From New York Times Opinion, this is the Ezra Klein Show.
I'm excited about today's episode.
We're getting really into the Inflation Reduction Act leads, but before we begin, we're doing our quarterly Ask Me Anything.
This is going to be the last to ask me anything before I go on book leave.
I'll say I guess more about the book leave in a coming episode.
But if you've got questions you'd like to hear answered on the show,
send them to EzraKlineShow at nytimes.com with AMA in the headline.
So we know what they're about.
Again, send your questions with AMA and headline to EzraKlineShow at nytimes.com.
But today we are getting into the Inflation Reduction Act.
And there's a kind of meta point I want to make here.
I've covered a lot of policy fights and a huge problem in how policy coverage is done is there's all this attention to the fight to pass the bill, the Affordable Care Act, the Trump tax cuts, the Inflation Reduction Act.
And then the bill passes and if the fight stops, attention just drops off a cliff.
Implementation matters, but it's harder to cover because it's happening in all parts of the country simultaneously.
There isn't a huge Republican-Democratic fight over it.
So there isn't the conflict that draws the attention to it.
And so we sort of implicitly treat policy like it's this binary one-zero condition.
One, you pass the bill and the thing is going to happen.
Zero, you didn't and it won't.
But there's actually this huge range of outcomes in between where the thing passes and maybe what you wanted to have happen happens.
Maybe it doesn't.
Implementation is where all this rubber meets the road.
And that's particularly true in the IRA, which has to build all these things in the real world.
I mean, we're not just sending out checks here.
We're building transmission lines and green hydrogen manufacturing facilities and trying to create a national network of electric vehicle chargers and on and on and on.
I mean, we're trying to do industrial physical transformation at a speed and scale unheralded in American history.
This is bigger than anything we have done at this speed ever.
And so I want to keep on this and I want to keep on the question of how is it going?
The money is beginning to move out the door now, but we're on a clock.
Climate change is not like some other issues where if you don't solve it this year, it is exactly the same to solve it next year.
This is an issue where every year you don't solve it.
The amount of greenhouse gases in the atmosphere builds, warming builds, the effects compound and it gets harder or frankly more impossible to solve over time.
Sol, frankly, isn't the right word there because all we can do is abate.
A lot of the problems now baked in.

So how is it going and who can actually walk us through that?
Robinson Meyer is the founding executive editor of heatmap.news,
which is a new publication that is doing great work focusing on the green energy transition.
He's also a contributing writer to New York Times opinion and he's been doing for a long time now.
I think some of the best work covering what the IRA is, how it's going,
and just the sheer, messy, difficult task of actually decarbonizing.
So I wanted him to come on the show and walk us through where the law is right now in its implementation process and what are the hurdles, the challenges between here and some semblance of success. And he really does. He really does. So I learned a lot in this. I hope you will too.
As always, my email for guest suggestions, for feedback, and again, for ask me anything questions is as reclined show at nytimes.com.
Robinson Meyer, welcome to the show. Absolutely. Thank you for having me.
So the Inflation Reduction Act passed last August. Obviously, it's early when you're building big renewable energy projects. They take some time. But what can we say has happened or is happening? What concretely can we see where we can track how it's going?
And what do we just not know about yet? You can almost divide the law up into different kind of sectors, right? You have the renewable build out, you have EVs, you have carbon capture, you have all these other decarbonizing technologies the law is trying to encourage.
Where we have the best data right now is in EVs. Electric vehicles.
Electric vehicles and in the effort, kind of this dual effort in the law to both encourage Americans to buy and use electric vehicles and then also to build a domestic manufacturing base for electric vehicles. And I think on both counts, the data is really good on electric vehicles. And that's where we're getting the fastest response from industry and the clearest response from industry to the law. And when you say the data is good, what are you seeing that's good?
Factories are getting planned. Steel is going in the ground. The financing for those factories is locked down. It seems like they're definitely going to happen. They're permitted. Companies are excited about them. Large forks and 500 automakers are confidently and with certainty planning for an electric vehicle future. And they're building the factories to do that in the United States. They're also building the factories to do that, not just in blue states.
And so to some degree, we can see the political certainty for electric vehicles going forward.
I think in other parts of the law, partially due to just like vagaries of how the law is being implemented, tax credits that where the fine print hasn't worked out yet, it's too early to say whether the law is working and how it's going and whether it's going to accomplish its goals.
But there's some very encouraging signs. There's some things we don't know yet.
So one oddity about the Inflation Reduction Act or at least the climate side of it, is we don't really know how big it is. So I mean, I always found this funny in a way.
The Congressional Budget Office and the Joint Committee on Taxation, they scored it.
They thought it would make about $380 billion in climate investments over a decade.
And then you have all these other analyses come out from other groups. So the Rodeum Group, which is a consulting firm, they think it could be as high as $522 billion. Then there's this Goldman Sachs estimate, which the administration loves, where they say they're projecting $1.2 trillion in incentives, which I can't even quite figure out what they were saying was happening

there. But that's really a bigger number than $380 billion. So why do all these numbers differ so much? And how big is this thing? All the numbers differ because most of the important incentives, most of the important tax credits and subsidies in the IRA are uncapped. There's no limit to how much the government might spend on them. All that matters is that some private citizen or firm or organization comes to the government and is like, hey, we did this.
You said you'd give us money for it. Give us the money because we really don't know and kind of rely on these large-scale national energy system models to estimate what the uptake for these things may be. We don't really know how many people are going to take advantage of each tax credit. And so because of that, different banks have their own energy system models, their own models of the economy. Different research groups have their own models. And that's why you produce these estimates that range from $300 billion to $1.2 trillion. One thing we do know pretty confidently is that the initial CBO estimate is probably going to be wrong. The initial CBO estimate I think is $391 billion, right? I've seen different versions. It's $380, something in that neighborhood. Yeah, and it also maybe $369. And I think it also depended on what exactly you counted as a climate incentive in the bill. We know that's going to be wrong. And we know it's going to be wrong because the Congressional Budget Office is actually quite
constrained in how it can predict how these tax credits are taken up. And it's constrained by like the technology that's out there in the country right now. For instance, the CBO really didn't see a very large take up for the hydrogen tax credits. Hydrogen is this important tool that's going to, we're going to use in the industrial sector, maybe transportation sector to like decarbonize and replace fossil fuels in certain uses. Very generous tax credits for it in the IRA. The CBO can only look at the number of electrolyzers, kind of the existing hydrogen infrastructure in the country and be like, well, they're probably all going to use these tax credits. And so I think they said that there'd be about $5 billion of take up for the hydrogen tax credits. Now, depending on other numbers, including DOE, it's potentially as high as $100 billion. But that's because the whole thing about the IRA is it's meant to encourage the build out of this hydrogen infrastructure. It's meant to encourage this technology to get build out. So the reason I ask about these estimates is when I talk to the administration, one thing they are excited about, one thing the authors of this law are excited about, they're getting these estimates, which have some information coming into them from private sector take up. And the fact that the estimates are going up is to them early evidence that this is going well. There's a lot of applications, people want the tax credits, they want to build these new factories, etc. But right now, what we mostly have to the extent we have any information about it at all is people applying to get money. And a huge fallacy that we make in policy all the time is assuming that once money is allocated for something, you get the thing you're allocating the money for.
Noah Smith, the economics writer, likes to call this check-ism that money equals stuff. But sometimes money gets allocated and then cost overrun and there are delays and you can't get the permits and so on. And the thing never gets built. So I want to talk through the road from this money to all of this decarbonization infrastructure they're trying to build.
And I think the place to start is maybe with where a bunch of the money is going out the door. I don't think people think a lot about who is cutting these checks, but a lot of it is happening in this very obscure office of the Department of Energy, the loan program office, which has gone

