

The escalating battle over renewable energy certificates (RECs)

**A conversation with Wilson Ricks and Killian Daly.
October 29, 2025**



David Roberts

Hello, everybody. This is Volts for October 29, 2025, "The escalating battle over renewable energy certificates (RECs)." I'm your host, David Roberts. You've probably seen it a million times: a business claiming to be run on "100% clean energy." What does that mean exactly? How difficult is it to achieve?

Back in September, I put out a podcast on the ongoing controversy over the standards that govern voluntary corporate procurement of clean energy, wherein businesses buy renewable energy certificates (RECs) and are subsequently allowed to claim to have offset their dirty energy use.

I realize this topic sounds somewhat obscure and wonky — perhaps too obscure and wonky for two pods! — but I promise it is extremely important. Big corporate energy buyers make up a substantial portion of the total market for clean energy in the US, and given the complete collapse of federal support, their role is going to be even more significant going forward. (I highly recommend listening to that pod before this one.)

In brief, the International Greenhouse Gas Protocol, a set of rules and standards that governs the measurement and reporting of greenhouse gases worldwide, is being updated for the first time in 10 years, and corporate procurement standards fall under that rubric. It is widely agreed that current standards are too lax — lots of companies are claiming to run

on "100% clean energy," even though the RECs they buy have little effect on emissions or on the overall energy mix.

The solution is for the standards to get more granular, to require the companies that want to claim they run on clean energy to procure not just any clean energy, but clean energy that is produced at the hour when and on the same grid where they are consuming energy.

In September's pod, I talked with some folks who are worried that too much granularity too quickly could stifle this market. Today, I'm speaking with people who take the opposite perspective. They believe that greater granularity will make corporate procurement more transparent, honest, and impactful.

Wilson Ricks is a postdoctoral researcher at Princeton and a member of the Technical Working Group updating these rules in the Greenhouse Gas Protocol (and a previous Volts guest). Killian Daly, also a member of that working group, is the executive director of EnergyTag, a nonprofit focused on carbon accounting. We are going to discuss what is happening with the Greenhouse Gas Protocol, the merits and risks of greater granularity, and the future of corporate clean energy procurement.

Without further ado, Wilson Ricks, Killian Daly, welcome to Volts. Thanks so much for coming.

Wilson Ricks

Thanks for having us.

Killian Daly

Hey, Dave, thanks for having us.

David Roberts

There's a lot here. Let's just start. Remind us where we are in all this. The Greenhouse Gas Protocol is being updated. The corporate energy part, the scope, is called Scope 2 – your electricity consumption emissions. Scope 2 accounting is being updated as part of that larger Greenhouse Gas Protocol. I believe the Scope 2 working group has put out a discussion draft of this proposed update. Is that where we are? What comes next?

Killian Daly

Just to take a step back, Scope 2 is about how companies account for the electricity supplied to them. There are two methodologies for doing that. There's a location-based method, which takes the grid average, or else you look at the contracts you have. Before EnergyTag, I used to do this as a practitioner. I used to do Scope 2 for a French company called Air Liquide, which consumes more electricity than Ireland. I've done this at a pretty big scale – I've bought power at a very big scale.

When I was going and buying electricity, that was one thing where you have respect for physical limits. You have to time-match your power purchases. You have to look at what boundary you can buy that power from – what EU country or bidding zone in the European case. Then you go to the green accounting world and you're in a parallel universe. You're in a world that doesn't really respect any of those limits and rules. That has caused some controversy, as you covered earlier, about these green claims – about companies getting to 100% renewable without doing the real job of getting to 100% renewable.

David Roberts

We should just say that the standard right now is that you can buy RECs from anywhere, annually, averaged from any geography. There are currently no geographic or temporal restrictions on where you can buy RECs. Is that correct?

Killian Daly

There are some level of restrictions, but you can buy from anywhere in Europe. One example we always use is Iceland, which has never exported an electron, but it is quite a big exporter of green electricity certificates. There are no geographical limits —

David Roberts

Because of geothermal.

Killian Daly

Or hydro in Iceland. Also, you can be solar powered at night. That's the other classic one to do with temporality. You can use solar produced in May on a dark winter's night in December and claim to be renewable at that time. This time matching and geographical matching just don't make any physical sense when we think about the classic way that power works on electricity grids and power markets.

David Roberts

I want to throw this in too, even though we'll return to it later. This is also in the news because this distinction between what you're actually consuming and what you're claiming via RECs is coming up now because of data centers. You have these data centers — Meta, etc. — building a bunch of gas plants, building a bunch of gas generators to run them, and then buying these RECs from wherever, California, and claiming to be 100% clean. People are noticing this in a way that is new. I think it is becoming a political issue in a way that is new.

Killian Daly

And just to be clear, all of the major tech company brands are already 100% renewable and have been, some of them, for many years.

David Roberts

According to this current standard.

Killian Daly

Yes, that's what they claim. It's not because they're fudging the rules. Those are the rules. They're following the rules and they're reporting zero emissions. That objectively is absurd and doesn't make any sense when we see what's actually happening out in the real world. That's one of the main reasons why this reform process was kicked off and why we are where we are today. We've been working on this for about a year, Wilson and I. Wilson can go through in more detail why these changes are needed.

But yesterday or two days ago, the Greenhouse Gas Protocol put out a draft that would significantly tighten up these rules.

David Roberts

We're going to go through the changes they make in some detail. I want to get a roadmap, clarity on what's happening process-wise. People are going to comment on this draft, then there will be another draft. How many drafts? When will there be a final? What is the process as you understand it?

