

[Speaker: Announcer]

COVER SLIDE

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[Speaker: Courtney Kendall]

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Good afternoon. My name is Courtney Kendall from the National Renewable Energy Laboratory, and I'd like to welcome you to today's webinar. We're excited to have you with us today. Before we get started, I have a few items that I would like to cover. First, I want to mention that everyone today is on listen-only mode. You have two options for how you can hear today's webinar.

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This webinar will be recorded, and we have posted the link up on the screen here of where it will be posted. I'm gonna go ahead and introduce Jenny Heeter with the National Renewable Energy Laboratory. Jenny?

[Speaker: Jenny Heeter]

SLIDE 3

Great, thanks Courtney and thanks everybody for joining us today. It looks like we have a good representation of ICT companies, about 20 percent of folks on the line as well as a mix of consultants, government, NGO folks, and some other folks as well. So I wanted to just provide some background and first introduce myself. I'm with the National Renewable Energy Lab. I've been here for about six years and have focused my work on the Voluntary Green Power Market as well as other state and local renewable policies in the U.S. primarily.

So I'm going to provide an overview of a recent report that we here at NREL have released, and then turn it over to Ryan for the

second half of the presentation today. So just for some context, you've probably heard a lot of announcements lately about ICT investing in renewables. There are just four announcements that we've tracked in the last two months alone. Google is planning to build a green data center in Alabama. Cisco is doing on-site work at its headquarters in San Jose. Facebook announced that it's planning to power its Texas data center with wind, and Amazon web services recently announced intention to purchase 208 megawatts of wind in North Carolina.

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So a lot of these news stories are popping up, and that was part of the impetus for a recent report that we published here at NREL to examine what is the status of renewable purchasing by ICT companies? So we considered a number of factors in this project. We know that the ICT sector is a substantial consumer of electricity. In particular, there were very aggressive growth rates in the 2000s, although those have slowed down. We still know that there is significant siting of new data centers around the country.

We also know that some of these forecasts for electricity growth rates within the sector become quickly dated, and so we don't have perfect information about where this sector is headed, but we do know that there are different options for ICT companies to reduce the impact of their electricity use. There has been a great focus on increasing efficiency within the sector, whether that's through increasing efficiency of particular devices or increasing service efficiency.

So there's been a lot of work in that space, but not a lot of work in how ICT companies are sourcing their electricity from renewables. So that was our framework that we started with as we scoped out this work.

SLIDE 5

So the report I mentioned is listed at the bottom here, but our general framework was to characterize the state of renewable purchasing in the ICT sector. We wanted to first perform an initial assessment of electricity consumption, and then within that, renewable consumption. We also wanted to understand what goals, whether that's a carbon reduction goal or renewable procurement target, do these companies have? How aggressive are those goals? Are those goals an aspirational goal or actually a goal that people within the company are aggressively working towards?

Finally, or I guess the third piece was that we wanted to develop outlooks for future growth with renewable procurement by this

sector. Then finally, we thought it was important to include some case study material because there is a lot of procurement that is being done by some of these leading companies, but not a lot of publicly available information about the status of their procurement or how those deals are structured. So we did also include case studies, which I'll highlight briefly at the end of my presentation.

SLIDE 6

So data on renewable purchasing and electricity use in the ICT sector is somewhat limited. We relied on two data sources primarily. The first was EPA's Green Power Partnership, and we do want to thank them for helping us understand the data and for pulling data for us over time and within this particular sector. They have information on electricity use and renewables that's reported directly to them by companies who are voluntarily participating in that program. So not every ICT company, clearly, but a large subset of the ICT companies that do buy renewables.

They do have data that goes back to 2007 within the ICT sector as well as within other sectors, and we found within that data set alone there was substantial growth of renewable procurement by the ICT sector. That data set also is U.S. only. So a little bit of limitation there in that it's not comprehensive and that it's voluntarily reported, but it was a great data source for us to start with.

