

Perspectives Podcast

“Making the Most of the (Electrical) Grid You’ve Got”

Transcript, 10 June, 2024

Adam Bass ([00:03](#)):

This is MSCI Perspectives, bringing to light insights and analysis that help global investors tackle today's challenges. I'm your host, Adam Bass and today is June 20th 2024. On this episode, whatever your feelings about the Inflation Reduction Act, it is inarguable that the law provides some of the largest incentives for a shift to clean energy that the US has ever seen. MSCI's own Matthew Lee from the climate research team recently teamed up with the Rocky Mountain Institute to investigate the effects of the IRA on US utilities in particular. For those who may not be familiar, the Rocky Mountain Institute, or RMI, is an independent, non-partisan nonprofit that, as they put it, transforms global energy systems through market driven solutions. I had the chance to speak with Matthew as well as two of his partners at RMI. We talked about the findings from their research as well as some of the background and context that did not make it into their published work. Here's that conversation.

([01:19](#)):

So as you all know, we are here today to talk about the IRA, the Inflation Reduction Act, and the impact that it's had from a climate perspective, from a utilities perspective more specifically. So before we dive into the impact, let's talk about the IRA itself. And I'll throw this out to any of you. What do we need to know about the IRA before we get started?

Uday Varadarajan ([01:45](#)):

So Uday Varadarajan here, I'm a senior principal at RMI. The IRA passed a couple of years ago. And I think the most important point to make about the IRA is that it really transformed the way in which the most important set of incentives in the United States that we've used to really incentivize clean energy worked for utilities. And the short of it is that before the IRA passed, those incentives just didn't work for utility. Regulated utilities in particular barely owned any clean energy and it really didn't work with their business models and their regulatory model to own clean energy. After the passage of some significant targeted changes in the way that IRA works for regulated utilities in particular, the way that they are able to take advantage of tax incentives to reduce costs for their customers, to monetize them more efficiently, it has become far more attractive for utilities to use tax incentives and therefore more attractive for them to own clean energy.

([02:54](#)):

And if there's one thing I would flag that probably set of changes is perhaps the shift in the way that utilities are starting to think about clean energy that the IRA precipitated. And I think beyond that, there are also a number of really interesting financial incentives that are targeted at utilities that are also potentially starting to shift the way that they're thinking about ownership of clean energy writ large. One of them I'll flag is a loan program, the Energy Infrastructure Reinvestment Program at DOE that is also making it a lot easier, particularly for fossil intensive utilities, to dive in to taking their existing assets and starting to find ways to cost-effectively use low cost government financing to enable the transition to cleaner resources.

Matthew Lee ([03:46](#)):

Yeah, I was going to say two points that stand out to me from that overview are, A, the direct transfer of these tax credits that can happen. So it's essentially a way for the companies that are capturing the tax credit to be able to sell it and let any other company out there, it doesn't have to be an energy company, access or gain

that tax equity there. And what we've seen is a lot of companies, and most notably as The Financial Times picked up, Taylor Swift's film production company is even getting in on this for their tax credits and reducing their tax credit. So it opens up the playing field beyond just utilities of who can get involved financially.

Adam Bass ([04:31](#)):

Sorry to interrupt the discussion so soon. But for reference, as the voices of our panelists continue, that self-proclaimed Swifty is Matthew Lee, whom I mentioned at the top of the program. Now back to the conversation,.

Matthew Lee ([04:45](#)):

I also want to bring up again Uday's point that there are multiple incentives structure in to stack against outcomes that help transition from existing fossil communities, communities that are affected by fossil fuels. There's just transition specific incentives or again, tax credits related to if it's currently a fossil fuel plant and you're able to show a plan to transition it away. The brown to green transition. There are very specific carve outs for that. So I think it's quite significant that they're aligning an outcome with the financial incentive multiple cases.

Jon Rea ([05:25](#)):

Hey, this is Jon Rea, I'm a senior associate at RMI. I would also add in, we're talking about the direct impacts on Western utilities, but we also see a lot of indirect ones where the Inflation Reduction Act has also changed the other sectors that interact with electricity. So it's really making a big change in accelerating adoption of electric vehicles, of electrifying buildings, of transforming our manufacturing around the US. And so all of those have really big impacts also on what services that the utilities actually need to provide. And so it's changing the load quantity and also shapes. So that's a really big impact on the electric utility sector as well.