from having $40 billion in lending authority, which is already a big boost over it not existing a couple of decades ago, to $400 billion in loan authority. Jigar Shah, who is not like a household name, but has become a very, very important figure in climate money. Tell me a bit about the loan program office and your sense of how they're doing. Yeah. And so in some ways, I think you're right to focus on the loan program office as one of the best places we've dated on how this is going right now. And one of the offices that's responded fastest to the IRA. So the loan program office is basically the Department of Energy's in house bank. And it's kind of the closest thing we have in the U.S. to what exists in other countries like Germany, which is like a state development bank that funds projects that are eventually going to be profitable. But because of how they have to be financed or because of they're so expensive or because of like the interest rates they need, private capital isn't willing. It has existed for some time. I mean, it first kind of was first a player after the Recovery Act of 2009. And in fact, kind of early in its life, it gave a very important loan to Tesla. It kind of gave this almost like bridge loan to Tesla that helped Tesla build up manufacturing capacity and that got Tesla to where it is today. It received a huge bonus in the IRA. Like as you said, it... Well, wait a sec. It didn't only give loan to Tesla. Yes. That's not the loan people know that it gave. Yes. It also lent to Selindra, which of course went belly up and failed and became a huge issue in the 2012 election. The reason I bring that up is not to embarrass the office. No, no, no. I mean, it's because one of the questions I have about that office and that you've seen some of the coverage of them is they're very afraid of having another Selindra. They are. They do not want that. And not wanting that and putting every application through a level of scrutiny high enough to try and make sure you don't have another one. The Selindra, as many people have noted, the issue is not that their technology failed. The issue is that China subsidized solar manufacturing so much it became non-cost competitive. But nevertheless, they don't want another of those. And on the one hand, maybe that's good. They're watching over taxpayer dollars. On the other hand, maybe that means they don't make loans quick enough. They don't make loans that are risky enough. There's a times profile of Jigar Shah and he's bragging in it that they're turning a profit. I'm never that excited when I see a government loans program turning a profit because I think that tends to mean they're not making risky enough loans. The point of the government should be to bear quite a bit of risk. The private market can't. So that's the meta question I'm asking here. Are they operating too much in your view? Because you're tracking this much closer than I am. Are they too much under the shadow of Selindra?

Are they being too cautious? Are they getting money out fast enough? Are they getting money to big enough bets? You're absolutely right that this is the key question. They gave this $9.2 loan to Ford to build these EV battery plants in Kentucky and Tennessee. It's the largest loan in the office's history. It actually means that the investment in these factories is going to be entirely covered by the government, which is great for Ford and great for our build out of EVs. And to some degree, I should say one of the roles of LPO and one of the roles of any kind of state development bank is to loan to these big factory projects that, yes, may eventually be profitable, may in fact assuredly be profitable, but just aren't there yet or need financing that the private market can't provide. That being said, they have moved very slowly, I think, and they feel like they're moving quickly. They just got out new guidelines that are supposed to streamline a

lot of this. They're core programs. They just redefined and streamlined in the name of speeding them up. However, so far, LPO has been quite slow in getting out new loans.
One of the things that I've seen in the reporting here, and this would take nothing away from the office, I want to say that the pressure they're under is very real. So, Lindra was a disaster for the Department of Energy, whether that was fair or not fair. There's a real fear that if you make a couple bad loans that go bad in a big way, you will destroy the political support for this program and the money will be clawed back. A future Republican administration will wreck the office, so they're not operating. This is not an easy call, but one thing you hear from the companies that have gotten loans is this is a grueling process. The ones who get it speak positively of it. This is very thorough. It's really hard, but it does mean you get both the money and this wonderful imprimatur of the government and this thorough checkup. But when you tell me they just made the biggest loan in their history to Ford, I'm not saying you shouldn't lend any money to Ford, but when I think of what is the kind of company that cannot raise money on the capital markets, the one that comes to mind is not Ford. They have made loans to a number of more risky companies than Ford, but in addition to speed, do you think they're taking bets on the kinds of companies that need bets? It's a little bit hard for me to believe that it would have been impossible for Ford to figure out how to finance factories. That just can't be true. Now, I guess what I would say about that is that Ford is, let's go back to why Selenja failed, right? Selenja failed because Chinese solar deluged the market. Now, why did Chinese solar deluge the market? Because there's such a port of Chinese financing from the state for massive solar factories and massive scale.
And to some degree, Ford now has to compete and US automakers are trying to catch up with Chinese
EV automakers and its firms have EV battery technology especially, but just have a kind of comprehensive understanding of the EV supply chain that no other countries companies have.
And so to some degree, I do want to like... Maybe that's the argument for giving Ford that money.
I think that's right. Is that basically if we think the US should stay competitive and stay as close as it can and not even stay competitive but catch up with Chinese companies, it is going to require kind of large scale state support of manufacturing. Okay, that's fair. I will say in general, there's a constant thing you find reporting on government that people in government feel like
they are moving very quickly because given the procedural work they have to go through, and they often are moving very quickly compared to what has been done in that respect before, compared to what they have to get over. They are working weekends, they're working nights, and they're still not actually moving that quickly compared to what a VC firm can do or an investment bank or someone else who doesn't have the weight of congressional oversight committees
potentially calling you in and government procurement rules and all the rest of it.
I think that's a theme across the government's implementation of the IRA right now is that generally the government feels like it's moving as fast as it can. And if you look at the Department of Treasury, they feel like we are publishing basically the way that most of the IRA subsidies work is that they will eventually be administered by the IRS. But first, the Department of the Treasury has to like write the guidebook for all these subsidies. So the law says there's a very general kind of, you know, here's thousands of dollars for EVs under this circumstance. Someone

still has to go in and like write all the fine print. The Department of Treasury is doing that right now for each tax credit and they have to do that before anyone can claim that tax credit to the IRS. Treasury feels like it's moving extremely quickly. It basically feels like it's completely at capacity with these and it sequins these so it feels like it's getting out the most important tax credits first. Private industry feels like we need certainty. It's almost a year since the law passed and you haven't gotten us like the domestic content bonus. You haven't gotten us the community solar bonus. You haven't gotten us all these things yet. Now some of those just came out, but like generally I think a theme across the government right now is that the IRA passed. Agencies have to write the regulations for all these tax credits. They feel like they're moving very quickly and yet companies feel like they're not moving fast enough. And that's how we get to this point where we're 311 days out from the IRA passing and you're like, well, it has a major big difference. I'm like, well, you know, frankly, wind and solar developers broadly don't feel like they have the full understanding of all the subsidies they need yet to begin making the massive investments. So one of the tensions I'm getting at here with the loan office is a question between what might have happened without the IRA, right? Investments that had a little bit more of a sure thing dynamic and things that are much more speculative and where the government is trying to backstop an innovation structure or take out the risk of something that might not otherwise happen if they didn't. And I think it's fair to say maybe the biggest bet on that is green hydrogen. If you're looking in the bill, I mean electric vehicles, I think what happened sooner or later, they're trying to make them happen sooner. But green hydrogen is something new and the size of the bet is huge. So can you talk about, first of all, what is green hydrogen? Because my understanding of it is spotty. And then what's the IRA doing? What seems to be happening? Why is it so important to this bill? That's a place where I think they're doing something. They really have a point of view that might not have happened in another administration. Walk me through it.

Yeah, absolutely. So green hydrogen, and let's just actually talk about hydrogen broadly as this potential tool in the kind of decarbonization toolkit.

A molecule.

It's a molecule.

See, I know something.

Yes, exactly. It's a molecule. It is a very light element and you can burn it, but it's not a fossil fuel. And a lot of the importance of hydrogen kind of comes back to that attribute of it. So when we look at sectors of the economy, they're going to be quite hard to decarbonize. And that's because there is something about fossil fuels chemically that is essential to how that sector works, either because they provide combustion heat and steel making, or because fossil fuels are actually a chemical feedstock where the molecules in the fossil fuel are going into the product, or because fossil fuels are so energy dense, that like you can carry a lot of energy while actually not carrying that much mass. Any of those places, that's where we look at hydrogen as going. We think it's going to be an important tool in the industry. It may be an important tool for kind of storing energy in the power grid. It may be an important tool for anything that needs combustion. The IRA is extremely generous, like extremely, extremely generous in its hydrogen subsidies.