Then we did use data from PVP. That's a global audience, also voluntarily reported by companies. There was a larger representation of ICT companies and some companies that were not partners with the EPA's Green Power Partnership. We did have difficulty within that data set always determining whether the electricity reported was for worldwide operations or just U.S. operations. Because our focus was on U.S. only, there were some challenges there, but these were the two sources that we used to build our report.

SLIDE 7

On this slide, you'll see a list of sort of the top companies by total renewable energy use that report to the previous two programs I mentioned. We haven't seen significant growth over time in the number of companies voluntarily reporting their renewable energy use. We see that as a trend that will likely continue. There is increased interest in corporate transparency and increased interest in improving reporting these reporting frameworks.

So what did we find from this data set? We looked at 113 companies. They were using 59 million megawatt hours of

electricity in 2014. Out of that, 8.3 million megawatt hours were renewable electricity use, which is about 14 percent. So 14 percent is definitely great, but I'll talk about where this sector might be headed later in the presentation.

Finally, just what we're missing with this data set. We definitely, obviously, don't have people who are not reporting their renewable energy use. In particular, we know there are co-location providers that are buying renewables, but are not participating in these programs. There are some reporters also who have worldwide published information, for example Facebook, but don't have a U.S.-specific number. So in the report you'll see some case study information on Facebook, but they're not in this list here because we don't have U.S.-specific information about them.

Then finally I'll just mention we are missing some of the very most recent announcements and we don't include announcements of projects that are not yet operational. So the data we're looking at is for renewable energy use and megawatt hours for 2014. So if a company signed a PPA in 2015, but that facility won't come online until 2016, then that would not be reflected here.

SLIDE 8

Another key component we wanted to look at was how does the ICT sector compare to other major sectors procuring renewable energy? This is data from EPA's Green Power Partnership. You'll see on the top left there that what they classify as their tech and telecom sector is the leading purchaser in terms of megawatt hours in their partnership followed by retail, things like local government and education.

So there definitely are a number of sectors that are purchasing heavily, but tech and telecom really dominates here. You'll see on the bottom right that tech and telecom has been increasing over time and has increased pretty dramatically since 2007.

Another focus of the paper and that we've heard a lot of talk about recently is how companies are buying renewables. So companies can have a variety of options to buy renewables. They can host an on-site facility. They can do a long-term power purchase agreement. They can work with their local utility and participate in a Green Power option, or if they're in a competitive market, they can switch to a supplier that has a renewable energy option.

We do know that within the Green Power partnership was done through the use of unbundled RECs, which can be sold separately from electricity purchases. So about 77 percent of ICT purchases

were through unbundled RECs. We do know that there is an increasing interest in options like a long-term power purchase agreement. Of course, if a company wanted to make a renewable claim from that PPA, it would still need to retain the RECs from that transaction.

But I wanted to highlight also the Corporate Renewable Energy Buyers' Principles Group, which is organized, which is organized by the World Wildlife Fund and World Resources Institute. They are working with a collaboration of folks to advance options for companies to buy renewable energy. And they're focused on mechanisms that might be working through a utility in a regulated state or advancing options like we've seen in some states that are starting to offer a specific tariff for a large industrial customer that might want a site from a renewable facility that's located in that utility service territory.

SLIDE 10

So what do we know about company commitments to renewable energy and their carbon reduction targets? We have seen a number of companies come out with 100 percent goals. Some companies have goals that are more in the 25 to 50 percent range, but have a concrete target year that is more of a near-term target. Some companies also have in addition to their renewable target, a carbon reduction goal. Typically, those reduction goals do include some type of renewable procurement in order to be met.

So this is just a snapshot here. This is certainly not comprehensive, but gives you a sense of who is doing what and how their internal processes are focused on procuring renewables. I will, I guess, also just mention that some companies will have a long-term goal of 100 percent, for example, but they may also have an intermediate or near-term goal that they're working towards.