Killian Daly

There's a comment period open now for the next 60 days. People are going to comment on that largely publicly. Then the technical working group that we're in — we've been working on this for about a year — is going to take those comments and work through them, see which ones are most relevant in alignment with the criteria and governance of the process, and then come up with a secondary draft. There may be a second comment period next year. The idea is that 2027 is when we'll really have a finalized new version of the protocol.

However, that might phase in only a couple of years after that. We're still relatively early in the process, but critically, a lot of the key decisions are being made right now, and we'll talk about them in more detail later on.

David Roberts

Okay. Let's then talk about those changes that are being made in this draft that has just come out. This draft is the subject of everybody's attention and focus right now. There are several changes that I want to go through, but the first two are the most notable because they are about this granularity we have been discussing. The first says "We're going to move from annual accounting of your energy use to hourly." People are going to have to match — they are going to have to buy RECs from the hours of the day that they are actually consuming energy, which gets into who is going to produce those hourly RECs, which we will talk about in a minute.

The first is about temporal granularity. The second is about geographic granularity. It says "No longer can you just buy them from anywhere in the US." Taking the US example, you can't just buy anywhere in the US. You have to buy from — and the language here is a little fuzzy — but you have to buy it from a grid where you plausibly could have physically accessed it at the time you were producing it. Temporally much more granular and geographically much more granular. Wilson, let's go to you. I think the merits of doing this — I discussed this on the last pod — are pretty evident.

The reason people want to do this is just accuracy. You can't be claiming to offset your energy when you're buying from some faraway time, faraway place, grid. Your claims are more accurate if you're buying closer. That's the merit of doing this. But there are also risks. I wanted to ask you about some of those. Both of you, really. My first question is just this: it seems on its face that this is a little bit more complicated. Buying annual RECs from just anywhere is very easy. This requires a little bit more administration, a little bit more calculation, just a little bit more — the soft costs are up. Do you not worry about that, just in and of itself, reducing participation in this market? The background fact here is that all the companies doing this are doing it voluntarily. Are you worried at all just on its face about the increased complication reducing participation?

Wilson Ricks

I would say that while there is increased complication here, it's not to the extent that it should make it very difficult for these large companies that are sophisticated enough to actually go out and buy their own actual electricity to do the accounting at a granularity that's equivalent to what they're buying power on. When it comes to actually reporting this, what you're essentially saying is that rather than reporting a single number for a given grid, you're now reporting 8,760 numbers — number of hours in a year. That's a larger spreadsheet. But fundamentally there's nothing significantly different about that compared to just adding up all the RECs you purchased over the year.

There will be some administrative barriers. For that reason, the current proposal is only recommending that this be required of the largest companies. If you're a small mom and pop business and you don't want to deal with your larger spreadsheet, you're still welcome to, but you don't have to. That threshold for what determines a small company hasn't been fully determined yet.

David Roberts

There are several feasibility measures that we are going to mention later. That is one of them — this only applies to big companies, but it is not clear exactly what counts as big.

Wilson Ricks

When it comes down to the logistics of making these claims, what you really need is a measure of when electricity was produced and where, which any large-scale electricity generator that participates in a power market is going to have and can be feasibly attached to the actual certificate that you're using. Then you just need to keep track of it, which is not trivial, but it's not at the level that it should prevent any reasonably sized company from pursuing this if they want to. I also want to circle back to the arguments in favor because I don't think they're just about this being more accurate. That is one very important aspect, obviously, it's not credible when you say your data center in Virginia runs on 100% solar power from Texas.

But there are also a few aspects of the way these incentives drive action that I, and others who are working on this updated standard, think will incentivize more impactful actions on behalf of these companies. One of the major challenges with the existing standard is that it essentially allows you to claim 100% clean power using whatever variable renewable resource offers the cheapest megawatt hour in some time and place. Even though we know that to decarbonize any given grid, you need a rather diverse mix of technologies.

Even though corporate procurement has been impactful when it comes to scaling up wind and solar power, there is no incentive for these companies to do the same thing for clean firm power, energy storage, or demand-side management, which are all key for overall decarbonization. But they do not deliver the cheapest clean megawatt hour. Their role is to deliver a clean megawatt hour in a time and place where it is hard to do that.

David Roberts

It's worth saying now and probably for the foreseeable future, a bulk daytime megawatt hour of solar is going to be cheapest, probably for a while.

Wilson Ricks

Possibly forever.

David Roberts

Maybe forever. As you say, one of the benefits here is to push some of that investment to technologies that can produce at those hours when maybe solar isn't, or wind and solar aren't — the famous clean firm. But the flip side of that is there's less supply for those hours. Those technologies are less developed, that's a less robust market, which is going to mean that those RECs are going to be more expensive. I think it's fair to say. Which means getting to "100% clean", is going to be more expensive under this regime.

We might say, it reflects the actual cost of doing it more accurately. But again, do you worry, since so much of this market is driven by optics — companies want to say "we're 100% clean" — is a company going to want to say we are "65% clean"? Do you worry that by pushing up the cost of getting to 100 and making the whole thing more ambiguous about what people have accomplished, or at least making the reputational benefits less clear, you discourage people?

Wilson Ricks

I don't think so, as long as everyone is on a level playing field. The standard being 100% as it is now has been unhealthy for the sector because it is meaningless when everyone is 100%. If, as Syndrome says, "If everyone is super, no one is."

To throw in a sick reference there. You've got companies claiming since 2020 that they're already at 100%. They effectively have nothing left to do under that standard except keep up with load growth. When you move to a system that makes it more difficult to get to 100% — because achieving 100% clean physical supply is much more difficult — you then start to see the distinction between companies that are doing an A-plus job versus just a B job. You can get to the point where people start to recognize that, say, 75% hourly and location-matched clean power is a very praiseworthy achievement that we should recognize.

