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CCRO Discussion: the Inflation Reduction Act, Impact on Energy Risk Management



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**Chris Dann:**

Okay. So just some quick initial comments. I think the Inflation Reduction Act is a big, complex piece of legislation. Every consulting firm, every law firm has got a summary of it on their website. I will spare you going through that. I will assume that you all have read something like a summary, so we'll sort of spare you the, the general description.

I'll focus my initial comments on three dimensions of the bill that we have been studying for some clients. These are areas that I think have some real relevance for risk professionals.

The first is that unquestionably this is the largest piece of energy policy in US history.

Prior energy policies that utilized the "production tax credit" as a primary mechanism had either step-down or sunset provisions in them. Effectively, this bill's tax credits are uncapped and perpetual. So, the numbers that you see that quantify the impact are in the billions... we think the appropriate number is probably closer to the trillions. This is a very, very big piece of legislation, and I think it has impacts that are not widely appreciated out there. So, the first dimension for risk professionals is just how enormous this bill is.

The second dimension is that the bill is focusing on the renewable energy assets in the power markets.

It significantly shifts the playing field to the regulated utilities, away from the unregulated competitive independent power producers that have been developing a lot of the renewables to date. It gives the regulated utilities not only significant economic advantages over the competitive players, but it creates incentives, that are irresistible for the regulated utilities, to maximize the amount of renewable assets that they can possibly invest in. And there are not a lot of limits on that.

Just since the passage of the inflation reduction act, what you're already seeing is that if you look at plans that have been announced for renewable investments by regulated utilities over the next four years, they are running at three times the pace of the previous four years.

In some places, you're talking about an expansion of investment plans that are up to 50% of the total power market in that region. Again, this is an enormous expansion of renewables.

The third dimension is that all this leads directly to a significant impact on volatility on the power markets.

Wherever you have seen such high penetration of renewables in the power markets, what you get is an enormous amount of volatility. Renewables are intermittent resources that have energy value, but not a lot of capacity value. They may be here, they may not. They drive an enormous amount of volatility in power markets. When the sun goes down or the wind doesn't blow, what you get are enormous spikes in prices. From a risk professional standpoint, there couldn't be anything more interesting than that.



These renewables are all going to be backstopped with gas. Considering our prior CCRO discussion, if you factor-in a third or more of the gas being exported for LNG, you set yourself up for potentially more volatility.

Still more volatility impacts from the bill arise from new demands in electrification and in hydrogen.

So, not only do you get significant periods of negative pricing when there's a surplus of renewables, but then there's a rollercoaster in pricing when they're not there.

So those are three dimensions that we've been focusing on. Andy?

Andy Roehr:

We're seeing much the same. Perhaps not quite the same perspective on the regulated versus unregulated. One of the regulated entities was on a phone call with me this morning and basically told me no unregulated entities will be able to build in their territory. That territory belongs to them from a rate of return standpoint. Thank you very much. So we'll see if they can actually pull that off.

I do think the IRA has sort of screwed up in a couple of areas:

There's a huge amount of ambiguity in what these credits are going to be worth.

So yes, they are uncapped to Chris's point. But nobody really knows whether they're getting 6%, 30%, 50%, right? The rules are still sort of hanging out there. Plus, we're going to have labor law written by Treasury. Stay tuned on that one!

So, as you're looking at what's actually going to come online in the future, a large number of these projects are penciled-out based on an assumption about value of credits. But those credits may or may not actually show up based on availability of labor and a whole bunch of factors that are outside of people's control.

I do think the labor piece is where the regulated utilities have a real edge. This is because they're not going to have to go out and request apprentices, et cetera. Many utilities are already kind of roped up with the unions. So, there is a reason that in the bill they don't just say, we want to create jobs for Americans. They literally say, we want to create good paying union jobs. Which, which I think had got everybody's attention. So I definitely agree on a regulated utility advantage in regards to labor.

The bill pays very little attention to the realities of grid reliability.

I think the other area not well thought out is while the bill focuses a lot on renewables generation, it pays very little attention to the realities of reliability.

First, on the demand side. The bill does a lot of things on the demand side that are sort of distorting. Electric vehicles, for example. I've got some numbers from PJM. If you would, imagine PJM was an all-electric world. Well, if they hit the 2019 polar vortex there are some estimates that their actual peak load at night in that world would be about six times the load they actually experienced in that disaster!

They just don't have the capacity.



Second, generation side. There's no solar at night of course. So, you're really at that point going to be relying on intermittent wind. The resulting volatility is huge. I think it's going to get worse in a lot of markets because the electrification policy is going to drive greater power consumption that shifts peaks off from what we're historically used to.

