Center for Strategic and International Studies

TRANSCRIPT

The AI Policy Podcast
"Executive Order on AI and Energy Infrastructure - Emergency Podcast 2.0"

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(Music.)

Gregory C. Allen: Welcome to The AI Policy Podcast, a podcast by the Wadhwani AI Center at CSIS. I'm Gregory C. Allen.

H. Andrew Schwartz: And I'm Andrew Schwartz.

Mr. Allen: Join us as we dive into the world of AI policy, where we will discuss the implications of this transformative technology and what governments around the world are doing about it.

(Music ends.)

Mr. Schwartz: This is an extra-special episode of The Truth of the Matter. It's a crossover podcast with The AI Policy Podcast, which I host with my colleague Gregory C. Allen, who's the director of the Wadhwani AI Center here at CSIS.

We also have with us our colleague Joseph Majkut, who's the director of our Energy Security and Climate Change Program here at CSIS, to talk about this new AI executive order, the second in consecutive days. We're talking today on Tuesday, January 14th. This one's on AI infrastructure.

But, Greg, I want to go to you first. Today – January 14th – the Biden administration released the Executive Order on Advancing U.S. Leadership in Artificial Intelligence Infrastructure. Before we get into the details of what this actually is, what's the motivation for releasing it today?

Mr. Allen: Well, those who listened to our podcast yesterday on the AI diffusion rule will remember that we said that the AI diffusion rule is effectively giving companies a big incentive to build their datacenter infrastructure in America, right?

Mr. Schwartz: Yeah, I remember that from yesterday.

Mr. Allen: Yeah. So they're trying to make it more attractive to build in America, and I think it's fair to say they're making it more difficult to build abroad. And what we have pointed out is that that only makes sense if it's part of a one-two punch, because the big bottleneck right now to building a lot of new AI datacenter infrastructure in the United States is actually on the energy side, right? The big AI datacenters right now consume about a hundred megawatts. There are plans in motion for one-gigawatt datacenters. And in the not-too-distant future, we're

talking about five-gigawatt datacenters. My colleague Joseph has just informed me that is five Hoover Dams' worth of –

Mr. Schwartz: Five Hoover Dams, Joe.

Joseph Majkut: Well, it's five Hoover Dams at present water levels. So the Hoover Dam is roughly two gigawatts as full capacity, but what we're able to sort of, like, responsibly operate it now is about one gigawatt.

The point of this is that this is massive electricity load.

Mr. Allen: Yes.

Mr. Schwartz: Yeah.

Mr. Majkut: And if you think about it in terms of the generators you need for let's say a two- to five-gigawatt datacenter, you need industrial infrastructure on the scale of a historically famous dam, a very large nuclear reactor, or multiple reactor units at a nuclear facility.

The reason that Greg is highlighting energy and why the industry is so focused on this challenge is the size of these datacenters sort of boggles the mind when we think about –

Mr. Schwartz: (Laughs.) Yeah. Sure.

Mr. Majkut: – individual loads on the power grid, all of which are arriving really, really quickly. Big deal.

Mr. Schwartz: Yeah. I mean, I've done a tour of the Hoover Dam. This is complex stuff. It is massive. And we're talking about, as you just said, a massive amount of energy to run these datacenters. Greg, this is something we've talked about on this podcast before.

Mr. Allen: Exactly. So I want to bring us back to October 24th, 2024.

Mr. Schwartz: Yeah.

Mr. Allen: That is when the Biden administration released its AI National Security Memorandum, and Jake Sullivan – the national security advisor – said that, you know, we're going to do what it takes to continue U.S. leadership in AI technology, and that requires energy. So Sullivan said, quote, "One thing is for certain: If we don't rapidly build out this infrastructure in the next few years, adding tens of even hundreds of gigawatts of clean power to the grid, we risk falling behind."

Now, just for context, the entire U.S. electrical grid, it's about 1,250 gigawatts. So adding hundreds of gigawatts to the grid for AI, that is going from, you know, AI was effectively nothing on the U.S. energy grid five years ago to maybe five years in the future we're talking 10, 20, 30 percent of the U.S. electrical grid could all be going to powering these AI datacenters.