And there's actually two different subsidies to care about in the law.
The first is for what's called blue hydrogen, which is hydrogen made from natural gas, where we then capture the carbon dioxide that was released from that process and pump it back into the ground. That's one thing that subsidizes, it basically subsidizes part of this broader set of packages targeted to carbon capture. There's another thing called green hydrogen, which is where we take water, use electrolyzers on it, basically zap it apart, take the hydrogen from the water, and then use that as a fuel. The IRA subsidies for green hydrogen specifically, which is the one with water and electricity, are so generous that relatively immediately, it's going to have a negative cost to make green hydrogen. It will cost less than $0 to make green hydrogen. The government's going to fully cover the cost of producing it. That is intentional, because what needs to happen now is that green hydrogen moves into places where we're moving, using natural gas, other places in the industrial economy, and it needs to be price competitive with those things, with natural gas, for instance. As it is transported, it's going to cost money, as it actually makes the investment to replace the technology, it's going to cost money.
As the hydrogen moves through the system, it's going to wind up being price competitive with natural gas, but the subsidies and the bill are so generous that hydrogen will cost less than $0 to make a kilogram of it. Do we actually know how to make and use green hydrogen at this level? Because my sense of the bill is its view, is that this is one of these technologies on the cusp. They're trying to create these big hydrogen innovation hubs that, unlike EVs say, where, yeah, more innovation is great, but we know how to make an electric car. There seems to be a sense that hydrogen, green hydrogen, is something we sort of know how to make, but we don't know how to make it cost competitive yet. We don't know how to infuse it into all the processes that need to be infused into, and so a place where the IRA is trying to create a reality that does not yet exist is a reality where green hydrogen is widely used. We have to know how to use it, etc., and they just seem to think we don't, and so you need all these factories, you need all this innovation, like they have to create a whole innovation and supply chain almost from scratch. Is that right?
That's exactly right. There's a great Department of Energy report that I would actually recommend anyone interested in this read called the Lift Off Report for Green Hydrogen. They made it for a few other technologies. It's a 100-page book that's basically how the DOE believes we're going to build out a clean hydrogen economy, and of course that is policy in its own right because the DOE is saying here's the years we're going to invest to have certain infrastructure come online. Here's what we think we need. That's kind of a signal to industry that everyone should plan around those years as well. It's a great book. It's like the best piece of industrial policy I've actually seen from the government at all, but one of the points it makes is that you're going to make green hydrogen. You're then going to need to move it. You're going to need to move in a pipeline or maybe a truck or maybe in storage tanks that you then cart around. Once it gets to a facility that uses green hydrogen, you're going to need to store some green hydrogen there in storage tanks on site because you basically need kind of a backup supply in case your main supply fails. All of those things are going to add cost to the hydrogen. Not only are they going to ask us, we don't really know how to do them. We have very few pipelines that are hydrogen ready. All of that investment needs to happen as a result to make the green hydrogen economy come alive. And why it's so lavishly subsidized is to kind of fund all that downstream investment that's eventually going to make the economy come true. But I think you're absolutely right that this is,

it's something where we know it is physically possible for many of these applications, but it is not being done at scale. And it's certainly not being done at the scale of a national economy. So that's some of the question of innovation, right? Getting the things that we don't yet know how to build and don't yet know how to finance into the world. But a lot of what has to happen here, including once some money is given out, is that things we do know how to build get built and they get built really fast and they get built at this crazy scale. So I've been reading this paper on what they call the Green's Dilemma by JB Rule and James Salisman, who also have this paper called the Old Green Laws New Green Deal or something like that. And I think they get at the scale problem here really well. They write and they're working off of some Princeton numbers here. The largest solar facility currently online in the US is capable of generating 585 megawatts. To meet even a middle road renewable energy scenario would require bringing online two new 400 megawatt solar power facilities, each taking up at least 2000 acres of land every week for the next 30 years. And that's just solar. We're not talking wind there. We're not talking any of the other stuff we've discussed here, transmission lines. Can we do that? Do we have that capacity? No, we do not. We absolutely do not. I think we're going to build a ton of wind and solar. We do not right now have the system set up to use that much land to build that much new solar and wind by the time that we need to build it. I think it is partially because of permitting laws. And I think it's also partially because right now there is no master plan. There's no overarching strategic entity in the government that's saying how do we get from all these subsidies in
the IRA to net zero? What is our actual plan to get from where we are right now to where we're emitting zero carbon as an economy? And without that function, no project is essential. No activity that we do absolutely needs to happen. And so therefore everything just kind of proceeds along at a convenient pace. So there are two places to go here. I want to put a pin in permitting and come back to it and talk first about that question of a plan. So given the scale of what's being attempted here, you might think that something the IRA does is to have some entity in the government,
as you're saying, say, okay, we need this many solar farms. This is where we think we should put them. Let's find some people to build them or let's build them ourselves. And as I understand what it actually does is there's an office somewhere waiting for private companies to send in an application for a tax credit for solar that they say they're going to build. And then we hope they build it. And I mean, we check up for the tax credit and things like that. The point is not that they just get to walk away with the money, but that it's an almost entirely passive process on the part of the government. I entirely would be going too far because I do think they talk to people and they're having conversations. But in terms of the literal function of the law, the builder applies, not the government plans. Is that accurate? That's correct. Yes.
And you think that's bad. You sound like you think that's bad. I think here's what I would say. And this gets back to what do we want the IRA to do? And what are our expectations for IRA? The IRA exists to build out a ton of green capacity and shift the political economy of the country toward being less dominated by fossil fuels and more dominated by the clean energy industry, frankly, than it is working. If the IRA is meant to get us all the way to net zero, then it is not capable of that. Now, what it is capable of is pairing what we could do for the power sector is to pair EPA regulations that require utilities to do certain things with the IRA subsidies, and then

hopefully we get to a place where we have a fairly decarbonized power sector. And I should be clear that I think we're going to build out a ton of wind and solar no matter what. The issue is that, and we've known this as a problem with IRA the whole time, and I think to some degree, why I keep going back to this expectations question is it is like in 2022, we had no way to see how we were going to reduce emissions. We did not know if we were going to do a climate bill at all. Now, we have this really aggressive climate bill, and we're like, oh, is this going to get us to net zero? But getting to net zero was like seen as a really, was not even something kind of on the possibility in 2022. The issue is that the IRA requires ultimately private actors to come forward and do these things. And as more and more renewables get onto the grid, almost mechanically, there's going to be less interest in bringing the final piece of like decarbonized electricity infrastructure onto the grid as well. Because the first things that get applied for are the ones that are more obviously profitable, the ones that feel bigger need. Is that what you're saying? That in a marginal way, that as this goes on, the things you would need to do to go the final miles and become harder, less profitable, etc. Exactly. Exactly. So I think when you and I look at the IRA, we see all these subsidies, we're like, this is amazing. You're going to be able to make a ton of money doing these things, building wind, building solar, whatever. And to be clear, most of the build out that's going to happen from the IRA hasn't happened
yet. We have a long way to go. I think a ton of build out is going to happen. The issue is when you talk to solar developers, they don't see it like, you know, am I going to make a ton of money? Yes or no. They see it like they have a capital stack and they have certain incentives and certain ways to make money based off certain things they can do. And as more and more solar gets on the grid, building solar at all becomes less profitable, but also just generally like, there's less people willing to buy the solar, they have less ways to make money.
And to some degree, solar developers are not really, they're competing for dollars against any other thing you can do with your dollars. And so as the law goes on, there is this risk.
And as we get closer to a zero carbon grid, there is this risk that basically less and less gets built because it will become less and less profitable. Let's call that the last 20% risk.
The last 40%. I mean, you can probably attach different numbers to that. But let's talk about the first big trunche, right? So you have solar developers, wind developers,
everybody coming in to get these tax credits. You do have a lot more applications happening now. I mean, there has been a big boom in this industry. When I hear people talk who are implementing
the IRA, so John Podesta, who's the former chief staff for Bill Clinton, a top advisor to Barack Obama. Now he came out of retirement to work with Joe Biden on an IRA implementation. He gave an
interview to Bill McKibbin at the New Yorker and McKibbin eventually says to him, well, what are you worried about here? And the first thing he says is permitting. And Podesta has become obsessed with permitting. As have a lot of us. I've become more obsessed with permitting. Gavin Newsom is having a permitting fight out in California. So tell me about the permitting problem here.
Why is everybody suddenly so focused on permitting? Permitting is the primary thing that is going to hold back any construction basically, especially out west that we need to do to build green infrastructure because right now permitting fights, the process under the National Environmental