Third reliability component is storage. Wind is unstable. Solar's unstable. I believe it was [NREL that said](#), we need about 300 gigawatts of storage. That's a, a massive number. Actually way outside the bounds of industrial policy to produce if you actually add up all the minerals required for that.

What most people don't understand though is we don't measure batteries in gigawatts. We care about hours, right? It's how much we can deliver and for how long. Yet it seems everybody's really focused on the first one. Maybe because it's easy to size a battery. It's really hard to figure out what that duration looks like. I always think about can we run overnight, right? Sort of eight to 10 hour plus when you come to large scale fail. Well, only about 12 to 14% of what's going in by 2040 can theoretically meet that duration. That's what we're looking at for eight hour or greater duration storage. We don't have enough storage.

So, to recap, we've got lots and lots of unreliable renewable generation going in. We have lots of new power demand. But we don't necessarily understand how it all works.

Then cap it all off. The grid is over capacity. Another NREL study says basically you hang one EV with a class two charger off the average US home distribution transformer, and you are at or over capacity.

So, the grid is under-invested and all of this is going to come back the bite to people in this room. We're creating more demand. We're not necessarily creating supply. We're all going to get whipsawed commercially in the middle.

CCRO Member:

Can, can hydrogen be part of the solution as a long-term storage for like green hydrogen? You know, if you overbuild the renewables?

Andy Roehr:

I'm working on a couple of hydrogen projects right now, full disclosure. What people are starting to figure out is hydrogen as a storage solution is an interesting idea, but you can't run electrolyzers like you can Bitcoin mining, for example. You're not going to turn your electrolyzers on and off based on market price. That's just not going to happen.

So yes, in theory. But if you're going to use it for standby storage, you must deal with the issue of leakage, which can be fairly high even with today's technology. Also, embrittlement is an issue for the underlying infrastructure. Then there is the fundamental density. A gallon of gas is about a hundred times denser than a cubic meter of non liquified hydrogen. So, you need a lot of storage for hydrogen. And, it tends to go away, it's a molecule problem.

You're not going to turn your electrolyzers on and off based on market price

**Chris Dann:**

Yes, there are problems with hydrogen, yet it's going to get an enormous amount of federal money. Hydrogen is not a source of energy, it's a means of storage, right? And as a means of storage, hydrogen is extremely inefficient. So, if the objective is to waste a lot of excess power, you could do that. It might sound silly but, there's some incentive in the act to power an electrolyzer with solar, create hydrogen, and simply release it back to the atmosphere. But without the Federal money, the fundamental economics are just not really there.

And as a means of storage, hydrogen is extremely inefficient.

CCRO Member:

You could change the hydrogen to ammonia, right?

Andy Roehr:

Although there are people working on ammonia engines especially for Marine, I've seen a couple of those initiatives going on. We know how to tank and transport ammonia, but as those of us who've been around long enough to remember industrial disasters like Bhopal, ammonia is not your friend. It has a lot of health and other issues. Frankly, a lot of it exists in historically underserved communities. So, you will have a real energy justice conversation going on with DOE if that's a strategy.

Chris Dann:

I think one of the reasons why the bill is so complex and has so many consequences, some unintended and others maybe intended, is that it's not so much energy policy as it is labor policy and industrial policy. A lot of the constituents that were behind the inflation reduction Act were upset to find that most wind and solar projects are built with non-union labor. So put a prevailing wage requirement around it, and you will move all those dollars into labor.

Of course, in doing so you're also increasing the cost of wind and solar while pursuing a completely different policy aim. And there's the domestic content requirement, which is really trying to achieve an industrial policy aim. Neither of these aims have much to do with the fundamentals of energy and how the energy markets work right now. Nobody was really thinking about that apparently.

The bill is not so much energy policy as it is labor policy and industrial policy.

Andy Roehr:

The bill nationally could have some very negative impacts on energy security. If the industrial policy aim doesn't succeed, the vast majority of your wind and solar and other renewables will actually be created by a country that is probably your number one geopolitical opponent. You can go beyond that and ask if you really want to have your renewables sourced from child labor and concentration camps? There are certain issues that people may or may not want to address. We're backing into some much bigger issues while trying to use this as a hammer. I think that's going to create a lot of dysfunction.



So sorry, but you asked told me to be honest! <laugh>

The bill could have some very negative impacts on energy security.

Anderson:

So you guys, when we were talking earlier, you said one big question is how do energy markets emerge from this dysfunctional future? What are your views on that?