Mr. Schwartz: I mean, that's incredible. This is incredibly disruptive. It's incredibly, I guess, exciting if you're in this line of work, right? And it's also incredibly challenging for whoever's going to put this together.

Mr. Allen: Yeah. And that's why I think it's really great that, you know, here at CSIS we have really smart folks on energy such as Joseph here and really dumb folks on AI such as myself – (laughter) – who can work together.

Mr. Schwartz: I wasn't going to say anything, you know. (Laughter.)

Mr. Majkut: I was going to say, where's the smart people on energy.

Mr. Schwartz: Yeah.

Mr. Allen: And so the national security memorandum in October directed the Department of Energy and the Office of the White House Chief of Staff to come up with a new policy that could break through the bottlenecks, a lot of which deal with, you know, what it takes to get the permits to build new electrical generation capacity, to hook that electrical generation capacity up to the American grid. All of that is very complex in regulatory terms. And if we want to move fast – if we want to compete with China, who can definitely move fast when it comes to building energy infrastructure – we're going to need some kind of reform.

And that's really what this new policy is about. It's the one-two punch of yesterday's AI diffusion framework that's an export controls policy, today's energy executive order. All of this is aimed at ensuring that it is actually possible to do what AI companies have told their investors they're willing to spend hundreds of billions of dollars to do, which is build the energy infrastructure and build the datacenter infrastructure that it's going to take to preserve American AI leadership.

Mr. Schwartz: All right, Joseph, so what does this executive order actually contain? What are the main policy goals? And what mechanisms does it use to try to achieve them?

Mr. Majkut: I think the new executive order focused on energy has kind of, like, two large-scale goals, which I think are both important.

The first is, as Greg says, create at least an option, if not a pathway, for the large hyperscalers to build the large datacenters needed to train frontier models and use AI at the frontier. There are challenges to doing that under today's conditions which we can talk about, but this is a way in which the sort of federal authority and federal lands can be used to skirt some of those challenges.

The second thing that I think they are trying to accomplish is to protect consumers and other electricity users from the disruption that may come from these very, very large facilities. And the reason why that's an issue, you know, we mentioned these numbers are enormous, right? Thousands of gigawatts; we're adding hundreds of gigawatts. The important factor, really, here is time. So over the last 20 years, the U.S. grew the grid by about 8 percent total. That's not a compounding rate. (Laughter.) To meet the challenge that we expect to see over the next five years, the growth needs to be upwards of 10 percent. So, like, just this is a(n) enormous disruption.

And then the thing is – and this is a characteristic of the datacenters themselves – these are enormous single-point loads. It's not like the –

Mr. Schwartz: What does that mean?

Mr. Majkut: So let's say the economy's just growing, you're building houses everywhere, you've got electric vehicles on the grid now. That requires you to generate more electricity and have a larger grid. The nature of these loads, however, are they are concentrated. So if you have a datacenter, it absorbs a lot of power in one place. Or maybe there's a few of these datacenters sort of close to each other.

Mr. Schwartz: So that's the single-point load. OK.

Mr. Majkut: That's the – yeah. And then it needs to run all the time, right? If you have a datacenter, you don't really want to be in the business of having it idled for a particularly long period of time.

Mr. Allen: Yeah. If you're – if you're spending $20 billion to buy all of those chips that go inside one of these gigawatt datacenters, you want those chips on 24/7 making you money to recoup that investment.

Mr. Majkut: Now, the way this has proceeded over the last few years is there's been a real rush to try and find places where the power grid can actually just accept loads of that size, and can deliver power to them reliably and affordably. And the way that we typically build out the power grid as you add new load, as you add new transmission infrastructure to serve

that load, a lot of the costs are socialized, because if you're building houses and people are powering electric vehicles we socialize the cost of the electricity grid as a normal part of economic development. The case here is these loads are so low (sic) that if you were to socialize those costs you see incredible rate increases falling on consumers – who are also voters – perhaps unfairly.

Mr. Schwartz: OK. So this is a problem.