David Roberts

This is the question. You and I will know that. The people involved in this market will know that. But you can't assume any knowledge of anything on the part of the public. Part of my question about all this is, what is the public going to make of it when, in 2027, all of a sudden lots of companies aren't clean anymore, and almost no one is clean, and people are halfway clean or 65% clean? I wonder about the public perception of it all.

Killian Daly

Sometimes the public knowledge of how this stuff works is pretty limited. Taking the example of my parents, when I explain to them what I do and that some of the data centers...

David Roberts

You poor man.

Killian Daly

It's unfortunate, but I have to try to get through it. Ireland, for example, where I'm from, about 25% of electricity in Ireland is consumed by data centers. That's by far the most in the world proportionately. It's a big topic in the public domain. When I tell them that these are all 100% renewable, a few eyebrows are raised. Then I say, it's sometimes based on this system of certificates where they can take one from Norway, a bit from Spain, and that's what's happening.

I think anyone can understand that people without an understanding of the electricity sector, if they take five minutes to dig a bit deeper into these rules, know on the face of them the claims are not realistic. If we try to continue hoodwinking and thinking the only way for these markets to progress and the only way for companies to remain committed to buying renewables is if they can claim renewables in a way that is not respecting reality, we are going to get attacked from all sides, even from people who are not necessarily advocates for renewable energy.

They'll say the only way of really being renewable is to fudge your rules and to pretend you're solar powered at night. I don't buy it and I agree with Wilson here that we need a reset about what's acceptable. If you're starting from a point of, we need to design the accounting system so that everyone can be 100% renewable by 2030...

David Roberts

It's a little participation trophy-esque.

Killian Daly

What are we really doing there? That is a very hard task.

We need to be realistic about where folks are at and make sure to get to 100% or zero. You have to jump through all the hoops that everyone has

to jump through to get there: more renewables, more demand response, more flexibility, more clean firm power. It doesn't make sense that a subset get to do that with a half-baked solution and then everyone else has to deal with the more complicated parts of that transition. We need that reset and it will ultimately value the really great work a lot of companies do in buying clean energy.

Let's not forget there are billions of dollars going into this stuff already today. We need to make sure that by 2040 the standards — or 2035, because that is what we are talking about here, a standard update that will probably come in by 2030 and be there until 2040 — are relevant in the next 10, 15 years, not in the last 10.

David Roberts

Let's turn to another question a lot of people raise about this. Most of the market is what's called a spot market. Most of the market for RECs is just a spot market where you buy individual RECs from a big pool, and a small fraction of these purchases are through power purchase agreements, PPAs. A hugely disproportionate amount of the impact of this market on getting renewable energy built is from those PPAs. It's the spot market that really comes in for criticism — that they have very little impact.

You can be a solar plant that was built 10 years ago and still be producing RECs, dumping them into this pool. If you buy those RECs, you're not getting anything new built. The PPAs are what's driving a lot of the impact. One of the worries here is that if I'm a corporate and I sign a PPA with a generator, I'm saying "I'm going to buy all the power that you generate" and that de-risks that for that project developer and that's how they get funding.

But if I'm a corporate and I'm dealing with a generator, I don't want all their power. I only want the power they're producing at the times that are hourly matched to my consumption. Either I'm not going to promise

to buy all their power, in which case I'll have a weaker effect, a trimmed down PPA, or I have to buy 400% of the energy I actually use to cover my hourly needs. Does this not make PPAs more difficult and is that not bad because PPAs are most of the oomph in this market?

Wilson Ricks

I don't think it makes them more difficult. In fact, I think it even incentivizes them. When you look at the example you just gave — why sign a PPA with a solar plant when I can only use it part of the day — the answer is you don't sign a PPA with a solar plant that's big enough to cover your total volumetric use. If it's enough to supply the amount of power you use around the clock, you don't need the part that generates during the day. What you want to do is buy a PPA from a smaller solar plant and buy a PPA from a wind plant to cover the other hours or add on a battery to shift the power from the peak when you're not using it into the times when you are short. That action helps to decarbonize those hours in the grid.

When it comes to the incentives to sign long-term contracts, one thing that gets overlooked is that the current system essentially decouples the action of deciding what power to buy and the action of deciding what RECs to buy. When you want to say you're using decarbonized power, you go to your utility, ask them for whatever power they can give you at whatever price is cheapest, and then you go out and try to find RECs. The easiest way to do that is to buy unbundled ones. You can sign long-term contracts, which a lot of companies do and which are more impactful.

That's something we should be incentivizing. But those contracts are not worth very much from an electricity purchasing perspective because they're usually what are called virtual PPAs, where you are buying power on some other grid and then you're reselling it into that grid. The actual value of that power to you as a power consumer is very low because the price that you're selling that power for in that other grid might be less than

the price you're paying for power in your grid, and they might not be very correlated. It doesn't act as a good hedge.

Whereas if you have to buy clean power from the grid where you're consuming it, and during the times when you're consuming it, you might as well also buy the physical power from those same resources. You're going to be incentivized to buy that under a long-term contract because then it will act as a hedge. You will be able to pay a fixed price for electricity in a way that's directly beneficial to you. There's very little reason for a company that has to buy power that's matched with their physical consumption to not go and try to hedge that with the actual long-term offtake of that generator's power.