Uday Varadarajan ([06:10](#)):

That's right. And building, I think, on what Jon's saying. It really is creating an enormous opportunity both on the demand and the supply side for utilities to invest their capital in a way that can be productive and lead to real meaningful opportunities for them to play an important role in unleashing what I think are a couple of the biggest trends that we're seeing in the economy today. Which is number one, a reassuring of manufacturing across the country. Which is being driven also in part by policy. Both the combination of the CHIPS Act, bipartisan infrastructure law, and the IRA incentives themselves are creating an opportunity for bringing back not only clean energy manufacturing across the country, but also of course semiconductor manufacturing. And also starting to drive, as Jon was saying, demand for electrification, for electric vehicles in this sector.

([07:07](#)):

And the utilities are in a unique position where they have the opportunity to really be the vehicle that delivers the fundamental power that's needed to drive all of this economic activity. And not only that, if you look at the entities, largely the corporate entities, that are driving a lot of that load, most of them often have either clean energy mandates or are tied to clean energy. So there's a lot of opportunity at a virtuous cycle really that might be possible from utilities taking advantage of this opportunity to deliver clean electricity with a significant and meaningful potential growing load opportunity coming before them.

Matthew Lee ([07:46](#)):

And I think that's key too because there is a lot of discussion around potential repeal of the Inflation Reduction Act. And because there's all these other businesses and investments that are being made as a result of the IRA. Some numbers pinned this companies that have put in \$74 billion into red states since the IRA in terms of manufacturing as well as the clean energy projects. These are sides to me that may not be as much of a clear cut case or priority even if there was a change in administrations. We've heard from CEOs at NextEra communicating this. We've even heard ExxonMobil's CEO say he supports parts of the IRA, as well as the American Petroleum Institute. So these perhaps are signs that the Inflation Reduction Act wholly being

repealed in its entirety wouldn't be something supported across the businesses. So many businesses are seeing financial opportunities from this.

(08:50):

And I think on a more practical or policy angle here, let's recall that it would probably need both Congress and the presidency in control to execute something like a full repeal. And so I think for investors thinking about the likelihood of that, they'll want to build that into their consideration. And a good analogy that comes to mind is the Affordable Care Act. So it was a top line message we heard during election season as a priority. It was a rallying cry politically, but when it came to executing something like that, because different states and different representatives knew about or heard about their respective constituents and their respective states, how they would be impacted, they may not have voted as passionately as the rhetoric during the election season.

Adam Bass (09:39):

Now, besides the likelihood or unlikelihood of that, Matt, that's interesting and the ACA is a great analogy like you said. But from an investor standpoint, from the company standpoint, let's take complete removal off the table, if it gets chipped away at a little bit. It sounds like from what you're all saying that there may be enough momentum that it keeps moving forward or I don't know, walk me through what you think might be the impact.

Matthew Lee (10:08):

So we've already seen some signaling of where the cuts might come. So they might target specific incentives around electric vehicles. I think that we've seen some specific citations as a target part of priorities maybe to cut back on. But I think the key here is that funds that are already dispersed are unlikely to be taken back. And also removing subsidies in general is a pretty unpopular move for Congress to take. In terms of the investments already made too, I think there's a lot of, not a lot, but let's say there's quite a few cases of foreign investment and factories being built off of the movement of the IRA. Enel announced the \$1 billion solar plan in Oklahoma. Hanwha Solutions, Qcells' 2.5 billion in Georgia. And LG, \$5.5 billion battery factory in Arizona. These are not small amounts. And these are very influential business outcomes in these states. So there may be certain parts of the IRA that draw targeting, but I think more broadly the money has already started being dispersed and so slowing down that momentum and when people have skin in the game can be a bit harder.

Uday Varadarajan (11:33):

I can add to that point, Matthew, because I think that as we're looking at utility integrated resource plans across the country, one of the things that we're seeing is an enormous uptick over the last couple of years in the planned deployment of clean energy. On the order of, and I'll let Jon give you the numbers, but 10 is really on the order of 100 gigawatts of new clean energy being announced since the passage of IRA. A whole lot of that deployment is by fossil heavy utilities in red and purple states. And the political challenge here is significant to really peel, again, any kind of really significant shift that eliminates some of these incentives would meet a lot of utilities having to explain how they have to make electricity much more costly or peel back their plans to use that money to reduce customer costs on a forward-looking basis in their utility plans. Jon?