Chris Dann:

There's lots of different ways to achieve policy aims, right? The production tax credits approach, I think started with the Energy Policy Act. Ever since that policy was implemented, the wholesale energy markets have stopped sending a price signal that would incentivize new non-renewable generation in this country. There isn't a single wholesale market that has signaled prices to incent that generation. This is largely because with the production tax credit you have a whole bunch of resources, particularly wind blowing at night, that will price their power at zero or even negative to get in front of the queue and get dispatched. That destroys the economics of everybody else in the market.

Now, the Inflation Reduction Act just puts that on steroids. That brings us reliability issues. If, if nobody is building dispatchable generation and what dispatchable generation exists is all dying because it can't survive in the open markets, then you're left with a very difficult situation with the power markets. Certainly, we can expect an awful lot of volatility.

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Andy Roehr:

Yes, the price signals are crazy. If policy was that before you get any credit, you're going to have to build three megawatts for every megawatt you take out; or you're going to have to back it with firm storage, I think you'd see a much better set of economics.

I think part of what we're struggling with here is that we're not bidding on apples to apples, right? You're not bidding for gas generation over there that we're fairly confident will actually run. Rather, what we're actually bidding on is wind coming out of West Texas, which at 4:30 in the afternoon may or may not show up.

We need the ability to step back and consider when I'm buying energy, what am I really buying? What kind of risk am I really taking when I buy that type of energy? What's my residual exposure?

I can tell you a lot of my large C&I clients are jumping up and down looking at alternative energy strategies. Things like premise microgrids, premise backup storage, premise gas turbines, just about anything they can get their hands on. This is because they don't believe that the grid is going to supply them power reliably. Even if they can actually supply it, they're not necessarily confident the grid will deliver it.



I never thought I'd say that about the US power environment. I've worked all over the world, and that kind of environment was what we saw in China 20 years ago. So it's kind of scary.

*What kind of risk am I really taking when I buy this or that type of energy?
What's my residual exposure?*

CCRO Member:

From a utility I worked at for twenty years, I saw over the last five years the growth of these boutique energy companies that would come in and build the on-premise generators for C&I type companies. They were really eating into the utilities business, and the utility was trying to figure out how do I combat that? We couldn't. I think we're going to see more of that under this bill.

Andy Roehr:

Yes, I think we will. I think Enchanted Rock's a good example, The guys at Bloom are kind of coming into their own now, or even Generac.

I think for folks who have generation, I think there'll be some interesting market models out there. The VPPP folks are basically turning demand response into megawatts. There's an entire industrial policy around de-industrialization, and then there's an entire policy around managed power consumption by the end consumer. In the end that's really where they're going.

Consider what California's model is, and some of the east coast. Their model is "we're going to admit we can't get you what you want when you want in the way you want it. Therefore, what we're going to do is control what you get and tell you when." That's probably, probably a bit heavy handed as an interpretation, but I'm just looking at some of the EV work going on right now in California.

CCRO Member:

Just a quick question. There are still power markets in the US that are highly regulated, right? For example, Georgia Power, Southern Company in their territories, others similar. How does this play out in those regulated regions?

Chris Dann:

So, all the power markets in the US are sort of a mix. ERCOT is probably the purest, but still even in ERCOT, 13% is vertically integrated, regulated generation. But if you go to other markets like MISO or SPP, there's 70% regulated generation.

The thing about this from a risk professional standpoint, is that the volatility that is going to be caused by this inflation reduction act is a great opportunity from a regulated utility standpoint. You couldn't ask for a better opportunity. This is a gift because as a regulated utility, you get to put a whole bunch of capital into rate base and earn nine, nine and a half, even 10% rate of return on it, while your customer bills go down. I mean, you can't get anything better.

The answer to your question is that wherever there is a regulated utility, in every integrated resource planning (IRP) process that they go through, they together with their regulators are just going to max this out as much as they can. This is because it's free federal money, right?



The tax credits basically flow right through to your customer. You essentially get federally subsidized electricity for your customers, and as a regulated utility, you get to earn a rate of return on it! So, everyone's going to do this as much as they can. It's hard to see the political opposition to a utility that comes to the regulator and says, "I'm gonna build wind and solar with union jobs and my customer rates are going to go down."

So what's the intervener that opposes that?

*a great opportunity from a regulated utility standpoint.
You couldn't ask for a better opportunity.*

Andy Roehr:

I did see a draft of something the other day where what regulators want to do is to figure out what the final capital cost deployed is for the rate base, and only let them earn a return on the non-subsidized component.