David Roberts

What about the geographic version of this problem? Say I'm a corporate with highly dispersed load — a supermarket or something — I have stores all over the country, none of which are in and of themselves particularly huge loads. If I can aggregate them, I can get enough demand to sign a PPA, justify a PPA. If I have to match the demand of each of those stores to the grid that store is in, I can no longer aggregate them across geographies. What's to be done about that problem?

Wilson Ricks

This could be a legitimate problem for a small subset of companies that are both large enough to aggregate a PPA from all their load over a country and not large enough to aggregate their load into a PPA in the various grid regions that that country is now going to be made up from, and are also not subject to any of these small business feasibility exemptions that are being proposed. The reality is that the vast majority of current corporate offtake in the form of PPAs comes from companies that are easily large enough to sign many PPAs in any of the grid regions they operate in. There is another pathway for companies that may run into this problem, which is that there is going to be a much larger role for aggregators who are going out and signing PPAs — these could be utilities, these could be independent power purchasers — but who go out and sign PPAs for clean power in a given region and try to create this time-matched supply with the intent of then selling that onto a customer pool whose load they aggregate across all of these different offerings.

There hasn't really been a business incentive for that to the present date, but I think it's something we're going to see evolve if this moves forward.

David Roberts

Just as service providers who are helping people do this?

Wilson Ricks

Yes.

Killian Daly

In general, outside of the US, in Europe about 80% of these PPAs are physically delivered.

That's the norm outside of the US. It is a different situation in the US, but outside the US most PPAs are physically delivered. Everywhere in the

world, including the US, the more correlated your demand is in time and space to the output of your PPA, the more that is going to hedge your operational power needs. That was my job before — I used to buy and hedge electricity. You're always going to have a deeper pool of appetite for risk in my view on long-term power for electricity that's needed to run a data center or to run a factory and that you want to lock in the costs for a certain amount of time.

I think we urgently need to focus on PPAs that are more around the clock, that are matched more to the demand profile of electricity consumers for a healthy PPA market in the long run.

David Roberts

Let me ask about that then because you're on the subject. One of the things I thought could happen to make PPAs more around the clock: what if instead of investing in geothermal and storage and the things that we would like people to invest in, they just pull in existing hydro or nuclear — that would just pull some of the demand away from renewables without inducing any new clean firm? Wouldn't that always be the easiest way to get a little firmer? Easier than funding some geothermal startup or something?

Wilson Ricks

One point is that they can already do that. We're only making improvements from here, but there is part of the proposal that we haven't gotten to yet that does look to address that. This is the concept of standard supply service, which has not existed in the GHGP to date, at least in a formalized sense, though it has been alluded to.

David Roberts

We have a whole thing on the standard supply service. We can't just do that on a drive-by. I'm confused by it and we need to spend some real time on it. I have a few questions left about PPAs.

Wilson Ricks

Table standard supply service. That is a partial solution to the concern.

Killian Daly

That's a critical element of the answer.

David Roberts

We'll come back to it then. This was my other big question about the geography element of this, which is just a simple question: what if you're on a grid in a state with statutory climate targets where utilities have to by law supply renewables? Then if you're required to procure clean energy from your grid, aren't you just helping the utility comply with a statutory target at that point? Aren't you just donating your money to the state for compliance?

Wilson Ricks

That's also standard supply service. There is no requirement to do that. It depends on how you structure these things. When a company goes out and when the utility has a mandate to deliver them, say, 70% clean power, part of the standard supply service concept is that if the company is on that utility's standard product, then they get to claim their fair share of that. Anything beyond that is something they have to go out and procure voluntarily. Importantly, they have to retire the RECs themselves so they can't count towards a government program that also requires retirement of those same instruments.

That lets it end up being additional on top of whatever the state would have been doing.

David Roberts

There will be cases where I'm consuming energy on a relatively clean grid. With these new rules, instead of inducing a bunch more solar to be built on a dirty grid far away, I'm spending money on a grid that's already pretty clean just to make it incrementally cleaner. I will have less carbon impact in the latter case than in the former. Mathematically, we have to concede that that's a possibility — that could happen under this?

Wilson Ricks

It's a possibility.

Killian Daly

Something to keep in mind: there are two joint consultations out. If a company wants to buy power that they can consume because they want to do that for an abatement reason, there are methodologies being developed called impact or consequential accounting methods. That would allow you to do that anywhere. My major concern about this is that we might focus on edge cases like you mentioned to say, "we don't need boundaries anywhere." Then you get a very leaky system — like what we have today — where companies may say that they're going to procure in a more complicated region, but may just go and procure in a cheaper region to cover their more dirty consumption in other regions.

We need to tighten up the inventory of what you can reasonably claim to consume and then have another way for people to go out and buy real abatements. It is a different thing. We can't mix apples and oranges in that sense. It's important to keep those two things separate.

Wilson Ricks

The premise of that question — I think it's likely to be the opposite. Currently, the system incentivizes companies to go to the places where they can procure RECs the cheapest — the times and places which are almost by definition going to be the places where renewable energy is already the most competitive and being built, just because it has a zero or negative green premium over the fossil alternative, which in turn leads to these purchases having essentially zero impact. If we're instead requiring companies to purchase where they happen to be — say, the data center company in Virginia has to source clean power from the eastern region of PJM rather than Texas — they're going to have to go to those more expensive resources that may not be economic otherwise.

The research that I and others have done modeling this out shows that that has decidedly more impact than the current system, even at lower levels of participation. This question about whether your purchases are additional — I know that's something you got into in the last pod — is essential to understanding why the current system is flawed and how we should be thinking about design of both the updated Scope 2 emissions inventories and this concept of the impact accounting that Killian referenced.