SLIDE 11

So to look at the future of procurement by ICT companies, we ran a few scenarios for just these 113 companies. We found that by 2020, these companies could buy 18.5 million to 37 million megawatt hours of renewables based on our low-case and high-case scenarios. So in order to do that, we looked at what growth rates might be in underlying electricity consumption and took a high-case and a low-case for that.

Then we also varied the percent of purchasing, percent of renewables purchasing by company. So in our high case, for example, we thought that we'd see 4 percent annual growth in electricity consumption, and then we had different scenarios for companies that are currently purchasing renewables and those that

are not currently purchasing renewables. For the companies that are currently purchasing renewables, we took the greater of 50 percent of the company's target. So if they had 100 percent target, we used that; or their current procurement in 2014.

So it was all done on a company-by-company basis, given our sample of 113 companies and clearly, that is a limitation. We're not looking at the entire ICT sector, but we wanted to provide a framework for people to understand if companies all went to 50 percent or 25 percent, what would that look like or what could that look like under a range of scenarios. So in the bottom right you'll see a snapshot of just how that growth could look in 2020.

SLIDE 12

So finally, I just wanted to provide some information on the case studies that were done for the report. Thanks to Bethany Gorham, who was at NREL as a graduate student intern, for providing all of this information. Just, I wanted to let folks know that there's more detail in the report on these case studies if you're interested.

SLIDE 13

So Apple, they are at about 680,000 megawatt hours of renewables. They have a goal of 100 percent of their operations to be renewable-powered, and they're at 92 percent. They have also focused on getting 100 percent of their data centers to be renewable-powered. They look at on-site generation as well as off-site generation in their procurement.

SLIDE 14

Autodesk company. They were at a not quite 9,000 megawatt hours of renewable energy in 2014, but that's 40 percent of their 100 percent goal. So that's on a worldwide basis. Then interestingly, I wanted to highlight that they have worked on developing a tool basically, an open source greenhouse gas target setting methodology, which you'll see a snapshot of below.

But it's really a tool that is designed to help other companies be able to play in this space. So you'll see from their operations below that their overall greenhouse gas emissions are reducing and they break out that out by sector, which is pretty cool.

SLIDE 15

Cisco is at about 425,000 megawatt hours. They are ahead of their goal, which is to power at least 25 percent of operations with renewables. They are also heavily focused on Scope 3 emissions. So for those not familiar with Scope 3 in greenhouse gas accounting, Scope 3 is stuff that you basically have influence over, but it's not under your direct control. They are also recognized by CDP as the number one ICT Climate Leader in voluntary reporting and number five within the Global 500.

SLIDE 16 So Dell, just briefly, smaller procurement of renewables, but they were at about 45 percent of total electricity from renewables, which is 90 percent of the way to their 2020 goal. They're also engaging with their supply chain partners to measure the energy use of their products. So you will see a number of companies that are focused on the efficiency of their product or focused on the supply chain for their methodology for reducing overall emissions within the sector.

SLIDE 17 So eBay has had a number of recent announcements, but in 2013, they were at about 10,000 megawatt hours of renewable energy. They were really aggressive in increasing that percentage of renewable energy. They have worked with SolarCity on a large installation in California. Then the focus of our report is not on fuel cells or efficiency necessarily, but it is interesting to note that their newest data center in Utah is the first commercial data center to be powered with 100 percent on-site fuel cells.

SLIDE 18 Facebook, I mentioned earlier they have 100 percent renewable commitment, but also have interim targets. They were expected to reach their 2015 goal of 25 percent and recently announced a higher goal for a higher intermediate goal. They also aggressively work on increasing the efficiency of their data center. Then as I mentioned at the beginning of this presentation, they announced plans for their newest data center in Texas to run off of 200 megawatts of wind energy.

SLIDE 19 Google, you may have heard a lot about. They are at 30 percent renewable energy with a 100 percent goal. They have a pretty unique structure where they use an internal subsidiary that focuses on working on Power Purchase Agreements, on-site projects, as well as financing of renewable energy.