Jon Rea (12:40):

Yeah, I would love to provide some good numbers here. Maybe the first perspective that I would give actually is still just to reiterate that the electricity is a growing industry and the IRA had already had a big impact on that and is accelerating it and is going to make that growth even more significant and sooner. But it was already the case that we knew that the size of the electricity sector was going to massively increase. This is a story we've been telling for a couple of years now and is now really picking up traction that the electricity sector had this really big problem to meet decarbonization goals, that it was going to try to reduce emissions by 80% while simultaneously doubling the size of the grid over the next 10 to 15 years. And that second point of doubling the size of the electric grid is just a really mind boggling concept that we need to take the existing system and build another same size system on top of it.

(13:35):

And we hadn't really seen that in our projections originally. So we've been doing a lot of work as part of the RMI's Engage & Act platform, where we're collecting all of the capacity plans, the resource plans from all electric utilities in the US and seeing what their load growth expectations are and how they're planning to build and retire power plans in order to meet that load. But the renewable additions to meet it was already increasing before IRA pass, but as soon as IRA passed definitely we saw that explode and uptick even more. So the numbers that I have are when IRA passed in August of 2022, the projected renewable additions of wind and solar by 2035 was 230 gigawatts across all resource plans in the US. And then in our most recent monthly update that was well over 300 gigawatts. And so we've seen that increase by 35% already, even though not even every utility has submitted a new resource plan in that timeframe. And so definitely really changed the landscape, really different ambition being shown in terms of really big growth in wind and solar from all these utilities.

Uday Varadarajan (14:45):

If I could, I just wanted to add to Matthew your point, particularly comparing this to the Affordable Care Act. And I want to talk about utility risk. And right now the biggest risk that utilities face across the country is one around affordability. There are prices going up for a lot of different reasons, whether it's wildfire risk or field price volatility because of geopolitics and of course because of essentially trying to build out all of the new infrastructure needed to meet new load.

(15:18):

And we cannot discount the extent to which the Inflation Reduction Act creates incentives that are targeted in a technology neutral way, which is one of the other really important features that are from a political sustainability, of the incentives that are in place, particularly on a forward-looking basis for the clean energy sector. A technology neutral way provide support that can bring down electricity prices by reducing the cost of the choice to use what is already increasingly cost-effective clean energy across the country by utilities. And that can be a serious and significant risk mitigate for a lot of utilities as they're going into rate cases and planning cases to be able to show how they're going to actually plan to mitigate this increasingly worrisome burden associated with affordability of electricity across the country.

Matthew Lee (16:09):

Yeah. To circle back to the blog we wrote using RMI's Engage & Act data, what was pretty fascinating to me was to see that even by 2030, if you sum together all the zero carbon or low carbon resources planned, we would have more from the investor owned utilities and low carbon installed capacity than natural gas. And 2030 now is less than six years away. So that was a pretty surprising finding for me. And even looking by technology breakdown, wind growing fivefold in capacity, solar is still growing by 2.5 times, battery storage by nine to 10 times. That to me was a great example of what the certainty around IRA introducing can bring in terms of the investment potential horizon on these technologies. So it was really cool to see that play out through the IRP data that RMI has put together. And I think for investors looking on the US outlook, it provides a lot of helpful insights in the medium term.

Jon Rea (17:19):

Yeah, we at RMI definitely love our data and charts. And when you see one line crossing above another, that's a pretty exciting point to call out. So it definitely stood out and it was really interesting to see that that wind and solar capacity is about to exceed fossil capacity and this energy transition is happening.

Matthew Lee (17:40):

I do want to throw a question to RMI's way around, let's say, concerns around AI creating more energy demand and therefore perhaps that justifies or increases the business case to use thermal resources that in theory won't be as intermittent. So maybe we still need a substantial or otherwise significant amount of coal and gas if

we are to meet this increased load. Yeah, I would love to get your thoughts on where that comes into play in terms of resource planning for utilities now that AI is going to drive up energy demand for data centers.

Jon Rea ([18:21](#)):

Yeah, maybe I can give a little bit of the table setting background context and then RMI has been doing a lot of work and coming up with solutions to this as well. But I'll say definitely we're seeing that obviously data center load and AI using those data centers is the hot topic right now and it's where a lot of the attention is being paid. And so even though we've been telling the story of load growth from electrification of vehicles and buildings and manufacturing over the last couple of years, the urgency in what's happening right now is this additional load right on top of it.