David Roberts

Now let's get to the third big change proposed by this discussion draft, which is the standard supply service concept. Wilson, tell us, what does that mean? How does it work now and what's the proposed change?

Wilson Ricks

This one is admittedly a bit in the weeds, but the motivation for this is that there are a lot of resources on the grid that were built by governments way back in the day, or they're built by a regulated utility. Everyone is forced to pay for these things. Yet the current Scope 2 system allows for some companies to come in and, if they can do some negotiation to access the clean attributes from those resources, they can claim them all for themselves, even though by rights those should be socialized among everyone who's on that grid and able to use them. What standard supply service is doing is formalizing the idea that certain classes of resources — ones that are government mandated or owned or regulated, where all ratepayers have a mandatory financial relationship with those resources — one company can't come in and just Hoover that up and claim to be 100% clean because they get 100% share from those resources in the grid, where they only make up 20% of the generation.

You can't come in and say, "I'm 100% nuclear powered in Louisiana," when nuclear power is only a fraction of Louisiana's grid. What this is requiring is that everyone gets to claim they are, say, 25% nuclear powered or hydropowered in a grid that's 25% one of those, when that falls under the standard supply service concept. Bonneville Power Authority hydro, regulated nuclear, Norwegian hydro — all these things, everyone gets their base share. If you want to get to 100%, if that grid isn't actually 100% clean from those resources, you then have to go out and procure other things.

You aren't allowed to take someone else's fair share of that. The motivation is in part about ensuring this fairness aspect — a company shouldn't get to claim my nuclear power if I'm a ratepayer. One byproduct of this is that it removes from the voluntary pool a lot of these old legacy large baseload resources that were built under these structures.

David Roberts

How big is that class of communal power?

Wilson Ricks

I've seen it estimated that it covers more than 75% of the existing large nuclear and hydro fleets, at least in the US. It's a very sizable portion.

David Roberts

What's going to happen if the rules change to the people who are currently claiming a disproportionate share of those? Is that going to get grandfathered in? That's a broader question — are current arrangements going to get grandfathered in under this change?

Killian Daly

One other thing that is probably obvious, but worth underlining: whether it be in Europe or the US or elsewhere, these assets that will probably be in standard supply are built decades ago, they've been paid off, they're amortized, so they can sell RECs for next to nothing. Look at the price of a REC in Europe. It's about 40 cent euro per megawatt hour from the standard pool and half of that goes to admin fees. You have this incredibly cheap certificate that bottoms out the price for everyone else.

It's trying to take that bottom out of the market that we see in the certificate market in Europe, for example. That means that the assets that really need the money don't get it. At the end of the day, economic actors are going to go for the cheapest thing possible and it all gives you the same 100% renewable claim. That is a really important aspect and also quite significant in Europe. That baseload hydro/nuclear makes up quite a lot of the percentage of renewable output in a lot of European countries.

David Roberts

This will lift the floor.

Killian Daly

This will be part of lifting the floor. The other two pillars would as well. This would be significant because often these are assets that are clean firm. They could really bottom out the prices that otherwise would be picked up by something like storage or a new clean firm like geothermal.

David Roberts

This does get to the previous question about PPAs just pulling in...

Killian Daly

It does.

David Roberts

...existing hydro nuclear. They won't be able to under this new rule. Anything else about standard supply service, Wilson? One other possibly more wonky thing is an updated definition of the residual mix. Do we care about that? I'm open to the possibility that that's too wonky for us to care about.

Killian Daly

Just to be brief: yes, this will have a massive impact on the emissions reported by companies because anything that's not matched — so you don't have a specific contract for it — before, what would happen everywhere outside of Europe or sometimes in the US, people would just say, in that case I am powered by the grid average power, which includes all existing renewables, all existing clean firm, and that will no longer be allowed. Now you have to go to this thing called a residual mix that takes out a lot of the claimed clean power already or defaulting to a fossil mix.

David Roberts

If you claim for that remaining bit that you haven't accounted for, "I'm using the grid mix," you are claiming a bunch of clean energy in that grid that other entities are claiming for their RECs. You're having double claiming now.

Wilson Ricks

Exactly.

David Roberts

Instead of using the grid average for this residual bit, you'll probably use something called a fossil fuel average — basically just the dirty stuff.

Killian Daly

Residual mix, which is a more sophisticated fossil average, let's say. We don't want to get into weeds on that. At a high level, it is something not to ignore. It is quite significant.

David Roberts

Those are the big ones. We have temporal granularity, geographic granularity, the standard supply service thing. You are no longer allowed to just dip into these giant pools of already built nuclear and hydro. For your residual mix, you are not allowed to double claim clean resources that other people claimed. All of which is going to tighten this up, make things slightly more difficult, raise the bar, as it were. Claiming you are 100% clean under these new rules is going to mean a lot more than it did before these new rules.

There are several provisions in here about feasibility. Whenever I look at this section, it just reads to me — "who lobbied loudest here to get their feasibility requirements tucked into the final thing?" For one thing, this exempts small companies like we mentioned before. Does that just mean

that small companies will be able to do things the way we're doing them now? There will be no changes for the small companies or what does that mean?

Killian Daly

For the small companies, the main initial exemption is about the requirement to do an hourly accounting rather than an annual. It's more on that pillar than the other two. Correct me if I'm wrong there, Wilson, but that's what I think is in the draft. I am supportive of that because in terms of balance of admin burden versus impact, there is a strong case for just saying, "Listen, SMEs..." — to give some numbers, if you look at CDP data, the Carbon Disclosure Project of companies who publicly report their electricity consumption — 7% of companies report about 75% of electricity consumption. Especially 10% of companies...