Policy Act just at the federal level can take 4.5 years. And now if we're trying to cut carbon emissions in half by 2030, as we claim we're going to do under the Paris Agreement, let's say every single project we need to do was applied for today, which is not true. Those projects have not yet been applied for. They would be approved under the current permitting schedule in 2027.
And that's before they get built, that process. That's before they get built.
Yeah, that is just to get your reports done and so on. Permission to build in 2028.
And then what we're going to build all this green infrastructure between 2028 and 2030. So I think everyone is obsessed with permitting because I think everyone has realized partially as a result of your work that any kind of infrastructure, including whether we're talking about highways, whether we're talking about solar farms, whether we're talking about large retail factories that requires any kind of federal input and any kind of federal authority, but also many kinds of infrastructure that are happening at the state level where states have their parallel permitting processes, it can take years to actually get them permitted and we don't have years to get emissions to zero to fight climate change. Let me not be coy on this because, as you say, I've been covering this a lot. And one of the things that has been an interesting dynamic to watch is I would say the rhetoric on permitting has moved at light speed, a kind of speed you almost never see in policy and government, right? Basically, nobody on the left talked about
permitting five years ago. I don't want to say literally nobody, but it just you weren't hearing it, including in the climate discussion. And now I just did a call about the Newsome permitting fight. I mean, the stuff he's saying on the record is very, it's called energetic, right?
Really mad at the environmental groups opposing him. Podesta gave a speech about the White House's permitting principles that again was very stark, right? We have to fix this. This is unacceptable. And then you look at what everybody's proposing here and it's fairly modest. It's, you know, let's try to constrain how long a National Environmental Policy Act review takes.
Let's try to make it a little bit better to coordinate the process across the government.
Let's try to get California Environmental Quality Act litigation down to 270 days, that kind of thing. And it's not that these are bad, nor is it even that they're good.
It's just that on the one hand, people have moved to saying we do not have the laws, right? The permitting laws, the procurement laws to do this at the speed we're promising and we need to fix that.
And then what you're seeing them propose is kind of tweak oriented, I would say.
And these are tough issues. I'm not saying that I have in my pocket like the permitting plan, but it's a place where it feels to me like the policy is still catching up right now to the sort of principles level understanding. That there's like a lag between like the severity of the problem people are now seeing and what they have figured out and figured out the coalitions around to do something about it. That's kind of my sense of the state of play, but you've been covering this in many ways more closely than I have heard and certainly more granularly.
Do you think that's right? I think that there's two things happening. First of all, you're right to see that there's a lag, but I think there's two other dynamics at play here.
The first is that permitting reform is this phrase we all use because we know it takes too long to get the government to give you permission to build things. That's like the problem we've diagnosed. And to say not just permission, but then there's all the litigation

risk and slowdowns. Exactly. Let's talk about that in a second because I think that is actually a key issue at play here. Permitting reform could mean a lot of different things and Democrats and Republicans have different ideas about what it could mean. Environmental groups within themselves have different ideas about what it could mean. And one thing I want to hit this more directly in a second is that for many environmental groups, the permitting process is their main tool. It is how they do the good that they see themselves doing in the world. They use the permitting process to slow down fossil fuel projects, to slow down projects that they see as harming local communities or the local environment. They use that exact litigation process. And can you say what that is? Like give an example. So what happens here? So we talk about the National Environmental Policy Act or NEPA. Let's just start calling it NEPA. We talked about the NEPA process. NEPA requires the government basically study any environmental impact from a project or from a decision or from a big rule that could occur. It like produces hundreds of pages of study about any big highway, any big solar project, any big piece of infrastructure, anything that is happening not just like on federal land, but in an area where the federal government specifically needs to grant authority, where the federal government has jurisdiction. That can mean in some cases like factory farms that use federal loans. That can mean large-scale projects that like might infringe on local water. Any giant project in the United States goes through this NEPA process. The federal government studies what the environmental impact of the project will be. Then it makes a decision about whether to approve the project. That decision has nothing to do with the study. Now, notionally, the study is supposed to inform the project. And as part of the NEPA process, the federal government has to consider other possibilities, other options for the project. But the decision the federal government makes, can you build this yes or no, legally has no connection to the study. But it must conduct the study in order to make that decision. Then any outside group can show up with people who say they're affected by the project and say, hey, look, you've made this decision, but you didn't study this one impact of the project well enough. You didn't study the fact that it might impact or harm this word population or that it might disturb this particular wetland. But any actor can show up and say, hey, you didn't consider something in the study. And the government has to pause what it's doing, whether it's approving the project, whether construction has begun in some cases, go back, amend the study, add the thing that the group has raised, and then kind of make the decision again. It doesn't have to change the decision because of the study. It just has to amend the decision. This is the prime tool. I think one reason that permitting reform is so tough for the democratic coalition specifically is that this process of forcing the government to amend its studies of the environmental impact of various decisions is the main tool that environmental litigation groups like Earth Justice use to slow down fossil fuel projects and use to slow down large-scale chemical or industrial projects that they don't think should happen. And so when we talk about speeding up permitting and when we talk about making this program faster and when we talk about making it more immune to litigation, they see it as we're going to take away their main tools to fight fossil fuel infrastructure. The issue is that anyone, not just environmental groups, not just democratic-aligned coalition members like Earth Justice, can bring one of these lawsuits. And people do regularly against, say, big offshore wind projects, against solar projects, against transmission projects. And so what we're fighting about and why permitting is so uniquely

divisive and also hard and why there's this gap between rhetoric and what's actually being proposed is that the same tool that is slowing down the green buildout is also what's slowing down the fossil fuel buildout. And for professional reasons, for earnest philosophical reasons, many, many climate activists, many folks are very worried about anything that could kind of allow both to happen faster because what they're worried about is like we're going to build out a ton of new fossil fuel infrastructure. I think that's part of what they're worried about.
Yes. I mean, a lot of these groups, say the Audubon Society in different states, has actually just fought a lot of renewable energy infrastructure because wind turbines are often bad for birth. I mean, that is... There's a classic conflict here between the environmental movement classic, let's call it, which was think globally, act locally, which said we're going to do everything we can to preserve the local environment and what the environmental movement and the climate movement, let's say, needs to do today, which is think globally, act with an eye to what we need globally as well, which is, in some cases, maybe welcome projects that may slightly reduce local environmental quality or may seem to reduce local environmental quality in the name of a decarbonized world because if we fill the atmosphere with carbon, like, nobody's going to get a good environment.
I was reading this piece by Michael Gerard, who's Professor Columbia Law School, he's a founder of the Sabin Center for Climate Change Law there. It's called A Time for Triage, and here's this sort of interesting argument that the environmental movement in general, in his view, is engaged in something he calls trade-off denial. And his whole point, and it's a very real point, and one reason I think permitting reform is hard, and one reason I say I don't have the solution in my pocket, is that, look, you can always come up with the edge cases that make the environmental movement look really bad or make these laws look really bad. So a famous one is in San Francisco, you ended up having, like, around a decade of fighting and over a thousand pages of California Environmental Quality Act Review to add bike lanes, just like an obviously good thing for the environment, it just takes forever. But you do have things where you really are pitting interest against each other, including environmental ones. I mean, if we are going to build out two 2,000-acre solar farms a week for 30 years, that is going to take up land that did not have anything on it before. It's plausible that we'll go into the habitats of endangered species or threatened species. I mean, you really will have choices to make. And his view, and the view of some people is that, look, the climate crisis is so bad that we just have to make those choices. We have to do things we would not have wanted to do to preserve something like the climate in which
not just human civilization, but this sort of animal ecosystem has emerged. But that's hard.
And who gets to decide which trade-offs to make? Like, that's the question, I think. But this is a place where, one reason I asked about the gap between rhetoric and policy is one thing I have not seen much of. This is the progressive permitting and procurement. This is the progressive build-out plan, such that maybe the easiest concern here, which is the concern where this will actually be used to add a bunch of fossil fuel infrastructure, we have concocted a permitting speedway for projects that are named essential to climate change.
We have all kinds of examples in the past of how we have chosen projects to streamline. I mean, there's very famously base closing commissions. And so one of the questions I have had is that permitting reform has been having these weird backdoor fights. It comes in as a