([18:56](#)):

And it is coming on really quickly and really fast. And so we're seeing really wide regional variation in where that data center load is happening. And so Dominion Virginia, really huge example of so much load growth happening from AI data centers. But we also still have companies whose resource plans project contraction actually because they have load defection either to community choice aggregators in California or just population changes happening. And so it's not happening everywhere around the US, but certainly is being commented on more commonly and regionally growing.

Uday Varadarajan ([19:35](#)):

Yeah. We are indeed seeing a significant shift in utility resource plans associated and in response to load growth. What we've seen is since the IRA passed and particularly over the last year or so, a very significant increase in resource plans and the total gas capacity that folks are bringing on, this is concentrated in places like in the southeast and in the west. So we're definitely seeing a response in some of the southeastern regulated utilities in particular. I will flag that our team has been asking the question, well, what can you do to avoid some of these increases in gas capacity? And just to be clear, it's important to ask the question. I think utilities are starting to ask the question and we're starting to see this emerge in their plans as well to some degree, which is what is it that their customers are actually looking for that are driving this load growth? And as we mentioned earlier, it's data center load, it's manufacturing load, it's electrification load.

([20:41](#)):

And many of the corporates, in fact virtually all of them, demanding this additional load have ESG targets or sustainability targets or renewable targets and they face at the least headline risk if not pressure from their investors around seeing that load effectively met by increased fossil generation and certainly not coal. And so there is really a push on the customer side, we believe, to really make sure that this load is met by clean energy. And we believe there are indeed some cost-effective ways to do this. Now there are some barriers and one of the barriers that we've seen that's making this immediate need for load growth a little bit more challenging than it should be is the fact that across the country right now we've got tons of plans for clean energy, 2.6 terawatts, 2,600 gigawatts, of clean energy planned in interconnection queues across the country that are waiting five to seven years unfortunately to get the approval to connect to the grid.

([21:40](#)):

So we need some solutions to move that forward if we're going to address this with clean energy. And that's one of the reasons utilities and other parties have been concerned about meeting the load growth. Now, that doesn't necessarily make it easier to meet that with gas. We haven't been building particularly much gas, there's much less gas in the queue as well. So it's not obvious that in fact this gas is going to help us in the very near term. But it is true that you need not just the energy, but you need the capacity. You need what is effectively long-term reliable power. And getting to grid reliability does mean doing more than just building solar, wind and storage. You do need to think carefully about how you coordinate that, how you bring in firm resources. But there are strategies to address this as well. So I think in particular there are some strategies that we like to refer to as making the most of the grid. You've got using virtual power plants to facilitate responsive demand.

([22:39](#)):

Deploying a strategy we call clean repowering, which is reusing fossil interconnection rights or hybridizing existing fossil plants to build the clean energy more rapidly to reduce that five to six year wait in interconnecting to make it a year. So that you can build quickly and maybe even build that load at the same point so that you avoid both the challenge in interconnecting load, which is really becoming a problem for AI companies. They can't get utilities to give them the interconnections they're looking for in some service territories.

(23:11):

And so if you're able to build both clean energy and supply quickly by putting them behind an existing fossil point of interconnection, that might be a real solution to both of these challenges. And moreover, there's been a great LP&L study that shows that just replacing only the wires in transmission assets across the country could double the capacity of the physical grid to interconnect clean energy. So these are the types of solutions that can be used to really bring clean energy into the mix but still enable the system to have the capacity it needs to reliably meet that load with resources that don't require heroic assumptions about where nuclear might be in the 2030s.

Matthew Lee (23:56):

Uday, if you could just give a quick one minute primer on a virtual power plant for our listeners, what forms can it look like?

Uday Varadarajan (24:06):

Yeah. My apologies. A virtual power plant is the best way to describe it is that it is aggregating a set of often demand side resources, whether they're batteries or responsive demand or solar units that are deployed or things like thermostats. You can pull together a lot of flexible resources that are owned by third parties, not by utilities, but together can act a lot like a plant. They can reduce what is effectively the load that needs to be met by the rest of the system and act in many ways and be dispatched in times of need. Many ways in the same way that a power plant can be ramped up, a virtual power plant can be ramped up to reduce demand. And so we think that virtual power plants are starting to become a very attractive way to meet peak demand without necessarily having to rely on old often very dirty gas and coal facilities, often in urban or populated areas with negative impacts on local communities.