David Roberts

That's not even the 80/20 rule.

Killian Daly

That's even stronger than the 80/20, the 93/7. We're in that ballpark. Are we going to... I think there's a bigger risk of the rules for everyone being overly relaxed and us missing out on that accuracy overall rather than being pragmatic and saying, "Listen, SMEs, you can move to hourly later or maybe continue doing annual for the next 10, 15 years."

I think that's not unreasonable because it is super important that the major consumers do report more accurately.

David Roberts

Another feasibility thing is that corporates that signed long-term contracts under the old rules will get grandfathered in. Is that objectionable or particularly significant, do you think?

Wilson Ricks

I feel mixed about this. This is one of the least formed areas of the proposal. It is going to be a main focus of some of the work that we do in the next year — how exactly this works, how the transition between the current and updated standards works. The current proposal is to allow some mechanism for companies that sign contracts under the current rules to keep counting those under the current rules for some period of time. The reasoning behind that is that you do not want to disincentivize companies from signing contracts because they are afraid that the rules might change at some point in the future.

This is a trust-building mechanism. It's not great from an accuracy of the standards perspective. One thing that is being included in the consultation is the question of whether a company should have to disclose whether they use that legacy provision. That would be very healthy.

David Roberts

Interesting. What does it say now?

Wilson Ricks

You can compare apples to apples and figure out if you're comparing apples to apples where one company happened to be making very heavy use of this — they're essentially just using the old system to make some claim versus another company that isn't. This is a tricky area given that the proposed changes are fairly comprehensive and aren't necessarily fully backwards compatible in terms of the reporting.

David Roberts

I wonder what else you would do. You don't want to dissolve all existing contracts, but very few existing contracts are going to conform to the new rule. I don't know how else you'd get around this.

Wilson Ricks

There are some things you can do. You can add storage if you are in the same region.

David Roberts

All problems, Wilson, that solves literally all grid problems.

Wilson Ricks

If you're in Texas and you bought a bunch of wind and solar PPAs, and you're producing more than you need at some points, you can add storage and that can help you out. The Secretariat and the working group are very cognizant of making sure that trust in these structures and markets persists and that people can continue signing contracts for clean power with confidence while at the same time making sure that we do move to this new system where going forward these purchasing practices are much more healthily directed.

Killian Daly

For long-term power purchase agreements where there is a long-term commitment to power, probably on balance globally, most of those will comply because many are matched to load. Many outside of the US especially are physically delivered already. I don't think it is so much of an issue there. If a company has made a multi-hundred-million-dollar commitment over 15 years to buy power, I can see why there is reasoning for some form of grandfathering. We do need to be careful that the terms are not too vague so that alongside those contracts you have these unbundled RECs costing 40 cents a megawatt hour.

The whole Norwegian hydro fleet gets grandfathered through to the next era — that would be a bit of a mess. We need some rules around what the long-term contracts are that we should allow through this flexibility and what ones we need to be careful about ensuring are not getting through

because they could really bottom out the whole impact of what we're trying to do here.

David Roberts

There have been some bad experiences with grandfathering in US environmental legislation. The draft waves its hands at phased implementation, but that could mean many different things and potentially a lot just quantity-wise, whether you start now or five years from now. That involves a lot of greenhouse gases. Where is that discussion?

Wilson Ricks

This discussion is the main focus of the next phase of work for the TWG. It is important exactly how this phase happens. We can say for certain that because the final rules are going to be put out in 2027, it probably won't be an immediate hard cut into new hourly reporting. That is going to take time — people need to have fair warning once the decision is finalized. The question of exactly how the phase-in works and when updated reporting is required, how existing target setting is considered going forward because companies do have their 100% clean by 2030 targets.

Making sure that all happens smoothly is going to be the main work of the next phase, once we have a sense for what the updated rules are going to be.

David Roberts

Assuming that these rules in this draft go into force, I want to think for a minute about how this will play out on the ground. You have these data centers — a lot of this is about data centers. You have these huge data centers, getting up to gigawatt-type data centers. If I'm a gigawatt data center and I'm owned by a company that's going "100% clean" by 2030 and these new rules are in effect — they probably won't be by 2030, but let's say the target's 2035 — as a data center, if I want to claim to be run on 100% clean energy, I'm going to have to find a gigawatt of steady supply at night somehow. Furthermore, if another data center and another data center also move into Virginia with me, all of a sudden we're looking for 3 gigawatts of supply at night. There just aren't that many. At least at the beginning of this, it's not just going to be a challenge to get to 100 — in a lot of places, I just don't see how these companies are going to hit their targets.

How are you going to find 3 gigawatts of nighttime supply before 2030 or before 2035? Do you think that this is going to put those targets out of reach?

Killian Daly

It is hard to be 100% clean powered, just to be blunt. That is hard in most places. Anything we do to paper over that and say, "I'm going to build a gas turbine and pretend I'm 100% clean powered," is bringing us backwards. In terms of the phase-in, probably it'll be 2030 or a bit after that. I don't want it to get too far into the 2030s because that's concerning.

Depending on the region that data center or factory is being built, we need to have a discussion about what's a credible target for how clean power for that data center is. It does create incentives to look at more round-the-clock technologies — these clean, firm technologies. In very sunny places, you could get further than we think by 2035 with solar

and batteries. There's a project under construction at the moment in Abu Dhabi that's 97% baseload solar.

That's under construction right now. Given how fast battery prices are dropping, we may get closer in certain places than one would think to real, clean power or close to 100% clean power. The message is, being 100% is hard sometimes. We have to acknowledge that.