SLIDE 20 Intel has been one of the largest purchasers or the largest purchaser in the EPA's Green Power Partnership. They do rely on purchasing unbundled Renewable Energy Certificates for their renewables commitment, but they were procuring over 3 million megawatt hours of renewables. So definitely a large contributor, and you'll see that they're ranked number one for the last six years at least on the Green Power Partnership.

SLIDE 21 Microsoft has done a lot of innovative things. They achieved 62 percent renewable energy, which is pretty far along the way to their 100 percent goal. They also have an interesting model for financing their investments. They basically have an internal

carbon tax that funds their renewable procurements as well as a number of other things.

SLIDE 22

So, finally, I just wanted to summarize the report and what we've covered here. So we do know that the ICT sector is a significant user of electricity. It's estimated to be about 2 percent of electricity consumption in the U.S. We know that the ICT sector has been a leading user of renewables in recent years. Looking forward, the impact of electricity use will depend on how efficient ICT operations are as well as how much renewables they use.

While we don't have a comprehensive estimate, we do know that data from 113 companies show purchasing of 8.3 million megawatt hours, which is about 14 percent. That could increase to between 18.5 and 37 million megawatt hours by 2020. So we are limited on the amount of data that is available, and we do note that there is a need for increasing reporting of this type of information on a public basis. That, obviously, will help our tracking of this going forward.

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So with that, I will just conclude. My information is here, and will be in the slide deck that is posted and publicly available, so please let me know if you have questions that we don't get to during our time here. But with that, I will turn it over to Ryan.

[Speaker: Ryan Schuchard]

SLIDE 24

Okay, thanks very much, Courtney and Jenny. Let me just make sure I kind of move the slides here. Okay, great. So I saw a good amount of yeses on both those questions, which is good, and I saw quite a few I don't knows, which is similar to what I had expected. So maybe we'll turn some of those don't knows into more positive responses as we go forward here.

So thanks very much NREL for having me and also greatly appreciate others taking the time here to join. I'm also really happy to see this research that NREL has done. BSR thinks it's actually quite important, as we'll shortly talk about. So I'm gonna discuss some trends and opportunities for renewables and ICT.

SLIDE 25

My name is Ryan Schuchard. I'm associate director for climate change at BSR. For those who don't know us, we're a nonprofit network of about 250 of the world's largest companies, who we work with to create a more just and sustainable world. I am dialing in from our headquarters in San Francisco, but we work all around the world.

Ryan Skipped SLIDE 26

SLIDE 27 We do our work through a combination of research, consulting, organizing services, and cross sector collaboration with our members.

SLIDE 28 One of the initiatives that we lead is called the Future of Internet Power, which I'll shortly talk about. I'll also say this initiative is part of our climate change program, which is one of two – you could think of them as innovation centers that are driving the organization where with climate change, we're focusing on translating climate signs for business, building stabilizations strategies for two degree world on climate change, and creating more cross sector collaborations.

SLIDE 29 So with that, I'll get started on the material. IPCC says that we need to rapidly expand renewables in order to achieve a two degree future or not beyond a two degree future. As part of this, the IPCC tells us that one of the few industries that we really to just scale up and almost unequivocally scale up is renewable power. You can see a graphic here that shows investment required to make this happen. This is mostly from Bloomberg New Energy Finance.

What we see is we need to get to about \$500 billion to \$600 billion per year of investment. Currently, we're getting not much more than about half of that. What that tells us in part is that corporate procurement for renewables is a very important opportunity.

So this webinar and BSR, in particular, have been really focused on ICT and there a few reasons for this. The first is that the sector is simply expanding energy use. As Jenny mentioned, the data centers alone are about 2 percent of electricity in the U.S., and you can associate around about 10 percent of electricity with ICT more generally.