Jon Rea (25:17):

Yeah, I do love the concept that we're repeating right now that we should be making the most of the grid that we've got. We wouldn't be RMI if we weren't focusing on energy efficiency as step one of creating the most effective energy system that we can. And so that's actually one thing that I'm curious about with data center load is that as algorithms become more and more efficient, then it's possible that projected demand from AI could actually be lower than maybe people are worried about right now. So I am curious to see how much improvements we can make there.

(25:54):

Because there are plenty of other instances where we've improved efficiency of entire systems by orders of magnitude over years, and so will that be able to happen with data centers as well? But regardless [inaudible 00:26:09] list of solutions there, we've got energy efficiency first, then making the most of the wires that exist on our system, reconductoring or grid enhancing technologies, and then going to the virtual power plants, the supply side resources. And then our final one that I think is a great report that any listener should be interested in looking at for is clean repowering, that we've recently published a report on.

(26:33):

All the solutions definitely make it possible to meet this growing role of the electricity sector without necessarily needing gas plants. I think one other piece of analysis that sticks out to me that we've worked on at RMI was some analysis of the EPA proposed carbon standards. Where gas plants would either be required to install CCS or hydrogen if they're running at higher capacity factors. But when we were reviewed the proposed

rule and looked at how much of the gas system in the US was going to be affected, we were actually surprised by the result being quite low.

[\(27:10\)](#):

Most gas plants and the role of gas that we were expecting to see, based on review of a bunch of external models as well as our own, was showing that gas plants are likely to run at low capacity factors in the future. And if you're going to build a full gas plant and not be running it very often, then that really begs an affordability question of, is that the most cost-effective way in order to meet that peak demand? If it's only going to run for 5% or 10% of the year, maybe we can solve that problem with demand side resources or with energy efficiency or making the most of the grid that we already have.

Matthew Lee [\(27:47\)](#):

And I think that's an important nuance for the stranded asset risk people put on coal gas. So if there's still a use case for it, maybe that's a way for it to stay as part of the grid. And we saw this in the blog too where you had an increase in installed capacity planned for natural gas, but the percent in generation was going to fall at the same time. And quite a few utilities we saw that in the planning. But of course if they're in that direction, then the considerations, Jon, you just raised I think are very relevant of how exactly does the financial case change if the new gas is really only being used as a peaker plant?

Adam Bass [\(28:32\)](#):

I do want to move us on, if I can, to investors here. Because that of course is our focus, our main audience, as fascinating frankly as this conversation is. So in this context, how are investors taking all of this in? And I guess, what should they be thinking about when they're looking at, from what you're saying, not only utilities but all of the other sectors that are being affected by this load growth and how utilities respond to it?

Matthew Lee [\(29:05\)](#):

Yeah. Actually if we could, I'd love to hear RMI's take on the solutions set you guys just proposed, from energy efficiency all the way with grid infrastructure improvements. What would be some signals investors can look for or where should they go digging to see that this has the certainty or the prospects like an IRA introducing that to their investment case?

Uday Varadarajan [\(29:30\)](#):

Yeah. Maybe I'll start with a couple of maybe higher, just backing up a little bit at a higher level. I will flag that utilities over the last several years until I think very recently, particularly utility equities, I think have somewhat significantly underperformed in the market until fairly recently. And I would argue that what we're seeing in the AI space in particular, but similarly with reshoring of manufacturing, presents just on the face of it, an extraordinarily interesting potential value opportunity for investors.

[\(30:12\)](#):

And the reason for that is that virtually all of the economic activity, and I think the most interesting and exciting economic activity that we're seeing emerging, is contingent on being able to access power. Not just power but clean power. And that there is significant value right now to be had in identifying opportunities to rapidly and quickly bring clean power online. And if you as an investor are thinking about where to come into this space, I think it's really a good idea to pay attention to where load growth and ask where are the utilities, developers, potentially demand side resources that are well correlated with where that load growth might be coming and where there are opportunities to potentially deploy clean energy.