Joe Manchin demand attached to clearance for this natural gas pipeline he wants,
or there's a bit of it in the debt deal where the Republicans want some things. But you're not really seeing, not really, I would say, from the administration, even though they have some principles now, not really from California, though Gavin Newsom has a set of sort of early things, is like, this is what we think we need to make the IRA happen on time. And this is how we're going to decide what is a kind of project that gets this speedway through whatever. It's just been very modest, but modest also in a way that doesn't seem to me to be even really trying to answer the environmentalist concerns. Weirdly, it's been a coalitional fight, but not a coalitional process, as best I can tell. I think that's exactly right, but I think there's kind of two things here.
The first is I think there's a failure on the part of, let's say, the environmental coalition writ large to have the courage to have this conversation and to sit down at a table and be like, okay, we know that certain projects aren't happening fast enough. We know that we need to build out faster. What could we actually do to the laws to be able to construct things faster and to meet our net zero targets and to let the IRA kind of achieve what it could achieve?
So on the one hand, it's a failure of coalitional courage. That's partially as a result of the fact that when we talk about permitting reform and we're like, well, what's the progressive permitting reform? You need to give us options here. You need to tell us what you think we should change in order to make the IRA happen. They see any conversation about permitting reform as taking away their main tool to slow down fossil fuels. Now, I will say that there's a few progressives in Congress, progressives in the Senate have proposed some reforms here.
I was going to ask you about this because there is this bill Promoting Efficient and Engaged Reviews Act, which Tom Carper, Brian Schatz, Sheldon Whitehouse, who are all climate-oriented Democrats in the Senate have authored. I was going to ask what you thought of it.
One thing you see in this law in that proposal and in other proposals from Democrats is to basically speed up or to grant faster deadlines or accelerated review to projects that specifically help fight climate change or adapt to climate change. Part of the issue is that we're in this environment where Democrats control the Senate, Republicans control the House, and it feels like very unlikely that you could just get, we are going to accelerate projects, but only those that are good for climate change into the law, given that Republicans control the House. And so part of the progressive fear here is that the right solutions must recognize climate change. There's probably no climate change. Progressives are very skeptical that there are reforms that are neutral on the existence of climate change and whether we need to build faster to meet those demands that can pass through a Republican-controlled House.
Well, you did an interesting piece on the permitting reforms that almost without notice got made as part of the debt ceiling deal. And the political economy and what got traded away of that, I actually felt that one of the implications of that piece was it was maybe a huge mistake for progressives not to have figured out what they wanted here and could accept here
back when the negotiating partner was Joe Manchin. I think that's absolutely right.
So can you walk through, so there's a Manchin sidecar process that fails?
Yes. Then what happens in the debt ceiling deal and why are you arguing that Democrats ended up trading some things away that maybe they shouldn't have because what comes next then is going to put them much more against the wall. So Manchin proposed a set of permitting reforms back in

November and December. And not just him. Schumer has his stuff in there.
Exactly. And this is basically a Schumer Manchin bill, we should say. And environmentalists call it Manchin's dirty deal, but let's be fair here that this was Schumer and Biden's support for this bill was the price of Manchin's support of the IRA. And then Biden and Schumer maybe not as enthusiastically as everyone would like, but again, they're dealing with coalition problems from the green groups do go and support Manchin's bill. And basically Manchin's bill is a set of largely moderate reforms to the NEPA process that we'll describe in a second because most of them eventually pass, but it also includes a number of reforms to the process of building new electricity transmission, which basically we need to make it easier to build transmission in order to fight climate change. Jesse Jenkins at Princeton relatively famously says 80% of the climate benefits of the IRA will be lost if we don't 2x the amount of transmission we build per year. Basically we're building all this new renewable energy generation. If we don't build the lines to get all that new electricity to where it needs to be, that electricity is meaningless.
Like I don't plug my car into a wind turbine. Exactly. And also solar relatively famously only works during the day, wind kind of works during the evening hours when it's best. If you build the transmission, you build a national grid that lets you like demand shift as the sun moves across the country. So peak electricity using hours are 5-8pm. It's sunniest in the middle of the country. When it's 5-8pm in the east coast or it's relatively sunny, you can send electricity. If you could send electricity from the plains or from the west to the east coast, you actually use much less acreage for solar, build much less solar overall while having the same kind of zero carbon grid. It's also much more efficient. It's cheaper. Manchin's bill is basically a set of moderate NEPA reforms and transmission reforms. Democrats, progressives refuse to move on it. Now, I do want to be fair here because I think Democrats absolutely should have seized on that opportunity because it was the only moment when Democrats, we could tell already that Democrats, I mean Democrats actually by that moment had lost the house. And so their next negotiating partner by December 22, if they didn't accept Manchin as their negotiating partner or Senate Republicans as their negotiating partner, if they want to do anything on permitting, it was going to be a bill that Republicans at least had more say in determining what it would look like. Now, I do want to be fair here that like Manchin's own account of what happened with this bill is that Senate Republicans killed it and that once McConnell failed to negotiate on the bill in December, Manchin's bill was dead. It died in both places. It died in both places. House progressives were working to support it and McConnell wasn't helping on it and it didn't have the support at all. I think that's right. Republicans already knew they were going to get the house too, so they had less kind of incentive to play along. Probably the time for this was over anyway. But it wasn't like Democrats were trying to get it. No, no, no, no, no. Not at all, especially not progressives.
The point is not that they're bad. They were furious at Manchin for good reason by this point.
To your point about this was all coming down to the wire, Manchin could have let the IRA pass many months before this and like they would have had more time to negotiate together, right? Like the fact that it was associated with Manchin in the way it was was also what made it toxic to progressives who didn't want to be like held up by him anymore.
Yes. And Manchin was also requiring as part of this bill basically immediate authorization for the Mountain Valley Pipeline, this natural gas pipeline. And I think we should be clear too

that while progressives were furious with Manchin over a lot of things, this one natural gas pipeline was like the focus of their opposition to the bill. Quite ironic because then what happened is the house switched over, we got the whole debt ceiling crisis.
What becomes kind of clear by the winter of this year, February, March of this year, is that as Democrats and Republicans begin to talk through this debt ceiling process, where again permitting was not the main focus, it was the federal budget, the entirely separate political process basically.
I would say the core weirdness of the debt ceiling fight was there was no main focus, right? It wasn't like that's where it was about the debt, like Republicans had some stuff to cut spending, they also want to cut spending on the IRS, which would increase the debt, right?
Like it was a total mishmash of stuff happening there. Totally.
As that mishmash is progressing, I think Democrats start to look at what a deal might look like. And they're like, well, we want to do permitting and Republicans want to do permitting.
And house progressives don't really want to seem to play ball here. This is especially in the Senate. What would it look like to kind of get, this is something that majorities in both parties would support, but would be very tricky for any party to move by itself.
So what could we get out of this process? Like both sides, and there's kind of off-the-record meetings, there's just like a slow negotiation process where basically as part of this debt ceiling deal, you might get some NEPA reforms and you might get some transmission reforms.
That alchemy goes into the final debt ceiling negotiations, which are between principal and Congress and the White House. And what we get is a set of basically the NEPA reforms in Joe Manchin's bill from last year and the Mountain Valley Pipeline, the thing that environmentalists were focused on blocking and effectively no transmission reforms.
Let's say the set of NEPA reforms that were just enacted that are now in the law include basically the word reasonable has been inserted many times into NEPA.
So the law, instead of saying the government has to study all environmental impacts, now it has to study reasonable environmental impacts. It also, and this is a kind of climate win, has to study the environmental impacts that could result from not doing a project.
The kind of average NEPA environmental impact to study today is 500 pages and takes 4.5 years to produce under the law. Now the government is supposed to hit a page limit of 150 to 300 pages.
Like people think this is going to make things easier, but I'm a writer and it's not necessarily quicker to write shorter. Exactly. And it also has to get the easiest NEPA reviews done in one year and the hardest NEPA reviews done in two years. And if the government agency hasn't made a decision in two years, then kind of the sponsor, the applicant for the project, can sue the agency and get a court to give them a decision. It's not as far as Republicans wanted.
Rahulians actually wanted to make the law that if an agency went over the NEPA process, that if it passed a deadline that immediately the project would be approved irrevocably and no court could review it. What emerged was that now you can sue an agency and kind of get an accelerated result. One I think reasonable critique you hear on this from Democrats or from the left or from someone is that if you want to have all of these reviews happening and you want them faster and we're rapidly expanding build out, then what you need is a lot more personnel. And this doesn't do