Remember that a lot of that revenue from the regulated utilities goes into public pensions. There's a lot of politics at play here. That return goes to the teachers' pensions, it goes to CalPERS. There's a lot of politics out there in this arena of utility finance.

So, back to your earlier point about this is policy by another name. There are a lot of things that they're trying to do. For example, if you look at underfunding of pensions over the last decade. This is an interesting way of doing a pension bailout. This is an interesting way to drive a lot of money into we'll call it - some well-deserving pockets. So, I think you're right. On the intervener side, somebody's going to do it because they're going to feel bound as a consumer advocate to at least beat somebody up.

But it's hard to find a loser in here unless, unless it's for those of us paying the bill.

Chris Dann:

They get a check directly from the federal government. They're all going to do as much of this as they possibly can. There's money on the table. Why wouldn't you pick it up?

That certainly has an impact on the power markets. Renewables is already a pretty challenging space because you've got long interconnection queues, you've got basis and congestion problems, you've got supply chain and labor shortages. Well, this bill just puts an enormous amount of money into the already challenged renewables space. And all the non-taxable entities, they're going to do it. The regulated utilities can do it. So, the numbers that you've seen that have been announced are, are enormous.

Well, this bill just puts an enormous amount of money into the already challenged renewables space.

Andy Roehr:

Well, I start with transmission. If you're going to build all this, especially wind and solar, you're going to be looking for bigger. For example, for solar plants you're going to be out to "cover the Katy Prairie."



That means you're going to need more transmission. The rest of the country trying to get from point A to point B. I think transmission's going to be a huge, huge issue. Buildouts run about seven years plus right now. That's assuming you go fairly quickly to get a transmission line permitted, and that assumes that you have no obstruction from a state or a state park wherever you're going. So, you've got a huge, got a huge timeline hangover there.

I think transmission's going to be a huge, huge issue.

Distribution. If you just take the EV thing. DC pass chargers take three phase power. The vast majority of the country does not have three phase power. So, if you're going to try to implement just that, the last I heard is like \$350,000 to \$500,000 per mile to take a single-phase circuit, turn it in the three phase. And that assumes, to your point, you can then get new transformers, you can do the substation refit, you know, on the backside of the local.

We don't have the gear. If you had the time, you don't have the gear. And if you have the gear, we don't have the people.

Chris Dann:

And then it's almost impossible to build transmission anyway, from a political perspective. It's very, very hard. In fact, part of the logic of this act was that it was supposed to be coupled with senator Manchin's permitting reform. The idea was that they were going to pass inflation reduction act, and then right after that was going to be the permitting reform that Manchin came up with. But that died. So now, you've just got the money without the permitting reform. It's hard to see how the necessary transmission gets built.

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Anderson:

So, in this wonderful energy environment of the future, if I've built a bunch of stranded assets, solar, hydrogen, whatever, sitting out in the middle of nowhere with no transmission line connected to them, do I even care? That is, do I still make a return on my investments?

Andy Roehr:

In theory, you will get a check for just releasing hydrogen. You get a slightly larger check if you took it ran a turbine and created power. There are some rules around things like it has to flow power. But it doesn't say for how long. In theory the investment tax credits have a five year claw back. So your investment probably has to do something resembling generating power for five years. Then again, there's nothing in the law that says it has to meet 80% of nameplate or whatever.

In theory the investment tax credits have a five-year claw back.

**Chris Dann:**

One means or another, whether you're making something like hydrogen or a sin fuel, or if it's lithium-iron batteries or whatever it is, you're going to be facing negative prices. One piece of analysis that we have has within the next five to ten years, MISO is running 70% of the time at negative prices.

That creates an enormous opportunity for somebody to come in and use that negatively priced power.

CCRO Member:

I appreciate the skepticism. It's real. But you laid out a lot of constraints which are very real resources, like supply chain, the queue, and transmission. It doesn't matter how many tax credits you're getting, there is still capital at risk. Utilities are not known for taking capital risk to do so many big projects. They must lay that risk off on the other side.

So now you're looking at a five-year time horizon from groundbreaking. Even though you may in two years see a change in administration. I broke ground, I spent money, do the tax credits go away? How much risk am I creating by chasing these tax credits now?

Chris Dann:

It's a good question. I can't predict lots of things, and I certainly can't predict politics. The fact that the inflation reduction act's spending is pretty widespread across both blue and red states makes it pretty resilient politically. After all, who is the constituency for repealing it if it's spending is spread across, and everybody gets some?

*The act's spending is widespread across both blue and red states,
which makes it pretty resilient politically.*

Andy Roehr:

It is looking like there's more investment coming out of this in the red states than there is in the blue. Which by the way, is really upsetting some of my friends in the blue states.