[\(31:11\)](#):

Matthew, as you said, we've got a number of strategies and each of them suggests potentially ways to target that. And I think that's something that our data can help a little bit with. In that you can start to see where the resource plans that, for example, are suggesting some of this load starting to emerge and where there are some clean energy opportunities on the development side as well as on the utility side emerging and which utilities are starting to really embrace this. And just in terms of the technologies and where you look for each of

the types of technologies, clean repowering, I would urge you to take a look at our report, we're identifying where we think that this is probably the most attractive and where that clean energy connecting to existing fossil points of interconnection could be most interesting.

(31:55):

Some of those are in regulated markets, but a lot of those are in organized markets or deregulated markets where there could be an acquisition opportunity. And even some of the utilities themselves are acquisition opportunity. I'll point out recently a partnership between CPPIB and Global Infrastructure Partners to acquire and take private Allete, the Minnesota utility, which again has a phenomenal opportunity to deploy clean energy.

Adam Bass (32:22):

Uday, I'm sorry, not to interrupt. Can you define some of those acronyms you just mentioned?

Uday Varadarajan (32:27):

Oh sure. So this is the Canadian Pension Fund and the Global Infrastructure Partners. And this is an opportunity to acquire Minnesota utility, Minnesota Power, that happens to also supply the majority of what is called atacamite production in the United States, which ultimately if powered by clean electricity could lead to clean steel that's domestically manufactured. Which by the way also as our incentives tied to it. So there are these particular stories that are emerging where there are opportunities to deploy clean energy that is linked to whether it's data center growth and AI growth or manufacturing growth that has incentives that are tied to it as well, that can create a virtuous cycle for economic development in those areas that can draw in, for example, also state economic development funds and the like and also provide what is effectively a competitive product with a significant market in the United States.

(33:28):

And I think these are the types of opportunities that are really interesting, reconducting and getser, another one. How do you actually, again, as an investor looking for those opportunities in both organized markets and in utilities can be a really attractive thing to do. I'll take an example in independent power producer world or in places where there aren't regulated utilities, there are independent power producers who own assets and can buy and sell these assets. Well, our clean repowering work shows that there are a lot of independent power producers out there who could build clean energy and use their points of inner connection to deploy it to deliver power to data centers and to manufacturing facilities, but maybe don't have necessarily the expertise to do so. So these are fantastic candidates, for example, for either engagement by investors to bring them the right capacity or for an M&A opportunity. And so again, that's the type of thing that we're really excited about and we see very significant opportunity. The clean repowering itself is about a \$350 billion opportunity, 250 gigawatts.

Matthew Lee (34:35):

And to go off of Uday's point on load growth being a starting point maybe to identify the opportunity, it really speaks a lot to our framework here in MSCI World where we like to say exposure to opportunities. What's your exposure filter? And for us, we're very familiar with that on our ESG rating side where we take geography and we use that as actually a multiplier when we calculate the exposure of a company based on their business line to different types of opportunities. Whether it's clean technology, renewable energy. And our opportunity set of key issues.

(35:12):

So to take a step back though, in terms of companies and what does a leader look like to an investor, I think we tend to have two hypotheses. The first hypothesis is who's the first mover? And that is very relevant in the utilities space and the energy space because these are very large and complex projects, because you need very specific regulatory awareness, you need to have familiarity with the permitting. If you already have that business up and running, if you're already generating revenue from it, which is a metric we like to look at, not

just existing revenue from renewables, but also the time series. How much is that business growing already? Is it from 1% to 10% in the last two years? Or how quickly has the business been growing?

(36:02):

There's also the second bucket which we call ambitious followers. And here the investment question we ask is, what are the credible signals this company has shown that indicates they will center this as a part of their strategy and they're serious in investing in it? So the first level still goes back to a bit more of a regulation point. So are they operating in a service area where, say, the state regulator has already said you have to do this? Or we know that they're tapped into certain subsidies and incentives very directly. In the other case, there might be some disclosures to state regulators that we can take advantage of. Which was the IRP data set for the blog where that was a filing that because it was part of a dialogue with the state regulator of eventually what they get approved as their revenue that has a higher level of credibility to us than just, say, a generic statement about their sustainability goals and intentions.

(37:06):

So communicating that in a strategy document that has some legal bearing to it, we saw that as a pretty high quality of information for investors to examine. Company investment plans and capital expenditure. Of course, that's another great forward-looking metric to see the distribution of where they're going to be putting their money at. But the absolute amount sometimes can also be very significant too.