Mr. Majkut: Yeah. I mean, like, it's a potential issue. It's not clear that it's a problem, but the scale of these facilities is so large and their arrival is so fast that you probably want to develop a way of isolating these price effects, paying for the infrastructure. So –

Mr. Schwartz: Can I ask, where are these datacenters going to be located? Is it all over America? Is it concentrated in the –

Mr. Majkut: That's a very interesting question. So what the EO says to accomplish those two goals is that the Department of Energy and the Department of Defense are each to select at least three sites at which large datacenters could be constructed with new clean energy resources to meet their energetic needs.

Mr. Allen: And "clean" in this sense includes nuclear.

Mr. Majkut: Right.

Mr. Allen: So it's solar, nuclear, geothermal.

Mr. Majkut: Yeah. By clean, this is a climate-focused clean, and so it's really about the greenhouse gas emissions associated with the generation.

Mr. Schwartz: Right.

Mr. Majkut: What that allows for is, in theory, you can build these facilities, they can be powered, and the development of the generation – so that's a big solar farm, it might be a nuclear reactor, it might be a geothermal facility, it might be a natural gas plant with carbon capture and storage – the development of that can proceed more quickly than it typically would because of the existing on federal land. It can skirt state and local permitting and NIMBY issues. Then it can be connected to this large datacenter, and the DOE's going to run some of the coordination that would otherwise take a long time. They feel they can speed that up. And then there are a variety of other permitting processes – environmental reviews – that any project on federal land would typically have to go through, but using DOD and DOE land the executive order says all these

projects are going to have to be privileged, with the idea of by the end of this year they're sort of designed and ready to go. And then we're building and operating these datacenters by 2028, I think.

Mr. Allen: Yeah. So I think, connecting a few of the threads that Joseph raised, it's hard enough to build a bunch of new power plants on an engineering scale. But what's also very difficult is the politics of the situation, right? Grandma does not want her electricity bill to go up so that some big AI company can make more money. And so by going –

Mr. Schwartz: But members of Congress might want this in their backyard because it generates jobs.

Mr. Allen: Exactly. So by putting this on federal land you're essentially getting rid of the NIMBY, not in my backyard, politics of this thing. Because the Army doesn't complain about what you do in their backyard when it's a federal executive order. They will just go allow this to take place. And if you think about, you know, the state and local, where a lot of these regulatory authorities lie, you know, they have their own universe of permitting complexity. And what the Biden administration is saying is that by going on federal land we can avoid all of that state and local permitting complexity.

Now, there's still permitting complexity from the federal rules, but what we've heard in talking with folks in the Biden administration is they describe this rule as basically the most that can be done without Congress getting involved to waive relevant regulations, to accelerate permits, and to give access – preferential access to this federal land for those six, you know, we're talking five gigawatt scale datacenter facilities and energy generation facilities that could be built. And the goal here is basically we think that on planet Earth there's going to be demand for five gigawatt datacenters as soon as 2028. People are talking about breaking ground on the one gigawatt datacenters maybe as soon as this year.

So if we're going to get ready for that complex future, we need to put the relevant regulatory authorities in place so that people can start submitting their accelerated permitting documents this year, in 2025, and start building in 2026-2027.

Mr. Schwartz: All right. I want to ask both of you, how is this executive order likely to be received by major AI and hyperscaler companies?

Mr. Majkut: I think, you know, when we think about the – when we've talked to the companies on the energy side, I think they appreciate the signal that this formulation sends. Which is, this is a critical issue and the sort of

current policy environment is going to make it hard for them to capitalize on the lead we have in AI, or to continue to build and invest at the pace that they have been doing. There are, of course, details that I think are going to be subject to a lot of investigation and a lot of thinking, right?

When you're saying, like, you can only do this with clean energy, and it needs to be new clean energy, that can be a challenging economic prospect. And so one of the key things to watch is the extent to which this is a potential option. If legitimately, the government can provide speed on the permitting side of things, can the companies put together a viable economic model for their new datacenters that's really going to allow them to continue to build? And, you know, in the meantime they're free to do this in the private market, as well as we have been seeing. But it's not clear where all these friction points are going to arrest the development of these very, very large datacenters.