that. This does not create a huge pot of money for the supply of people who are going to conduct environmental impact reports to increase and to get even better recruitment into that sector of the economy. You're demanding faster, but you're not really increasing capacity that much.
Exactly. And I think if there were two progressive requirements for these negotiations, one was expanding the number of staff that are working on this and making it more of a staffing issue. And there's a study that's very well cited by progressives from three professors in Utah who basically say, well, when you look at the National Forest Service and you look at this 40,000 NEPA decisions, what mostly holds up these NEPA decisions is not like, oh, there's too many requirements or like they had to study too many things that don't matter. It's just there wasn't enough staff and that staffing is primarily the big impediment. And so on the one hand, I think that's like probably accurate and that these are in some case, the beast has been starved and these are very poorly staffed departments. I think on the other hand, this did wind up being for progressives a way to get around the conversation that we were just saying they're not having where the main progressive demand was not like, where can we streamline NEPA? What are we willing to accept here and the changes to the law? The main progressive demand was just like, we must staff it better.
If you stare at this for too long, you will lose your mind, right? Like to the point of all this, I mean, I kind of, as you're suggesting, I don't really like that study. For instance, the most common form of NEPA report is not an environmental impact statement, which is the one people kind of think of to the extent that they think of anything. It's a categorical exclusion statement, which is to basically say, this is the kind of project that does not need a NEPA review. And that is partially a staffing problem. But if it's taking you this much staffing and that much time to say something doesn't apply to you, maybe you have a process problem and you shouldn't just throw endless resources at a broken process, which brings me because again, you can fall into this, never get out, which brings me, I think, to the bigger critique here. I had mentioned earlier this draft law paper I've been reading called the Greens Dilemma by Ruel and Salisman. And NEPA gets a lot of attention here in California. It's cousin, the California Environmental Quality Act gets a lot of attention. But one of their points is that these bills are almost symbolic because there's so much else happening. And it's really the way all this interlocks and the number of possible choke points that if you touch one of them or even you streamline one of them, it doesn't necessarily get you that far. So they write quote, all told over 60 federal permitting programs operate in the infrastructure approval regime. And that is just the federal system, state and local approvals and impact assessments could also apply to any project.
So their view is that under this system, it's simply not possible to build the amount of decarbonization infrastructure we need at the pace we need it, that no amount of streamlining NEPA or streamlining California sequel will get you there. That we basically have been operating under what they call an environmental grand bargain dating back to the 70s, where we built all of these processes to slow things down and to clean up the air and clean up the water. And we accepted this trade off of slower building quite a bit slower building for a cleaner environment. And that was a good trade. It was addressing the problems of that era. And now we have the problems of this era, which is we need to unbelievably rapidly build out decarbonization infrastructure to keep the climate from warming more than we can handle.

And that we just don't have a legal regime or anything like that. You would need to do a whole new grand bargain for this era. And I've not seen that many people say that, but it seems true to me. I'm curious if you think they're right. I think they are right. And I think I would make two broad observations. One aspect of the environmental grand bargain of the 70s that we don't talk about as much, right? That I think fits into this is that it was actually part of a much larger set of decisions that were happening in the 70s across the government and across American society that we're dealing with the fact that American manufacturing was really no longer cost competitive. The role that America had played in the global economy in the 50s and 60s, where we had a ton of manufacturing, where we were kind of the factory to a world rebuilding from World War II was no longer tenable. And that also we wanted to focus on more of these kind of high wage, what we would now call knowledge economy jobs. That was a large economic transition happening in the 70s and 80s. And it dovetailed really nicely with the environmental grand bargain. Today, we're in a place where American policy makers and Americans generally in both parties are not as sure that was the right choice. And they're certainly not as sure that that is the right stance for the US to have if we're facing this kind of decades long competition with China. And that more broadly, like there were good parts of the economy that that moment built and there were bad parts. At some point, the IRA like recognizes that that environmental grand bargain is no longer operative, right? Because it says, we're going to build all this big physical fixed infrastructure in the United States. We're going to become a manufacturing giant again. But like there has not been a recognition among either party of what exactly that will mean and what will be required to have it take hold. And I want to give an example here about one particular technology, which is carbon capture and how we're seeing a grand bargain get hashed out.

But right now there's no one actor or no one party that can kind of be as serious about this as it needs to be. The Supreme Court has said it ruled last year that basically the EPA can't generation shift. It can't require utilities to change the kind of fossil fuel they're burning or what they're doing to meet climate change requirements under the Clean Air Act. That if the EPA wants to treat carbon pollution as an air pollutant under the Clean Air Act and keep power plants from emitting it, it can't say, well, just shut down your coal plant, shut down your natural gas plants and build a ton of renewables. It must require a form of on the ground inside the fence line like at the site of the power plant pollution control technology. The only way to do that really is by requiring carbon capture and requiring the large construction of major industrial infrastructure at many, many coal plants and natural gas plants around the country in order to capture carbon so it doesn't enter the atmosphere until we don't contribute to climate change. That is what the Supreme Court has ruled until that body changes. That is going to be the law. So the EPA has now, last month, proposed a new rule under the Clean Air Act that is going to require coal plants and some natural gas plants to install carbon capture technology to do basically what the Supreme Court has all but kind of required the EPA to do. I don't think that rule is strong enough. I think it could be stronger. We can get into that. But the EPA has to demonstrate in order to kind of make this rule the law and in order to make this rule pass muster with the Supreme Court that this is a tenable, that this is the best available and like technologically feasible option. And that means you actually have to allow carbon capture facilities to get built and you have to create a legal process that will allow

carbon capture facilities to get built. And that means you need to be able to tell a power plant operator that if they capture carbon, there's a way they can inject it back into the ground, the thing that they're supposed to do with it. Well, EPA simultaneously has only approved the kind of well that you need to inject carbon that you've captured from a coal plant back in the ground is called a Class 6 well. The EPA has only ever approved two Class 6 wells. It takes years for the EPA to approve a Class 6 well and that is an environmental justice groups really, really oppose these Class 6 wells because they see any carbon capture as an effort to extend the life of the fossil fuel infrastructure. In fact, in Louisiana, you see many environmental groups, including earth justice, opposing an effort by the Democratic governor of Louisiana to expedite Class 6 well approval while holding what Class 6 well are actually required to do to a higher standard than the EPA itself would require. The issue here is that it seems like CCS carbon capture is going to be essential to how the USD carbonizes. Legally, we have no other choice because of the constraints the Supreme Court has placed on the EPA. At the same time, environmental justice groups and big green groups to some extent, oppose building out any CCS. And so on the one hand, there's a technology we must build in order to decarbonize. On the other hand, no of the actually existing environmental groups want to see that technology get approved and they're fighting any effort, whether open or kind of sub-roads that they're fighting any effort to streamline and make it possible to build Class 2 wells, to build CCS. There's a deep logical disconnect there between... Well, it's not a logical disconnect because they would say, to be fair to them, they would say there are other ways to decarbonize. That may not be the way we've chosen because the politics weren't there for it. But there are a lot of these groups that believe you could have a 100% renewables, do not use all that much carbon capture. They would have
liked to see a different decarbonization path taken too. I'm not sure that path is realistic.
I think that's right, but I also want to say... But that is what you hear.
In some ways, I also want to differentiate here between, let's say, an effort to block any one individual CCS project and an effort to stop the entire apparatus of approving and constructing CCS projects across the country. Because an effort to stop any one CCS project to some degree, that might be part of a new grand bargain, where basically we say, you can do CCS. That's really hard to get a project approved. That's a little different from saying, from what the EPA will need to do legally in order to finally pass muster and get clean air act rules past the Supreme Court, which is say, it is possible to build a CCS project anywhere in the country. So what you do is there are environmental groups opposing, kind of making it possible to build CCS anywhere in the country.
I'm not arguing that. And I'm just making the only point I'm making here is I think this is where you see a compromise a lot of them didn't want to make, which is a decarbonization strategy that actually does extend the life cycle of a lot of fossil fuel infrastructure using carbon capture. And because they never bought onto it, they're still using the pathway they have to try to block it. The problem is that's part of the path that's now been chosen. So if you block it, we just don't decarbonize. It's not like you get the 100% renewable strategy.
Exactly. The bargain that will emerge from that set of actions and that set of coalational trade offs is we will simply keep running this and we will not cap. Right. And I want to be also clear here that I understand where they are. I understand why these demands of these groups are what