(37:32):

A soundbite I like to throw out there is Total Energies, the French large oil and gas company, they do have one of the largest solar pipelines in the US. And that's because even if solar is about 13% to 16% of their total revenue right now every year because they're such a large company, that does translate to a significant market effect even in a major market like the US. And then under that layer we would have targets and ideally we're looking for interim targets, we're looking at specific targets, company disclosed per business line. So the more you can say, "This is in the next five years what we want to do." Some utilities have even started dividing it out by business line saying, "This is our plan for our gas business." We view that as much more of a higher quality disclosure, again, than a generic net zero by 2050 commitment.

(38:25):

So that's how we think about evaluating companies and leaders. But I know that there was a good point brought up about CPPIB and I think that's also very relevant in terms of what private markets have as a role to play in driving this. Our research from last year has identified that a lot of asset owners, in addition to Canadian Pension Plan Investment Board, OMERS, so Ontario Pension Fund, they're also a top holder in terms of solar capacity in their pipeline. And in the US here we have developers like Kokote and Invenergy that operate a lot of renewables projects and mostly in the unregulated space and they are often the ones working with the industrial and the tech companies with the power purchase agreement. So there's definitely a big role to play there and metrics for investors to look at in terms of their forward-looking pipeline and how that compares to what they're currently operating to identify to.

Jon Rea (39:32):

We definitely agree that the best information that investors should be looking at for assessing utilities is the forward-looking plans. And we love resource plans because they are approved by state regulators and so they go through this whole process of review and it really is like a fully drawn out plan. This is exactly the plans that they're going to build and retire, and that's really what they're planning to do. And those forward-looking projections are a much better assessment of whether or not they're a leader or a laggard in the space, whether there's a growth opportunity, whether or not their climate aligned is based on what their future plans are.

(40:13):

And full agreement that a net zero by 2050 target is nowhere near as good as a 2030 target. Which is also nowhere near as good as a plan to really what impacts climate is the total amount of carbon we put into the atmosphere. And so if you want to see whether utility is making the most climate action, then you should add up all of its cumulative emissions over the next 10 to 15 years, over a relevant timeframe. And that's really the

metric that we look at the most to see which companies are leading and lagging in terms of meeting the need of this time.

Adam Bass ([40:52](#)):

One interesting aspect that you've all brought up a few times now, so I want to ask something about it, is the role of pension funds being managed in Canada or foreign firms opening up plants in the US. But the role of non-US players. So I guess two questions here. One is how vital is that to coming up with these solutions in a practical term? But also larger thinking, as we go to reduce that total carbon emissions that you're talking about, Jon, are there lessons to be learned from those in Europe or elsewhere in terms of addressing because they're facing the same problems?

Uday Varadarajan ([41:34](#)):

I'm going to point back to some changes in the Inflation Reduction Act that make it a little easier for some foreign firms to engage. And I'll point to the tax transferability opportunity in that market. For foreign firms now, one of the options that's now available to them is to indeed engage in the US marketplace but work with firms with significant US tax capacity, or if they have it themselves, to really make sure that they're able to fully deploy the tax incentives and be market participants to drive and to deploy both clean energy manufacturing as well as clean electricity generation itself in these markets. The second point I'll make is that there are nascent industries in the United States that are very much dependent on capabilities that still lie on other shores. And I'll point to US offshore wind as a particular area where this is important. And clearly some of the manufacturing capabilities that we've been talking about.

([42:34](#)):

It is indeed the lowest cost manufacturing capabilities that we've seen both in cell and in battery ED cell manufacturing and as well as in cell and module manufacturing for PV are largely firms that previously would've built capacity either in China or Southeast Asia or somewhere else. I should note that this is being made a little bit more complicated by some shifts in the market. I think the very low cost of battery manufacturing right now in China and some of the challenges around the level of incentive that's provided in the United States may not mean that this is obviously going to translate to US deployment of all of that manufacturing capability without some work and some thinking and some deeper engagement. But I think the opportunity is enormous for a lot of companies to start meaningfully investing in the United States. And that's something that I think we're seeing happening and that capability and know-how is going to be critical for this country to have a sustainable supply chain on the clean energy side, which is what it's going to need to meet 2050 targets.

