk to them about hydrogen, they get really excited. You know, do they have any idea what hydrogen is or, you know, what...

**MAY:** ... but nuclear power exists.

**SHAFFER:** Right.

**MAY:** Submarines have been going how many years?

**SHAFFER:** ... but don't have one SMR [Small Modular Reactor]. Like, we don't have one proof of concept. And so, we don't really know how much it costs...

**MAY:** ... small nuclear modular and they just put it in Britain, didn't they? That's working perfectly well, no? You don't know about this?

**SHAFFER:** No.

**MAY:** OK.

**SHAFFER:** No.

**SHAFFER:** ... I have a nuclear energy here...

(CROSSTALK)

**MAY:** ... what's that?

**UNKNOWN:** ... is building one...

**MAY:** Yeah?

**UNKNOWN:** ... with DOD support...

**SHAFFER:** But we still haven't done it until...

**UNKNOWN:** ... they are science projects...

**MAY:** OK.

**SHAFFER:** So, until you actually build one commercial...

March 4, 2025

*Featuring Dr. Brenda Shaffer, Ken Moriyasu, and Michael Ratner*

*Moderated by Clifford May*

*Introductory remarks by David Adesnik*

**MAY:** OK, all right. I'm trying to understand what we're – where the technology is.

**SHAFFER:** Yeah, he's – we have a nuclear energy expert with us...

**MAY:** Good – no, no, no, good. I – we need to...

**SHAFFER:** ... in the room. Is there a nuclear energy expert in the room?

(LAUGHTER)

**MAY:** We...

**UNKNOWN:** ... existing nuclear plant, but the real problem is we don't have a supply chain for it, either on the fuel side or on the plant side.

**MAY:** Ukraine has a – has uranium, of course.

(LAUGHTER)

**UNKNOWN:** No, we – I mean, uranium's not the issue.

**MAY:** Oh, OK.

**UNKNOWN:** ... it's enrichment capacity, which is dominated by Russia, and conversion capacity and actual – we don't have the forging capacity to build nuclear reactors in the United States...

(CROSSTALK)

**MAY:** Forging capacity, OK.

**UNKNOWN:** ... it's the same – if – you know, look at the countries that can build ships, since we have someone here from the Navy. We don't build ships in the United States. So those are the same countries...

(CROSSTALK)

**MAY:** We tried...

**UNKNOWN:** ... that can build nuclear reactors, and the only ones we can build, the only ships we can build, or the only nuclear reactors we can build, which are for the Defense Department, which has no cost limitations. So, it's just not...

(CROSSTALK)

**MAY:** ... Woah well you're going to get objection there, but...

(LAUGHTER)

**SHAFFER:** ... has had no cost limitations. No – and there's also one, because we haven't built one commercial SMR, we don't really know the costs. And two, it seems that the industry, if it actually – on – cost-wise prefers larger reactors with all their permitting problems, because they're – it – they're – the finance doesn't work on SMRs because of the smaller capacity. Did I get that right?

**UNKNOWN:** I mean, it's just natural – what do you call it – you know, larger cost efficiency...

(CROSSTALK)

**MAY:** Yeah, economies of scale.

March 4, 2025

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*Introductory remarks by David Adesnik*

**UNKNOWN:** ... that doesn't make any sense, I mean, especially in a – you know, SMRs may be useful in remote locations or certain things, but you can build – you build a normal nuclear reactor that can build – generate a lot more electricity...

(CROSSTALK)

**MAY:** ... but you need a grid that can – that – that can – that...

**UNKNOWN:** But it's a proven technology. I mean, we've been building these other reactors for generations.

**MAY:** OK. All right.

**MORIYASU:** I was going to just say...

**MAY:** Yeah, go ahead.

**MORIYASU:** ...one thing about the Arctic, when – when we talk about dividing, driving a wedge between China and Russia...

**MAY:** Yeah.

**MORIYASU:** ... I think the Arctic is one area that there is a – an opportunity because Russia is very uncomfortable with China's presence in the Arctic. And here, I come back to the Trump administration. I don't agree with their China policy, but I do kind of – I'm very interested in their Greenland policy...