Secondly, ICT companies are really doing a lot in the area of new build, which creates leverage for driving deals. So they're expanding operations throughout basically most if not all U.S. states right now and internationally. As they do so, they create a lot of the groundwork for future energy investments. They're also in a position to make the best terms for contract negotiation to drive renewables as they do so and to tell governors and economic development commissioners that they're shopping for states to move to, and that they really care about renewables.

The final reason we care about ICT is because the public and policy makers are paying attention to them. This is an industry that is a relatively big energy user, which means it has real skin in the game and also everybody just knows the brands.

SLIDE 30

So what is the industry doing? There's two quick stories I'd like to share and Jenny had hinted at both of them. The first is that ICT companies are doing a lot of deals, deals for renewables. Here's an illustrative list of deals over the last couple of years, a few of which you saw some reference to previously. This is an incomplete list, but it's meant to show kind of a diversity of what we're seeing for those who this is newer to.

I point out a couple of things. Number one, many of these are really quite large in scale. These are utilities scale initiatives. They're not just about doing distributed generation on rooftops. This is about building new centralized power when the utilities are not doing it on their own. Secondly, there are also examples and important examples of smaller ones. I included the eBay reference on the left there to show just that this is a – it has been a few years since this I've started. One of many type of solar rooftop deals.

As an aside, I was interested to see that there's an article today in *GreenBiz* on SolarCity and how it's now going to take on the bottom 99 percent of businesses on the SMEs to really be scaling up distributed generation. So this is really a story of both distributed as well as centralized.

Also, this is meant to be a demonstration of ICT examples, but I included Kaiser Permanente in here in part because it illustrates that many companies are actually in the ICT business, even if you don't think about it. Kaiser runs a number of data centers as do many other companies.

Final thing I'd say on this is that the financial analysis on these gets a lot of scrutiny. If you look just on the Apple deal, there's a ton out there from *Motley Fool* to *Forbes* talking about is this actually good for investors? The bottom line is these deals look good from a financial standpoint.

SLIDE 31

The second story is that the on doing actual deals, the companies are thinking big and making commitments. We have a list here of about 15 – well, exactly 15 ICT companies that have committed to 100 renewables. I was very careful to write the words July 2015 up there because we counted 10 just a couple of months ago. So this number is increasing rapidly, and I would not be surprised if

somebody interjects to say we've missed something that just came on.

So this is new, and this is exciting. Another last count, this group is larger than the group of all other sectors combined that are making commitments if you think of the world's largest companies.

To be very clear about these commitments, they're aspirational in general. These are all – they have different terms, but generally speaking, these are well-intended aspirations from companies, and it's not as if they're banked. So, for example, I heard recently from a regulator in California there's some misconception. When a company makes a commitment that that is somehow completely been figured out and is done for. I think in virtually all cases here, there's a lot of important work that has to be done to actually make this happen in these companies and support them. So this is significant.

SLIDE 32

Okay, so we're talking about the ICT sector, and just to look under the surface a little bit here to where we can find opportunity. I want to say just a few things about the data center sector itself. So, firstly, those companies or many companies that are using technology as a core part of the business or main part of the business are looking to data centers as they seek to become more connected and process information. Data centers are really becoming ubiquitous.

The second thing is they're big energy users. The biggest data centers can use 100 times the energy of a typical office building, and they can be 80 to 100 megawatts or more. Now, these are the biggest. There's a long tail of smaller ones, of course. But nevertheless, these are major power centers. They're also, as a group, the fastest growing segment of the ICT sector's carbon footprint.

Then thirdly, there is a segment of data centers that you could think of as professional industrial data centers that are outsourced by the cloud and retail companies that you might more readily think of. These are called co-location providers because they basically have a number of tenants who use their services. They're called co-los for short. So there's a real value chain here of data centers that creates some interesting opportunities and questions for us.

SLIDE 33

Here's a list of those questions. So if you think about the data centers with co-lo providers and the prospect of developing renewables, there would seem to be some important opportunities. Such as, can we find ways to share group purchasing among co-lo tenants who don't know about one another being in the same facility because of privacy issues?