Matthew Lee ([43:50](#)):

I'll just add quickly in terms of the financing side, what Uday mentioned, there's a lot of joint venture just overall. If we look at the pipeline or planned solar and wind and battery projects, just looking at some numbers here as of May. So the top holders based on a weighted ownership. So if the solar project, and they have a 40% stake in it, is 100 megawatts, we would attribute 40 megawatts to the 40% stake. Out of the top 10 holders here, I think five of them are foreign firms. So I think they have a very active presence in driving a lot of the project development here too on the financing side. So Repsol, EDF, Canada Pension Plan Investment Board, ONG and Shell. Sometimes it's under them on their own doing a project, but for example, Repsol works a lot with Hecate, that private energy developer that earlier we mentioned. That's a top US private developer. Oftentimes they're in joint venture developing projects together. So they do have quite a significant financing [inaudible 00:45:00].

Adam Bass ([45:01](#)):

And I want to be conscious of the time here where we're running a little short. Definitely invite listeners to check out the blog post on msci.com that you worked on together called [IRA Boosts US Utilities' Plans to Grow Renewables and Storage](#). I know Uday and Jon, you mentioned a couple of papers that folks can find at rmi.org,

which I invite them to check out as well. But with the little time we have left, what I want to know about I guess is reading the blog post, hearing you guys talk, what are you looking at next? What can we expect? What's the next question you're going to work on to try to answer for folks?

Jon Rea ([45:44](#)):

What I'm looking at is all of the growing demands from EVs, buildings and manufacturing. So I said that we need to double the grid and that was the story we were trying to tell a couple of years ago. And load growth in the growing electricity sector is already a hot topic right now. But in our review of resource plans across the US, what we're seeing still only adds up to 20%, 25% increase in load by 2035. And that's not doubling the grid. And so I think there's a bunch more load coming on from EVs and buildings and electrification of manufacturing, and I'm excited to see more ambitious plans in accelerating clean energy in order to meet that new load.

Uday Varadarajan ([46:32](#)):

I think on my end we've had policy including IRA, creating extraordinary incentives for the electricity sector to decarbonize. But I think what none of us really realized was the extent to which we face challenges in the country to meet load growth and to address affordability across the country. Twin challenges that in many ways are heading in opposite directions. But I think there is a real opportunity with all the incentives in place and I think an opportunity that hasn't adequately been creatively addressed for creative investment and deployment of capital by investors across the country in the electricity sector to meet these challenges. And now is the time for that investment.

([47:14](#)):

We've already heard from Jon, we need to double the size of our grid and we need to do that while potentially creating enormous value through reshoring of manufacturing and providing the power needed for the next generation of AI load. This is an extraordinary opportunity for the sector in a way that we haven't seen in 100 years. And what I'm really interested in is how we're going to do it in a way that's still equitable, that keeps the electricity system affordable, maybe even lowers costs. And at the same time meaningfully addresses climate change, which could make all of this naught if it's not addressed. That's an enormous challenge, but it's a huge opportunity. That's what I'm excited about.

Matthew Lee ([47:55](#)):

I'll keep tabs on what I call the four Is, inflation, industrial policy, investments and innovation. So the first two, inflation and industrial policy. I think those are really two big macro factors that set the stage of what's possible and the overall momentum. But they definitely influence the type of investments and innovation that can come from it. So even on the investment side, I think that that is important to see as we talked about the forward-looking indicators to identify who's showing progress, who's serious about this. But innovation will always create new opportunities and new possibilities and new collaborations. So I'll look forward to how these four factors continue to develop.

Adam Bass ([48:41](#)):

And with that, I'll just say thank you all very much, Matthew, Jon, Uday for coming on and sharing your insights as you keep looking into those issues as your research continues. Sincerely, hope you'll come back on and speak with us again. Thank you.

Uday Varadarajan ([48:56](#)):

Thank you so much, Adam.

Adam Bass ([48:59](#)):

That's all for this week. Many thanks from Joe and me to Uday, Matthew and Jon and of course to all of you for joining us. Next up on the program, MSCI's Chief Research Officer convenes his quarterly panel for a mid-year look at his five key themes for 2024. We'll look at how they've played out over the first six months of the year,

what surprised our research team and what investors may look out for as we head into the summer as well as the second half of the year. Until then, I'm your host Adam Bass, and this is MSCI Perspectives.

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process. To learn more, please visit www.msci.com.

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or disseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of msci.com.

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK).

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at <https://adviserinfo.sec.gov/firm/summary/169222>.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Global Market Intelligence. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Global Market Intelligence.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at <https://www.msci.com/privacy-pledge>.