(LAUGHTER)

... because I – if it goes through the bombastic statements, there is kind of a logic there. He talks about – when Trump talks about the Panama Canal, the latest news is that CK Hutchison sold the two ports to BlackRock. But before that, Trump is worried about the Panama Canal being dominated by China, the Suez Canal being disrupted by the Houthis. So, the Arctic is an alternative path.

**MAY:** Right.

**MORIYASU:** And then having Greenland to secure that makes sense.

And also, you know, by talking a lot about the Arctic kind of brings Russia – it reminds Russia of the threat of China. And when it comes to China and Russia, I think America has to make a decision, which one is the ultimate threat? And if they decide that China's the ultimate threat, they have to work on Russia, bringing Russia in rather than the other way around.

**MAY:** Interesting. We could do another panel on this cause I get it. I think it's a great idea but not feasible.

Its 12:11, going to 12:15 here. Maybe one more question and then we'll – before we are – are...

**BREAUX:** Thanks, everyone. My name is Reece Breaux, I'm an intern here with FDD.

Brenda, my question's about your comment earlier about infiltration in the critical – into infrastructure grid here, shutting down in the event of a contingency or something. What can be done to insulate the United States' critical infrastructure from these energy threats from hostile actors? Thanks.

**SHAFFER:** OK. An important question. Do a full project on that at FDD while you're here.

(LAUGHTER)

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So – well, first thing, to be mindful of the fact that military supply lines run on civilian energy – military energy supply lines run on civilian supply lines, that makes a lot of sense in terms of efficiency, costs, but you – then you need to think of your own civilian energy security as having national security implications, right? So, if our grids are insufficient, unstable, vulnerable, that means our military is unstable, vulnerable, and – you know, to these threats. And I don't think we have enough thinking about that cause, like, the – if you think of, like, cyber procedures or the – you know, procedures in place in this military sector versus the civilian sector, obviously we're not – a lot more vulnerable in the civilian sector.

And I think something that's not directly to your question but in general about warfighting and energy – for years – I'm talking about thousands of years, you know, ancient history, right – the bedrock of energy in warfighting, you had two sides to it.

One was to ensure that your side had energy. So, if that meant having oil that you can throw, you know, at the Romans, or meaning that you had hay for your mules in the Civil War so that they could pull, you know, the – pull the canons and guns and things.

But the second side, which was always part of all of our battle plans, was disrupting the enemy's energy supplies, and this makes total sense, right? Just like you need yours, you need them not to have theirs.

Well, with this sort of meshing of, you know, international humanitarian law into warfighting, we've gone into a situation where let's say the Biden administration sort of hamstrung Ukraine from attacking Russian energy supplies. You know, here and there they allowed, but they didn't really want the global oil price to go up and they didn't want Russian citizens to have the lights out and stuff. And in the case of Israel/Gaza, not only could Israel not disrupt Hamas' energy supplies; it had to supply them, supply them with the energy to fight the war.

So it's not by chance that we've had two wars with no decisive end, long, drawn-out, you know, wars that could have been wars of – certainly, Israel/Gaza could have been a six-week war if Hamas didn't have energy for its terror tunnels that Israel provided by pushed by Samantha Powers and wider Biden administration.

And in the case of Ukraine, you might've also had, you know, Russia just – if there were cost to the energy supplies disruptions to both civilian and military supplies, not able to sustain the war.

So, we can't go on this way. You know, maybe people have a feel-good moment, but could you imagine trying to win World War II and telling – Americans saying, well, we've got to make sure Dresden has blankets, you know, and we've got to make sure they have fuel, you know. Well, – you know, so it's really an impossible situation.

**MAY:** Well, we're at 12:15. I think it's a good place. First of all, let's thank our panel for – I think it's...

(APPLAUSE)

**MAY:** Thank all of you, as well. I think this was a fascinating discussion. I think we at least established that energy security is national security. Thank you.

END