Mr. Schwartz: I see. Greg, you know, the bipartisan U.S.-China Economic and Security Review Commission has called for the creation of an AI Manhattan Project. Do you see this executive order as establishing this kind of a project they're talking about?

Mr. Allen: So there's elements that you could point to. I mean, on the one hand the big five hyperscalers have collectively announced something like $300 billion in new capital expenditures in just 2025 alone. So that's, like, coming up on half the DOD budget. And the – you know, the atomic bomb project –

Mr. Schwartz: Half the DOD budget?

Mr. Allen: Is, like, what these private companies are getting ready to spend in one year.

Mr. Schwartz: All right. So put that in perspective for our listeners. How much actual money is that?

Mr. Allen: Well, $300 billion is about one out of every $60 in the U.S. economy, is going to be spent on AI energy infrastructure and datacenters. Now, not all of that is going to be built in the United States in 2025, but it does just go to show this –

Mr. Schwartz: One out of every $60?

Mr. Allen: Yeah. This is wrath of god money. I mean, it really, really is just an extraordinary scale. So you could sort of say, like, oh, well, the U.S. federal government is getting involved. They're letting this happen on

federal lands. Is this a Manhattan Project? And one very important difference between this and the Manhattan Project is the U.S. government is not going to spend any money on this. What the U.S. government is trying to do with this policy is unlock that private capital, to identify what are the critical bottlenecks that they face in trying to make these unprecedented investments, and make their life easier, and make everything move faster.

Mr. Majkut: And that exactly highlights the problem, as we understand it. It's not that the hyperscalers – I mean, these are very cash-rich companies, right? It's not that they don't have enough money to develop these facilities. It's that they actually can't deploy their money quickly enough to keep up with where the technology could go.

Mr. Schwartz: Why is that?

Mr. Majkut: For all the reasons that we talked about.

Mr. Schwartz: The permitting –

Mr. Majkut: The permitting, the powering issues. Like, the power sector in the United States for a long time, has been a slowly growing, highly reliable system – a slowly growing system designed for reliability, for cleanliness. And now we need to reassert growth. The power grid has grown at the levels we've been talking about historically –

Mr. Schwartz: Right, because this isn't just any growth. This is massive, explosive growth.

Mr. Majkut: Yeah, yeah, yeah. Right.

Mr. Allen: Joseph, can you connect this – you know, you talked about how, like, the pace of growth in the future and the pace of growth in the past, but can you connect that to timing? Like, how long some of these permitting issues typically take in the United States? And what kind of timeframe the Biden administration expects this to accelerate it towards?

Mr. Majkut: Yeah, of course. I mean, if you want to build a large new load it can take years to so-called interconnect that to the grid. And what that means is, you know, it's, Andrew, like, when you're at a party and you're looking for a place to plug in your guitar amplifier, right? You might need to look around the room a little bit to find an open plug. And what's happening in the background in grid planning is we're making sure, can the grid in this area actually provide the electricity for that facility without disrupting the physics of the grid in such a way that you get blackouts, or brown outs, or reliability issues, frequency regulation challenges – all

these kind of like technical engineering questions. It does take time to do that kind of assessment. It just so happens in the United States it takes way longer than it ought to.

We also have to interconnect on the generation side. Key fact, when we look at the number of projects that are applying for interconnection on the generation side, we have plenty of energy to meet the load growth numbers that we're talking about for datacenters. The challenge is, they're just not all going to get interconnected because the process by which we do these evaluations takes a long time. So if you think that whole process takes – I don't know. It depends on this nature of the project, it depends on where it is, depends on its size, but let's say years. It is not a short process to roll up into a grid service area and say, I want to connect a gigawatt or two of either generation or of new load.

What the Biden administration wants to do, and I don't think this is going to be inconsistent with what we expect from the Trump administration because this is where the industry says competition is going, is develop these things over the next few years. Tens of, 50, 70, 100 gigawatts of new datacenter capacity in the next five to seven years, that is a rate of expansion that the current system is just not prepared for.