David Roberts

Maybe to put it more bluntly, a bunch of these companies made these goals with the current rules in mind. That's the level of difficulty that they were committing to. Now the targets are in place, and if the rules change, all of a sudden their targets are committing them to a much greater level of effort, a much greater level of spending and effort. I wonder about the political economy of that. I wonder how they are thinking about that.

Meta, Amazon, Microsoft — they must know that if these changes go into effect, their 100% targets are a lot more ambitious than they used to be. Do they know that?

Wilson Ricks

They know that. It does become a public communications challenge where you have to say, "these targets that we are currently shooting for were made under the existing rule set." And we may end up in a situation where a lot of these companies have 2030 targets, we get to 2030, everyone's hit their 2030 targets because it's super easy to hit that target.

David Roberts

Then the rules change and they unhit them.

Wilson Ricks

We say, "everyone's done that, great job." Now we move on to the actual work of achieving physical, decarbonized supply. Everyone resets at that point under the new rules.

David Roberts

I'm trying to imagine being Meta's PR person explaining to Meta customers, "No, we were 100% powered by renewable energy in 2030, but now it's 2031, and all of a sudden we're 60% powered by renewable energy, still heading to 100. But we didn't back down our ambitions. The rules changed under us." That's a tricky communications challenge.

Wilson Ricks

It'll be a little awkward. I'm sure their communications people will come up with a way to communicate that favorably, especially if they're doing well relative to their peers.

We cannot let the awkwardness of saying, "Oops, we're not 100% anymore, get in the way of creating a system that accurately represents where people are."

David Roberts

Final thing I want to discuss. We touched on it earlier. I think a lot of people, especially if they're not familiar with all of this, the rules and the technical aspects, just looking at these claims on the tin, assume that these companies are making greenhouse gas emissions claims. People assume that the amount that you say you run on clean energy corresponds to your emissions impact. As we discussed earlier, emissions impact — a system that measures your impact on the system — and a system that measures your inventory — are separate systems.

What we're talking about here is an inventory system. The idea now in this discussion draft is, because a lot of people also have the very strong intuition that we ought to measure emissions impact and not just be measuring who gets their electrons where — what is the logic of hiving this off into a separate measurement and what is that going to look like? Are there going to be two sets of claims now? If I'm Google, am I on one hand run on x amount of clean energy, on another hand have offset all my emissions? Are we just going to report those separately? What's the logic here behind splitting consequential accounting off into its own thing?

Wilson Ricks

The logic here is to avoid conflating the two within the same number, which is even less informative than splitting them off. Currently, it's not true consequential accounting, but we're saying that I'm consuming power in one place and that's effectively being offset by RECs I'm buying from somewhere else.

David Roberts

People hear it as an emissions claim.

Wilson Ricks

That's something that needs to be better communicated. The GHGP can help to emphasize what claims you can make based on these different numbers. The Scope 2 system is an inventory system. Some people will quibble with this because of concerns over what constitutes a legitimate claim to use, but Scope 2 by definition is saying, here are the emissions embodied in the power I'm using. That is a relevant factor because it measures how exposed you are to things — climate policy.

One of our hopes with the updated Scope 2 proposal is that the actions you take to reduce the emissions embodied in your electricity supply are also actions that have impact in driving new clean power onto the grid in the

times and places where it's needed most. But it's not explicitly a measure of impact. That's where this idea of consequential accounting comes in, which is trying to say, "I did X, Y, and Z and therefore carbon emissions fell by this amount." This is a fundamentally different thing from inventories, where you're adding up the emissions that you get to claim.

Consequential accounting is asking, "In this counterfactual world where I didn't take this action, how would emissions have been different?" This is also a fundamental question behind carbon offsets. The question of additionality is a main —

David Roberts

Let me ask you this: consequential accounting — you could see consequential accounting applied specifically to electricity, specifically to Scope 2, but there are a million actions a corporation can take that affect emissions that have nothing to do with electricity. Is the electricity part of consequential accounting just going to be subsumed in a larger consequential accounting scheme that addresses all their actions?

Wilson Ricks

That's an open question and there's an Actions and Market Instruments working group that is looking into that. The reason there is an electricity-specific tack on the consequential accounting side is that electricity is weird compared to other commodities, compared to other actions — just the way electricity systems work. It requires sector-specific expertise to design a system that's robust. We are not at that system yet. Consequential accounting in the electricity sector is promising and I'm glad we're pursuing it because companies should have an outlet for saying, "I can't zero out my inventory, but I've taken these other actions that are impactful."

The existing proposal — it is very fraught because, for the exact same reason that carbon markets have lost credibility, proposals for consequential accounting of the electricity sector are vulnerable to allowing and even incentivizing companies to make claims that vastly overstate the carbon impact of their actions and are essentially unverifiable.

David Roberts

This was my second question: do we know how to do this? Consequential accounting in other areas, in the areas of carbon offsets, is notoriously gamable, notoriously fraught. No one really feels they have that nailed down. Do we have a better handle on it in the electricity sector than we do at large? Because consequential accounting at large does not look like it is doing particularly well.

Wilson Ricks

The answer is, right now, no. Pretty emphatically no. There's a decent chance we can get to a system that is sufficiently robust and sufficiently widely acknowledged as robust and conservative enough to enable claims that we consider to be good enough, even though we can't fundamentally verify them. As it stands, there's significant academic disagreement over how you estimate the carbon impact of electricity sector actions. It's not at the extent of, "oh, we have plus or minus 20% uncertainty." This is one method says your impact is 20, 30, 40 times greater than the other one.