they
are. Let's be really clear. If there was a petrochemical refinery in the middle of Washington, DC, I don't think there'd be a lot of national support for keeping a lot of petrochemical refineries open. Right. And I don't think I would be very enthusiastic about the idea.
That being said, the rhetoric you sometimes see from these groups is that CCS is a false solution that it will not actually fight climate change. That is preventing the environmental movement from calling industries bluff here because industry says, oh, we need CCS to decarbonize. What could be possible is that progressives and Democrats and EPA turns around and says, oh, that's fine. You can do CCS. You just have to cap every single stationary source in the country. Like, you want to do CCS? We totally agree. Essential. You must put CCS infrastructure on every power plant, on every factory that burns fossil fuels, on everything.
If progressives were to do that and were to get into the law, and there's nothing that Supreme Court has said, by the way, that would limit progressives from doing that, the upshot would be we shut down a ton more stationary sources and a ton more petrochemical refineries and these bad facilities that groups don't want than we would under the current plan. But because it is coalitionally uncomfortable to turn around and say, oh, sure, you want CCS, you can do CCS. You just have to put it on everything. What is effectively going to happen is that way more factories and power plants stay open and uncapped than would be otherwise.
So for obvious coalitional reasons, the dynamics we are talking about here at the state level are stronger in blue states where you have strong environmental movements that then interact with Democratic governments. I mean, even the example you gave of Louisiana, you do at least have a Democratic governor there. One reason Louisiana is so important is because Texas will probably also apply for this process. And because Texas has a Republican administration right now, that process will probably be easier and more lax than Louisiana would be.
So something really interesting is emerging with where the money is going. So Republican controlled
states are just on track to get a lot more of it. So the Rocky Mountain Institute estimates that red states will get $623 billion in investments by 2030 compared to $354 billion for blue states. Gavin Newsom, Governor Gavin Newsom in an interview with me recently was complaining about how he's
saying the word he used was indignant. He's like, I'm indignant to see these red states that have fought these policies like every step of the way getting this money.
So I know there are a number of reasons here and I want to get into some of the red state politics here, but just at the high level, why are red states getting so much more of this money?
I think there's two reasons. I think first of all, red states have been more enthusiastic about getting the money. They're the ones giving away the tax credits. They have a business-friendly environment and ultimately the way many, many of these red state governors see it is that these are just businesses. And yeah, they may be doing something that at the national level, we don't think we should be subsidizing, but we're happy to help you come to our state and contribute to our state's business environment. When you say they're giving away the money, what do you mean that it's the federal government who gives away the money?
In some cases, there is local tax benefits or just local incentives right off. You get discounts basically on your local business tax, local property taxes, if you come in as a large industrial

producer. I think the other thing is that these states, many of them, are right to work states. And so they might pay their workers less. They certainly face much less risk financially from a unionization campaign in their state. And so frankly, one reason that red states are getting a lot of this money to support the new construction of heavy industry and manufacturing is that regardless of the IRA, that's where manufacturing and industrial investment goes in the first place. And that's where it's been going for 20 years because of the set of business friendly and local subsidies and right to work policies. So the private companies that are applying for this money like to locate in the red states. Yes, exactly. Because the climate for them is simpler. And there were a lot of provisions in the bill that were trying to have higher labor standards that were to the extent that a right to work state is an advantage in this.
I mean, you can make the argument from, you know, again, triaging tradeoffs to get decarbonization,
but that's not the argument this bill made, right? That is not what the Biden administration wanted. Biden brags about being the most pro union president in American history.
So are those labor standards that they thought were going to be so potent where you get more money and credits for, you know, better jobs or those not proving effective?
I think there's two things going on here. And I think to some degree, the law is actually a little undecided. If we can ascribe, you know, intentionality to the law, I think the law is a little undecided about what's happening here. He created a large language model, trained off of the IRA and had it answer questions for you. On the one hand, I think the administration
wants to see these as many of these be union jobs as possible. And what it's been able to do in the IRA is like require the construction jobs for these factories to be unionized or to be effectively unionized to receive union wages. It can't always require that the workers who then work in the factories are actually part of unions. That's one thing. And I think the administration would say, yeah, we want this to be a big union-led effort. We want it to go to the Great Lakes states that are our political firewall. At the same time, I think the other thing happening here, and I think the other thing that to some degree, the people who shaped the law knew what happened is that a ton of this investment would go to red states. And it would go to red states because that's where private industry has been locating since the seventies and eighties and it would go to the southeast and the Sun Belt. And that that wouldn't be so bad because then you would get a dynamic where red state senators, red state representatives, red state governors would want to support the transition further and would certainly not support the repeal of the IRA provisions and the repeal of climate provisions. And that you'd get this kind of nice vortex of like the investment goes to red states. Red states feel less antagonistic toward climate policies. More investment goes to red states. Red state governors might even begin to support environmental regulation because that basically locks in benefits and advantages to the companies located in their states already. And so I think to some degree, there was a little bit of hazy thinking about what exactly was going to happen here because on the one hand, I think there was a hope that these would be unionized jobs. And on the other hand, I think anyone looking at the landscape of where large-scale corporate investment was going in the 2000s and the 2010s would see that it was going to go to Georgia, would see that it was going to go to red states and hope that by making clean investment there that you might dislodge some of the Republican opposition to climate

policies.
So red states can sound like one class of thing, but they're not on this. So you mentioned Georgia. Georgia's been getting a lot of investment here and Kemp, the Republican governor of Georgia, has been very excited about it, has talked it up. They're really open for IRA business.
And then we mentioned Texas. And in Texas, there's been a raft of laws proposed, some of them passing
some of them not, that are basically making renewable energy harder to build in Texas, that are trying to make Texas more of an oil and gas state. You've seen the governor of Texas after there were huge blackouts because the gas system failed, blaming renewables for this somehow
and trying to make it easier to build natural gas infrastructure. So I think one of the possible failure modes here is that instead of the red states actually getting a lot of investment, they turn against it as well, capital or government ESG or something,
and begin to make it hard to do in the way they basically wall themselves off from the Medicaid money in Obamacare. How do you see that playing out?
It's worth kind of splitting this into two different categories. On the one hand, what you see in Texas is yes, this kind of anti ESG backlash, so maybe that's now going away. This rejection of kind of making decisions in the market based on anything other than hard, what are supposedly the hardest of market fundamentals. You also see rejection of renewables and a rejection of clean electricity generation. I would kind of divide clean electricity generation renewables from EVs. I guess what I'd say generally is what you see is that EV investment is generally welcomed by Georgia, by Tennessee, by Kentucky, by Texas. I mean, Elon Musk lives in Texas now.
Exactly. So I think what you see is that Republicans are increasingly warming to EV investment and it's actually building out renewables and actually building out clean electricity generation where you see them fighting harder. And how much is the permitting differences mattered here? Because I mean, this is an argument Newsom is making in California for his permitting reforms, which are fairly modest, but they're still a big fight there.
They point to Jennifer Granholm, the Secretary of Energy giving this speech in California where she's basically asked, how can California get more of this money? Why isn't getting more of this money? And she says, look, these other states are coming to me and saying, we did permitting reform. We have made it easier to build in such and such state. She's like, if California can make it easier to build here, she's like, I can't tell you where the money will go. We're agnostic, but that would definitely be helpful in getting manufacturing to relocate here and this money would flow towards the manufacturing. I think permitting is really important in two ways. I think first of all, it's important in the approval of the factories themselves and the approval of the infrastructure itself and simply easier to build in states. In many states, you have to deal with the NEPA process. In California, you have to deal with NEPA and this EQA process, which is basically a parallel state level NEPA process. The other way that permitting matters, and this gets into the broader reason why private investment was generally going to red states and generally going to the Sunbelt, is that the Sunbelt states, Georgia, Texas, it's easier to be there as a company because housing costs are lower and because the cost of living is lower in those states. And why is the cost of living lower in those states? Because they're surrounded by big sprawling, the cities are surrounded by big

suburban sprawl where it's very cheap to build and it's very cheap to live as someone who might work at those factories. And so the big story in the American economy for the past 50 years or something, 40 years, has been the growth of the Sunbelt and the relocation of people in the North to the South. That's partially because of local permitting laws and there are cities you can point to in the Sunbelt that have better permitting, but it's also partially because the Sunbelt and the Southeast, it was like the last part of the country to develop, frankly, and there's just a ton more land around all the cities. And so you can get away with the kind of sprawling suburban growth model in those cities. There's still like, I don't know, alpha there. It's just cheaper to kind of keep building suburbs there. There's one other area before we wrap up of problem emerging, I think, that I want to talk about, which is basically the supply chain for all of this. And we have become much more antagonistic and bivalent towards China. China has a lot of the supply chain for renewable energy, for batteries, et cetera. They got a lot of lithium and cobalt and so on. And they bought up a lot of the supply chain in other places for that. And when I say the supply chain here, actually primarily I'm talking about the actual mining and manufacturing of these materials. If we want to make all these EVs, if we want to make all these solar panels, we need a lot of basically resource extraction from the earth. Solar panels need chemicals to function. And when you say, look, this environmental group is fighting this solar array, people are like, oh, environmental groups. But when you say they're fighting a giant lithium extraction site, I mean, people don't want to live near a lithium extraction site. And we're going to need a lot of lithium extraction sites. And there are ways in which this whole new clean energy world, not all of it is clean. And not all of it is gentle, peaceful, decentralized, right? It's not all the small earth model. We can't fight climate change. We can't decarbonize. We can't reach net zero with everyone having rooftop solar. So how are you seeing the fights over these rare earth metals and the effort to build a safe and if not domestic kind of friend short supply chain there? Let's talk kind of three different aspects of this. The first is what is the process like to actually build new mines in the United States? Are we going to be able to source some of these minerals from the US? That process seems to be proceeding but going slowly. There are some minerals we're not going to be able to get from the United States at all and are going to have to get from our allies and partners across the world. The kind of open question there is what exactly is the bargain we're going to strike with countries that have these critical minerals and will it be fair to those countries? Because if we were to turn around to Chile, I say, which has a huge amount of usable lithium reserves and say, well, we're going to take all your lithium. We're going to help you mine your lithium. Then because we have all these nice subsidies at home, we're going to take it into the United States, refine it, turn it into high end products and then sell them back to you. That is actually colonialism. I think a word that's thrown around a lot but saying we're going to take your raw resources, add all the value to them and then force you to buy them back. That is not an equitable way of relating to other countries. That isn't to say that I think the IRA on net is going to be bad for other countries. I just think we haven't really figured out what deal and even what mechanisms we can use across the government to strike deals with other countries, to mine the minerals in those countries while being fair and just and creating the kind of economic arrangement that those countries want. Those countries will be able to turn around now and go to China and say, well, the US is giving us this. What would you give us, China? To some