Can we find ways for data center peers who just happen to be in the same places like Silicon Valley or Virginia to co-invest? Are there offerings that co-los can provide that would look kind of like green tariffs? So a product would have a premium for their customers, but an attractive package for renewables, for additional renewables. Going together to talk to utilities in similar areas could be an opportunity.

Going to policy-makers, as I mentioned before, and telling them the internet companies are shopping for states and cities that promote renewables. And/or finally talking to the wider corporate set of customers who are using data centers to help them understand how retailers, healthcare, energy companies can be a part of this internet value chain collaboration.

So these are the overall questions that we have when we look at the value chain of data centers and the internet, think about renewables procurements.

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This takes us to the Future of Internet Power. So, I'll just make a few comments about what BSR is doing in the Future of Internet Power, and then that will take us to questions. The Future of Internet Power started in 2012 with several ICT company leaders who said at the time that they needed to be doing more with energy efficiency. They really wanted to tackle renewable energy. We have founding members, and HP and eBay, in particular, play leadership roles in really getting it started.

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Today we have ten companies and recently have had four join this year. Etsy, LinkedIn, Autodesk, and most recently Akamai have joined. The Future of Internet Power is intended to bring together the most influential internet companies to accelerate progress for an internet powered by 100 percent renewables. We're doing this in three main ways. First, is collaboration, so we're looking at that value chain and trying to find ways to help the data center operators, co-lo providers and energy providers to work together on co-investments.

Secondly, to build capability for the internal siting and procurement officers in the companies that are running data center operations that are expanding in the U.S. and internationally. Then, thirdly, calling to act. So asking those state policy makers to help the data center sector to do more through this collaboration would basically make renewables deployment easier.

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If you looked at the number list, you'd see there's really diverse situations at data centers. Some cases, there's a small number. The company owns a very small number of very large centers. In some cases, they completely outsource all of their data centers in co-los, and in many cases, it's a mix of both. But if you look across what they all have in common is they want to move the industry faster, and they're all in various states of committing to maximum renewables deployment for their company.

So what that brings us to are two common aims: one is we are seeking in the near-term, so the next year, to increase the number of companies in the sector that have 100 percent renewables goals from 10 to 20. As you've seen, there have been a few that have jumped on to this really in the last 6 weeks-ish.

So that's the first one. That's one proxy of progress that we think is quite important. Then the other one is about making the ambitious scenario that Jenny presented happen. We've simplified this use amount numbers, but what we're thinking about this as is by 2020 that 100 of the biggest ICT companies will get more than half of their energy from renewables. The high end of the spectrum that Jenny presented was, I believe, 48 percent. Her number of companies was 113. So in some ways, this is just slightly more ambitious, but very similar to that scenario. So this is what we're aiming for.

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This year we are focused on forming activities. The first is developing a framework with a call to action for the co-lo industry. The second is mapping or analysis of the specific opportunities, literally looking at which companies are in which co-lo sites and then which co-los have customers that are beyond that first group looking for co-investment opportunities. The third is a toolkit for internal use of siting and co-lo negotiation.

As some here will attest, it's kind of a common story that when renewables coming up in a siting deal or a co-lo procurement deal, very quickly if renewables are mentioned, we have to start talking about tax and accounting. Those are things that can make people run screaming from the building. So, nevertheless, there's a

relatively straightforward framework of things that matter, things to do. We'll be building on that.

Then the fourth is education and advocacy. On this point, I would mention that there's several others working in this space that we are partnering with to help do this and do this effectively. I'll just list a few. RMI with the Business Renewables Center is helping companies in all sectors to build, to better do transactions, giving them toolkits for renewables deployment on a deal basis.

The Buyer's Principles by WWF and WRI are building national dialogue about the need for corporate renewables and talking, in particular, to utilities and policy makers about this. Then also by WRI, the Utility Leadership Forum has more focused dialogue with utilities. Then finally, RE100 which is part of the We Mean Business Coalition that BSR is a co-founder of is giving companies a platform to make 100 percent renewables commitments.