Mr. Schwartz: And, Joseph, you just mentioned you think the incoming Trump administration may agree with some of this. To both of you, you know, are they likely to implement it?

Mr. Allen: So I think it is definitely true that the Biden administration, which has a handful of days left, is not going to be in charge of implementing this.

Mr. Schwartz: That's a fact.

Mr. Allen: And a lot of this policy does really require real governmental work. There's a difference between having an executive order on the books and having a White House that is cracking the whip on all the relevant federal agencies to actually carry out that executive order. Now, I've listened to an awful lot of Trump campaign speeches and interviews where he mentioned AI. No matter what the question was about, energy was a part of the answer. So Trump is absolutely committed to facilitating this large-scale energy build out. And as he looks at this Biden administration policy, a lot of the conditionality of exercising this use of federal lands, these special authorities, does rely on it being clean energy – clean in the sense of not being carbon related.

Now, the issue for Trump is he might want to say, no, I want it to be coal. I want it to be natural gas. Everybody knows that Trump hates wind

power with a passion. But the reality here is that it's not just the Biden administration that's pushing this to be clean energy. There are actually critical legislative authorities that have been granted to the federal branch which are only accessible when it is carbon neutral type energy generation. And so there's some stuff that the Trump administration could tweak this. I don't expect this executive order to survive unaltered. The Trump administration is absolutely going to want to put their stamp on it. But the basic idea of let's harness federal lands, let's harness the waivers that are available to us in federal lands, I absolutely expect the Trump administration to want to pick up on this.

I do think they're going to want to remove the focus away – because the Biden administration is not just doing this for AI. They're using AI as a tool here to try and accelerate America's clean energy transition. They're saying, oh my gosh, $300 billion is about to be spent in energy infrastructure. Well, wouldn't it be nice if a lot of that money went to help us with this clean energy transition? So I think the Trump administration is going to be, obviously, less optimistic about that. But the reality, and this is something that I've learned from Joseph, is actually if you're talking about, like, what type of new energy you can build in just a year or two, solar is one of the fastest ways to add energy capacity on the grid.

And so I do expect this executive order to change. I do expect this executive order to survive, though. I expect the Trump administration to, you know, launch it in a revised form. And even though the Trump administration is very friendly to the fossil fuel industry, I actually do expect solar, nuclear, geothermal to be a big part of the story, no matter what they decide.

Mr. Schwartz: Joseph, last word.

Mr. Majkut: Yeah. I generally agree with Greg. I mean, the chances that this executive order as written today are being implemented a year from now are near zero. But are a lot of the mechanisms in here something that the Trump administration may pursue, because it – like, their number-two energy priority is winning the AI war with China – I think that's probably the case. Until we can get more general reform for the power system, for permitting issues – which is a matter for Congress – this is a way that you can use federal tools to start building things over the next few years. And with the sense of urgency we feel from the incoming administration I can see a lot of the individual tools and the sort of skeleton of this approach being helpful. But the – yeah, the conditions on clean energy are almost certainly going to be removed.

Mr. Schwartz: So, for all our listeners who really like deep cuts, we're going to have to do another podcast just to talk about permitting. That'll be a deep cut podcast, like for the permit freaks out there.

Mr. Allen: I think that's a Joseph one. (Laughter.)

Mr. Majkut: Just me and the heads.

Mr. Schwartz: Guys, really appreciate it. Thanks, as always. Want to give a big thought to our friends, family, countrymen out in Los Angeles battling these fires. You can donate to the Red Cross. There's lots of other charities that are readily available to donate to. Big prayers for our people out in L.A. Thanks so much, guys.

Mr. Allen: Thank you, Andrew.

Mr. Majkut: Thank you.

(Music plays.)

Mr. Allen: Thanks for listening to this week's episode of the AI Policy Podcast. Be sure to subscribe on your favorite podcast platform so you never miss an episode. We also love to hear from you, so reach out at AIPolicyPodcast@CSIS.org with your suggestions and feedback. Finally, don't forget to visit our website, CSIS.org, for our latest research reports and events. This podcast was produced by Cera Baker, Isaac Goldston, and Sadie McCullough. See you next time.

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