degree, the Chinese are like much far ahead of Americans on even being able to use policy to adjust how countries make decisions. A great example, Indonesia has these amazing nickel reserves. Indonesia basically got Chinese companies to establish joint ventures in Indonesia so it could learn how to take nickel that was coming out of the ground in Indonesia and convert it into battery grade nickel. That was not something Indonesia previously knew how to do. Now it is learning that technology from Chinese companies and working jointly with them. The last part to answer your question is, well, let's say we get the minerals. Let's say we learn how to refine them. There's many parts of the battery and many parts of EVs and many like sub components in these green systems that there's not a strong incentive to produce in the US. For instance, there's been $50 billion of investment in the EV and battery supply chain in the US since the IRA passed. We're definitely going to be doing final assembly of batteries in the US. That's pretty clear. We might be doing some refining, but there's all these middle components in batteries like the cathode and the anode. One possibility here is that we wind up importing a ton of cathodes and anodes from China, putting them into US-made batteries, putting them into batteries with 60% domestic content, and then selling them and repackaging them as US lithium ion batteries. We'll be doing a lot of production in the US. We'll feel like we have this great EV supply chain, but at certain core points of the supply chain, not very high value points, let's be clear, but like certain core points, we won't actually have this dual supply chain from China. I think at the same time, there's a ton of technology, one answer to that might be to say, okay, well, what the federal government should do is just make it illegal for any of these battery makers or any of these EV companies to work with Chinese companies. Then we'll definitely establish this parallel supply chain. We'll learn how to make cathodes and anodes. We'll figure it out. The issue is that there's technology on the frontier that only Chinese companies have, and US automakers need to work with those companies in order to be able to compete with them eventually. How much easier would it be to achieve the IRA's goals if America's relationship with China was more like its relationship with Germany? It would be significantly easier, and I think we view this entire challenge very differently because China, as you said, not only is a leader in renewable energy, it actually made a lot of the important technological gains over the past 15 years to reducing the cost of solar and wind. It really did play a huge role on the supply side of reducing the cost of these technologies. If we could approach that, if China were like Germany, if China were like Japan, and we could say, oh, this is great. China is just going to make all these things. Our friend China is just going to make all these technologies, and we're going to import them. They're going to be very cheap. China is the source of basically the world's cheapest labor that can meet global production standards. This is awesome. We're going to import it. It would be much, much, much easier. I think there would still probably be some need to diversify the global supply chain because I think right now, just whatever you think our relationship with China should be, China makes a huge amount of solar. It makes basically more than 75% of the world's solar panels. It makes the further you go upstream in the solar supply chain, the more it dominates, so it like refined 75% of the polysilicon that you need for solar, but it actually, the machines that do the refining, 99% of them are made in China. I think it would be

reckless for the US to rely on a single country and for the world to rely on a single country to produce the technologies that we need for decarbonization and unwise, regardless of our relationship with that country. We want to geographically diversify the supply chain more, but it would be significantly easier if we did not have to also factor into this the possibility that the US is going to need to have an entirely separate supply chain to make use of for EVs, solar panels, wind turbines, batteries in potentially in the near term future.
I think that is a good place to end. It seems like it's going to be hard to do all this.
Yes, I think it will be. Luckily, I should add this is exactly the kind of challenge that we're covering at heatmap.news, and folks should read our journalism there.
They should, and in addition to that, what are three other books they should read? Well, heatmap isn't a book. The first book is called The End of the World by Peter Brannon. It's a book that's a history of mass extinctions. The Earth's five mass extinctions and actually why he doesn't think we're currently in a mass extinction or why at least things would need to go just as bad as they are right now for thousands and thousands of years for us to be in basically the sixth extinction. The book's amazing for two reasons. The first is that it is the first that really got me to understand deep time. When you go to natural history museums, you see dioramas of what the carboniferous used to look like. Peter's book actually stitches it into a narrative that you can remember and that these are not just different eras that you see at the museum and you have no idea how they fit together. He explains how one kind of triggered the next one. It is also an amazing book for understanding the centrality of carbon to Earth's geological history going as far back as basically we can track.
The second book might be a little outdated now, but it's called Climate Shock by Renate Wagner and Marty Weitzman. It's about the economics of climate change and it's by, I would say, probably my favorite economist. One of the co-authors is my favorite economist of climate change, Marty Weitzman, who has become, I think until recently was kind of the also ran important economist of climate change, Nordhaus was the famous economist. He was the one who got all attention. He's the one who won the Nobel. Weitzman's way of thinking about climate change is a little different from Nordhaus's. He focuses on risk and that climate change is specifically bad because it will damage the environment because it will make our lives worse, but it's really specifically bad because we don't know how bad it will be and it imposes all these huge high-end tail risks and that blocking those tail risks is actually the main thing we want to do with climate policy. That is kind of, I think in some ways, what has become the U.S. approach to climate change and to some degree it is like the underlying economic thinking that drives even the IRA where we want to just cut off these high-end mega-warming scenarios and this is a fantastic explanation of that particular way of thinking and of how to kind of apply that way of thinking to climate change and also to geoengineering. The third book, A Little Controversial, is called Shorting the Grid by Meredith Angwin who's an engineer in Vermont. It's going to be a little controversial because if you actually go look at her online presence, she can be quite harsh toward renewables. She's not the world's biggest renewable fan, but she is also not the world's biggest fan of natural gas and her argument basically is that, first of all, if you are curious at all about electricity markets and the actual policy that we have around electricity, which is an extremely cursed area of American law and policy and also absolutely essential to ultimately decarbonizing,

the first half of the book is like the best explanation of how electricity markets actually work and the thinking behind them in such plain language. It is incredibly impressive to me with the plain language she uses to describe them. It's like a form of writing that feels like it went extinct in the 1970s. Her argument is basically that electricity markets are not the right structure to organize our electricity system. Because we have chosen markets as a structured organized electricity system in many states, we're giving preferential treatment to natural gas and renewables to fuels that I think climate activists may feel very different ways about instead of coal, which she doesn't think we should phase out, and really nuclear, that basically we've made it easy for generators, for power plants that can accept side payments, that can accept money from other places such as by taking renewable electricity credits, by taking capacity, just various other payments that exist in the electricity markets, by making it easy for renewables and natural gas to kind of accept these side payments, we've made them much more profitable and therefore encourage people to build more of them, and therefore underinvested in the forms of generation such as nuclear that actually make most of their money by selling electrons to the grid where they go to people's homes. It's a really, really interesting book and I think a perspective that if you're immersed in climate policy, you wouldn't necessarily have. I don't endorse everything that she says, but I think if you want to understand electricity markets and also if you want to understand this completely heterodox criticism of how we've structured electricity in the United States, and we might need to do to decarbonize, I recommend it.
Rob Meyer, thank you very much. Thank you for having me.
This episode of The Israel Clanches is produced by Roland Hue.
Fact-checking by Michelle Harris, engineering by Sonya Herrero, our senior editor is Roger Karma.
The show's production team also includes Annie Galvin, Emma Fogau, Jeff Geldt, and Kristen Lynn.
Original music by Isaac Jones, audience strategy by Shannon Buster.
The executive producer of New York Times' opinion audio is Annie Rose Strasser,
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