All four of these initiatives are cross-sector, so they're not ICT-focused, but BSR is working very closely with them. So with that, I'd be happy to follow up with anybody who thinks they should be involved more with BSR or Future of Internet Power or also to answer any questions about these initiatives. I think that some of the representatives from the initiatives are here. Maybe they want to either offer or ask something. With that, I think I'll stop. Again, I would finally say that I'm very happy to take any suggestions or calls to action that people might have as well as far as what Future of Internet Power should be focused on.

[Speaker: Courtney Kendall]

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Thank you so much, Ryan. We really appreciate it. If anybody has any more questions, please feel free at this time to go ahead and type it in.

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We will be taking questions at this time. We'll get to as many questions as time allows and let's see what we have so far. Okay, Ryan, I have a question for you. Can you speak to how these large deals are structured? If not net metering or PPAs, but how do those work?

[Speaker: Ryan Schuchard]

That's a good question. Are you able to show my slides and go back to the table deals? Great. Do I have control or do you?

[Speaker: Courtney Kendall]

Nope, you have control. Go ahead.

[Speaker: Ryan Schuchard]

SLIDE 30

Here's the table again. At a high level, you can see that these are done with the company, and then a renewable power development partner. In most cases, it's not the utility, but it's a third party developer. It really depends on the state with respect to what's allowed, what they can do. You can see that these are pretty large in size. I think anything above maybe 20ish megawatts would be considered large. Most of these are wind, but they are wind and solar.

With respect to specifics of the deal, I don't know terms, we'd probably have to take that offline. I would also plug RMI here with their Business Renewables Center. They've got a shop to – they do benchmarking on these questions. Yeah, I would recommend them for follow up if not me.

[Speaker: Jenny Heeter]

This is Jenny. Also, I would just add that some companies are also not doing a physical PPA, but they're doing a virtual PPA. So they may be contracting for the energy, but the energy is not physically delivered to their location. So that's another structure where there's not a need to have a specific wind facility feeding directly into a data center.

[Speaker: Courtney Kendall]

Perfect, okay. Let's move on to the next question. I'm gonna direct it to both of you. When you say total renewable energy use metric, are you including those purchasing RECs only versus those who are purchasing renewable energy?

[Speaker: Jenny Heeter]

I can take that one because I think that might be in reference to our study. We did look at purchasing that is done through unbundled RECs, so just the RECs separately from the electricity as well as purchasing through a bundled option. I would just note, there has been some skepticism of RECs, but RECs underlie all of these transactions where companies are making a renewable claim. So if a company is doing a PPA, but is not keeping the RECs, then that company can't make a renewable claim.

So I'm not sure if the question was getting at that angle or not, but the RECs are what allow companies to make that claim and to meet their renewable and carbon reduction goals.

[Speaker: Ryan Schuchard]

I've got a couple of things. Firstly, I'd encourage you all to really familiarize with this NREL paper if you haven't yet already and you're interested in the subject. We are in need of a shared understanding about what we're measuring and progress in the industry. This paper is the first that we've seen come along to tackle this. So, for that reason, we are really trying to dock into the ambitious scenario that the papers presented under the terms that Jenny has outlined.

If there needs to be discussion about making it more sophisticated in the future version, let's have that, but I think the key messages, part of this question is about that there's not really good standards. But it would be helpful to talk more about the same numbers. The other thing I would mention is if we just ask the question in our group, and we have. There's about ten of the members that have weighed in on this. We said, "What do you think about RECs?" This is a really complicated question because part of this is about, well, what do our stakeholders think about RECs?

There's not a lot of very good science. I think generally speaking, there is a sense that doing more additional direct renewables deployment, that is clearly bundled and clearly addition, is preferred. There is a sense, I suppose you could say on the other side, from some who would say, "Well, fair, and also if we completely said that unbundled RECs shouldn't be used at all, that would have a deflating effect on the secondary market, which would hurt the whole market."