CCRO Member:

Why would there be a need for a secondary carbon market if this happens?

Andy Roehr:

That's an interesting question.

Chris Dann:

In my mind, these types of policies are running at cross purposes to carbon markets. Germany has learned this as well as anyone, right? They spent a trillion dollars putting wind and solar in their system, and then they had a hard time with the [Emissions Trading System \(ETS\)](#) and keeping that going.

With these types of policies you've mandated-out a technology rather than letting markets decide the best way. For example, consider putting a tax on carbon and then just letting the market figure out the best way to decarbonize. Well, markets may determine that the best way is to move associated gas



from the Permian to LNG and move it to China and at all what these policies are doing.

India. But that's not

With these types of policies, you've mandated-out a technology rather than letting markets decide the best way.

CCRO Member:

This has been one of my complaints, and it's one of those questions I think for the CCRO's ESG working group as well. I worked on a biofuels project that converts woody biomass to synthetic aviation fuel. The economics were entirely driven by this rube goldberg structure of [LCFS](#), you know. What's that market doing? It's volatile. It's up to 300, it's down to 50. And then [RINs](#), and like 70% of the revenue was LCFS and RINs.

Now, if you ran a \$50 a ton carbon tax through it, it would've been a successful project. But instead, what they did is put in place tax credits for sustainable aviation fuel that lasts for four years and then expire. Okay, it's going to take five years to build the project! Nobody's going to finance that.

I just think we have all these Rub Goldberg approaches to carbon, while you have guys like [Art Laffer](#) saying, let's have a carbon tax.

Andy Roehr:

Well, the other folks who were talking about a carbon tax come into play if you want to move anything into Europe. Their border tax on carbon is one of those things that is getting people's attention. So, if I don't pay for it here, so why do we need a market here? Well, if I don't pay it here or somehow get credit for it, I'm going to get whacked when I take my product into Europe,

To our earlier point about working at cross purposes, now we're laying one more layer on top of something. It's just going to be really hard to unwind.

I do hear that for some folks, one scenario does worry them as possibly playing out. Call it a global carbon regime without an offsetting unambiguous US carbon tax or something like one.

CCRO Member:

Well, as, as a sleepy utility that began a transformational project long before the IRA started and even made some public announcements on some very large ones. The thing that I lose most sleep at as the risk manager is not so much the market price volatility but is starting a couple of billion-dollar projects and having the rug pulled out from under us. Or worse, going through that five-year credit and then not having a secondary market to lay off the rest of the risked investment.

The thing that I lose most sleep over as the risk manager is ...having the rug pulled out from under us.

**Andy Roehr:**

So historically, the feds have between administrations generally not pulled the plug on a credit or something like that once it's been implemented. Now they may let it run to end of life, which is kind of where we were heading with some of these tax credits anyway. They'll probably let it run out.

But if you thought you had a 10-year horizon, I wouldn't plan anything for year 11. Who knows where we'll be by then.

I do think you'd be betting against the house to assume that somebody's going to come in and kill it.

CCRO Member:

At the end of the day, you're asking households that make 50 grand a year to pay for the transmission & grid upgrades. They don't want a \$20 to change in their bill, much less a hundred dollars change in their bill. I think we're going to skip a step anyway, and just eventually go off the grid.

Andy Roehr:

What we're talking about here is at some point, as the price of some of this stuff comes down with some of the tax credits, et cetera, you're going to get the "frees" effect. You'll get early adopters and then you'll get the move-ons. What I fear is you're going to end up with a, a regime that says, "I still have to provide power to every street address, right?"

So, the utility has a big set of fixed costs for the grid, and at the same time it has a declining number of kilowatt hours running across it. So, what's it to do? It's going to back itself into something that economically is going to be untenable.

Unfortunately, the people who really get whipsawed in this scenario aren't going to be the folks who can buy the Generac. Right? It's going to be the folks down here in Houston who are sitting around after a hurricane, and they have no power. The power doesn't exist because the storm just took out every one of the floating wind turbines out in the Gulf.

I think there's a huge problem coming. But I do think a lot of it's going to go distributed. You know, who tells the utilities and the ISOs to get out of the way? But, you know, PJM already came back and said, "we're happy to do that. Can you talk to us in four years?"

So, lots of rules, lots of stuff coming for the risk professional to consider.

Anderson:

You know what, I think I'll suggest we keep it going over at Morton's over a drink.

CCRO Member:

After listening to this. I need a drink. <Laugh>