If we're dealing with the potential pitfalls here, the main one is that you get credited with actions that are not additional. You're saying that your actions caused more clean power to be on the grid somewhere in the world than otherwise would have. That's not true either because the project didn't need your financing to be competitive or because it competed with another project of the same type. If we don't have ways to rigorously verify that, then for the exact same reason that companies

currently get their RECs from the cheapest projects possible, which are also the ones that are least likely to need the money, you get the same phenomenon here where it's a race to the bottom — the cheapest offset becomes the projects that are least likely to actually be legitimate offsets, which is the main problem with the voluntary carbon market.

It's acknowledged as a problem in electricity sector offsets, which are a thing. The Integrity Council for the Voluntary Carbon Market recently decided that they weren't going to give the highest certification to electricity sector offsets specifically because renewable technologies are so broadly competitive around the world that it's really hard to verify whether they needed the funding and whether anything you do with them is additional. That's the hard work of this. I don't think it's impossible to do, but the pitfalls are significant if we get it wrong.

David Roberts

I lean impossible or at least, I wouldn't want large sums of money turning on precise answers to that question. If this is all just about what is your level of bragging rights on some badge you put on your website, that's fine. But some of these problems are insoluble.

Killian Daly

One thing that is important to keep in mind: this protocol is in European legislation. European companies are obliged to use the protocol or a standard similar to it. This is in law in Europe. We're also developing a carbon border mechanism that is going to be based as well on the fundamental principles of what are the emissions of electricity. Verifiability becomes — you can't get around that. You have to base it on things like time of production, location of production. They are verifiable things that you can link to consumption.

That's incredibly important. Accounting needs receipts. That's just a basic fact. It's a useful exercise and it's important that we have these metrics. But are we going to use it as the nuts and bolts of regulations and disclosure? We need to get a bit further down the path before we could say that's the way forward. With the methodology that's being proposed under Scope 2 by Greenhouse Gas Protocol, that is something that is verifiable and it's super important. That is something that is also shown to deliver in modeling exercises, is shown to be able to deliver long-term beneficial, consequential outcomes for emissions, incentives for new technologies.

It's not just about bean counting.

David Roberts

This is another problem with the bean counting around consequential accounting: on what time horizon? What changes have your actions inspired on what time horizon — this year? There are ripple effects 10 years down the line. If I invested in geothermal today, maybe I didn't produce X amount of clean power by next year, but I boosted the market a little bit. I made the next investment in geothermal easier. How do you measure all of that?

Killian Daly

You don't measure it, you estimate. That's important. You can't measure something that didn't happen. You can't measure that. But you can come up with hopefully pretty reasonable ways of estimating that. I always have an issue with "measure" in this context because measure is like an electricity meter where you can measure the output. We are in different worlds when you talk about 10-year impact.

David Roberts

You both agree, though, that the inventory of Scope 2 reporting and consequential accounting should be kept distinct and clearly separate.

Wilson Ricks

Yes.

David Roberts

How do we envision that information being conveyed to shareholders and customers? Are we literally just talking about two separate badges, two separate levels, two separate certifications? I don't know if you guys have thought through all the implications of this, but how does that get reported? What does a company do with those two numbers?

Wilson Ricks

You have to report them separately, and there needs to be guidance on stating that explicitly because the entire point of separating them is that they are fundamentally different measures. One of them is much less certain and is trying to estimate explicit impact. The other one is not trying to estimate, is measuring the emissions embedded in the power.

David Roberts

The problem is the former one is the one that everybody really in their heart of hearts cares about. The fuzzy one is the one that in the end really matters the most.

Wilson Ricks

That's the real challenge. The thing that we care about the most is also the thing that is hardest to measure and is most likely to be wrong. The reality is that the work of decarbonizing your physical supply is ultimately something that everyone is going to have to do if we are serious about decarbonizing. Progress toward that is a really important thing to report. It's something that we can measure with very good accuracy.

Killian Daly

This is a very important point. Ultimately, companies will always spend orders of magnitude more time and effort and money and capital on decarbonizing or working on physical power that they need to run their businesses. When you go to investment committee and ask for a 10-year contract for physical power, that is a different conversation than going in and saying we're going to commit to this power that we can't actually use. The best way to have the best consequential long-term outcome of these systems is to have companies focus on using clean power in their operations that will have these knock-on trigger effects.

They'll spend a lot more money on that and that's maybe the best we can do. Use this rigorous inventory system that will show who's using the most clean power and likely in the long run will also have the best consequential outcome. It's important to link these two things together and realize that probably in the long run, we can have the best consequential impact by having companies focus on using clean power.

David Roberts

Investing in these nascent or newer or less developed technologies, for reasons that have been discussed a million times on this pod, ripples out — obviously affects the trajectory of developing countries, etc., in ways that are very difficult to quantify.

Killian Daly

Even something not as fancy, but if you have an hourly target and you do a small amount of demand response, but you're a really large gigawatt-scale data center, that can have huge cost impacts right now on how grids are built out, on how costs are socialized to ratepayers. In today's accounting or alternative approaches, you totally ignore that problem because you can just get a REC from another time. With this more hourly...

David Roberts

Just accelerating the development of the demand response market.

Killian Daly

For me it is enormous. It is something that we need. It is not as cool as a new technology. It is maybe a bit simple and boring to talk about, but I think it is incredibly important and it can have major cost and emissions benefits in the short run.

David Roberts

I think we did it, guys. I think we figured out RECs. It only took two pods. Thank you guys so much for coming on, walking through all this. It's enormously clarifying and I appreciate it.

Killian Daly

Thanks for having us on.

David Roberts

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