I think however, what's most important to think about is, is the company making ambitious commitments, and does it have a strategy for deploying the direct additional renewables? I mean that's really the focus. If the answer is yes, then I think we should be less concerned about how aspirational are the technical details of it, but whether or not they actually have a strategy in place. If they don't then I think that would be where the tension is the most interesting is, if you don't have a strategy for it, getting it in place.

[Speaker: Courtney Kendall]

Well, great. Thank you, Ryan. Well, the ICT sector uses perhaps 2 percent of electricity, a number of studies have indicated their technologies avoid a significantly greater use of electricity. Have you any findings in that regard?

[Speaker: Ryan Schuchard]

If I could paraphrase, so the question was ICT companies are part of the solution for GAC reduction in general. How does that square with all of this? Is that basically the question?

[Speaker: Courtney Kendall]

I think so, yeah.

[Speaker: Jenny Heeter]

Yep.

[Speaker: Courtney Kendall]

Yep.

[Speaker: Ryan Schuchard]

I mean, I'll just say that, yeah it's a great point. This was the starting point in 2010 or 2011 where most companies we would talk to in the ICT sector would say, "Our job is to do energy efficiency internally where we can control it. By the way, we're dematerializing the economy anyway, so leave us alone. We're the good guys." I think that there's a lot of truth to that, that ICT is absolutely vital in achieving greenhouse gas reductions and other sustainability measures we need.

So none of this is meant to take anything away from that. At the same time, the sector is growing, has got impacts, and very importantly, beyond being something that is just – I guess you might think is material, it's really has a lot of leverage to move policy and to move renewables deployment to happen today. So think of it as a third or additional leg that's really important.

[Speaker: Jenny Heeter]

Yeah, and I would just echo what Ryan said, but add that in our report, we did not focus on how ICT could reduce greenhouse gas impacts in other sectors or transform other sectors. But we certainly are aware that that is happening and that there may be some work from DOE to forms of energy or others in that space going forward. Particularly, the transportation front as we see a lot of IT-enabled services are helping reduce transportation emissions. But that was not the focus of our work for this report.

[Speaker: Courtney Kendall]

Okay. Has the Department of Energy been engaged in the development of the siting and procurement negotiator guide?

[Speaker: Jenny Heeter]

That is something I am not familiar with. I know Department of Energy has done a lot of work in conjunction with EPA on how to buy renewables and different mechanisms for that. There is a new version of that that is in the works, but if that person wants to contact me directly, I can help fill you in on whether we might be involved with that siting and procurement guide.

[Speaker: Ryan Schuchard]

I wonder if that was a reference to one of the deliverables or activities that we had listed? It sounded close to it. If so, the answer is we're just getting this started and NREL has agreed to be involved, but it's just being scoped out, so stay tuned.

[Speaker: Courtney Kendall]

Well, it looks like we have time probably for another one or two questions. Let's see. Does it the BSR speaker *[laughs]* – so Ryan, do you feel that renewable energy projects should be held to project-based accounting protocols in order to demonstrate additionality as would be expected of project offsets?

[Speaker: Ryan Schuchard]

Oh, what a hard question. I mean I think that conceptually strong demonstration of additionality and that reductions are bundled with the project is really good, all else being equal. Companies should strive for that to the extent that they can, to the extent that it's plausible. They should drive policy change to make that happen or possible to happen in places where it's not already.

As to whether this specific project-based accounting, where I fall, I don't have a – let's say, I don't have an informed opinion right now. I mean it's a good discussion that's probably better had with others.

[Speaker: Courtney Kendall]

Okay, thank you. Okay, it looks like we have run out of time. I definitely would like to thank our speakers today, Jenny Heeter and Ryan Schuchard for their time today. We will be posting presentation slides and audio within the next few weeks on the Green Power site, and you can find them at the link that's posted on this slide at this moment.

With that, we would like to conclude today's webinar. Thank you, again, and goodbye!

[End of Audio]