BEFORE THE
CALIFORNIA ENERGY COMMISSION (CEC)

In the matter of	)	
	)	Docket No. # 11-RPS-01
	)	and 03-RPS-1078
	)	

STAFF WORKSHOP ON STATION SERVICE IN THE RENEWABLES PORTFOLIO STANDARD PROGRAM

California Energy Commission
Hearing Room A
1516 9th Street
Sacramento, California

Tuesday, September 10, 2013
9:30 A.M.

Reported by:
Kent Odell

APPEARANCES

COMMISSIONERS PRESENT

Robert B. Weisenmiller, Chair
David Hochschild
Kelly Foley, His Advisor

STAFF PRESENT

Mark Kootstra, CEC, RPS Certification and Eligibility
Gabe Herrera, Legal Counsel
Kate Zocchetti, Acting Office Manager,
Renewable Energy Office

Paul Thomsen, Ormat Technologies
Rahm Orenstein, Ormat Technologies
Steven Kelly, Independent Energy Producers Association (IEP)
Brian Cragg, Outside Counsel to IEP
Phillip Muller, on behalf of Ormat Technologies
Jeremy Weinstein, Pacificore
David Branchcomb, Sierra Pacific Industries
Nick Goodman, Cyrq Energy
Sandeep Arora, LS Power Development
Shawn Bailey, Sempra U.S. Gas and Power

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P R O C E E D I N G S

SEPTEMBER 10, 2013 9:40 A.M.

MR. KOOTSTRA: Good morning. We're going to get started. Thank you. My name is Mark Kootstra. I work on the Renewables Portfolio Standard in Certification and Eligibility, a lot having to do with Guidebook revisions. I want to let everyone know that Commissioner Hochschild will be here shortly, in about five minutes, and I'll introduce him when he does come in.

As you're all aware, we're here to talk about Station Service in California's RPS. On the workshop agenda, we're going to go over some welcoming and housekeeping, the staff presentation, and then we're going to go into public comments, and after that we'll have a short bout of next steps.

There are handouts on the front desk as you came in the entry with the sign-in sheet; hopefully most of you saw that. If you haven't already seen the Station Service paper, it's there, as well.

Restrooms are located on the first floor just out the main doors and to your left. There's a snack bar on the second floor. There

are a number of restaurants within walking distance. We don't know if we're going to be stopping for lunch yet, it all depends on how many public comments we have, but we'll determine that as we get closer to the noon hour.

There are emergency evacuation procedures. We'll be going over to the park kitty corner to the Energy Commission, you can just follow staff and we'll lead you right there.

And for those on WebEx, there's interactive participation. You're either going to be able to view the slides, raise your hand to ask a question, that will also chat to the WebEx Host. Brian is manning the WebEx, so please feel free to chat with him if you have any questions. WebEx users are muted on entries, and will be unmuted during the question and answer time, and log-in details are on page 4 of the workshop, hopefully you've already found them if you're on WebEx.

Ground rules. There are blue cards available to the speakers; those were in the front area. If you need one and you don't have one now, Emily is going to be handling the blue cards and you can just raise those when you're

done completing them and she'll pick them up from you for comments.

Before speaking, please provide a business card to the Court Reporter if you have one, if you don't, it would be helpful for him to get your name and company on a piece of paper so that he has that information spelled correctly. We ask that you use the microphone at the podium to speak so that we can have that recording, and the WebEx and phone participants can also ask questions during the Q&A.

Comments will be taken in the following order, audience in attendance, then those on the WebEx, and then the phone-in only participants.

The purpose of this workshop is to provide clarity on the requirements surrounding Station Service in the Renewables Portfolio Standard Program and to seek public comment on the Station Service Requirements in the RPS.

What is Station Service? Essentially, it's the power that's used to generate power at electricity generation facilities. We're not talking about, you know, at a biomass facility. With biomass, we're talking about the electricity that gets fed back into the system.

There's general consensus throughout industry, at least, that we've seen is that this power should not be used to create RECs, but the definition of what a Station Service is, is a little more disputed.

In the RPS, the Guidebook itself did not mention Station Service until the 7th Edition Guidebook, and at this time it's only mentioned in the outstanding issues section. We have required participation in WREGIS since the adoption of the 3rd Edition RPS Guidebook back in 2008 -- or, sorry, I believe it was December 2007 with the formal adoption. And this is the quote from the Guidebook, it essentially states that: "Facilities must participate in WREGIS in order to be RPS certified, or they must report that information to us by a specific date."

In 2012, the Program Administrators in WREGIS came together to discuss Station Service and we developed an Advice Letter. It provided what the Program Administrators thought of Station Service and how the definition that is in the WREGIS Program Operating Rules should be applied. The paper supported the current WREGIS practices we saw at the time.

The 7th Edition of the RPS Guidebook which was adopted in April did originally contain in the draft language regarding Station Service that aligned us more closely with WREGIS explicitly, but that information was removed at the direction of Chair Weisenmiller, but he did ask that we retain the status quo language, which retained the requirement to participate in WREGIS. And he also directed staff to conduct a workshop to gather public input so that we could have more informed discussion.

The status quo language is continued deference to the WREGIS Operating Rules regarding Station Service. Station Service in the WREGIS Operating Rules is defined as the electric supply for the ancillary equipment used to operate a generating station or substation. The May 2012 Advice Letter also supported this.

Staff's view on Station Service. We kind of looked at it by breaking the power use for electricity generation facilities into three groups: directly contributing to electricity generation, Station Service loads, and energy consumption not contributing to electricity generation. These aren't a formal breakdown, but

we kind of broke it down conceptually for our discussions.

Directly contributing to electricity generation: this would include the biomass at a biomass facility, radiation from the sun at a solar facility, the type of stuff that is used to define whether or not the facility -- or what type of energy resource that facility uses; generally, it's a fairly obvious item.

Station Service loads. We looked at it to include secondary processes, onsite fuel transportation, and general facility operations. If you've read the paper, it has some additional information on these -- and I'll go through them for a bit here. The secondary processes -- they're processes necessary to generate electricity and control the generation process, but aren't primary contributors to generation. This would include pumps in such as a ranking cycle. The pumps are necessary to keep the working fluid flowing through the system. They're also able to provide a minimal amount of energy into the system for generation, but it's a worthless amount that it's negligible for all purposes. Condensers, again, are necessary to

generate electricity, but they don't really contribute power to the process.

Fuel transportation. We broke fuel transportation out into onsite and offsite purposes. Onsite, we categorized as Station Service, and this is generally any transportation of the ready-to-use fuel from an onsite or near site fuel dump that is used to deliver the fuel from that site to the electricity generation facility without intermediate steps. And this was done in part to prevent someone from saying we're going to draw our facility boundaries differently so we get this out of it being considered Station Service. For the most part, these will be stationary delivery methods and not trucks delivering from a few miles away to the facility.

General Operations. They don't necessarily directly contribute to the production of electricity, but they're necessary to ensure their operation of the facility, optimal operations, or safety of the facility, itself.

And then different energy consumptions that we didn't believe contributed to the electricity generation process. We looked at

fuel processing, offsite fuel transportation, maintenance, and miscellaneous processes, as well as construction and initial operations.

The fuel processing, we consider any activity that is done to the fuel that doesn't change the energy content of the fuel, or create the fuel itself, such as biomass chippers which do enhance the ability of a facility to use the fuel, but it doesn't add energy content to the fuel, itself. Methane captures, a similar thing, as well as water impoundment, though that's not technically a fuel; I think we all understand that if there's water behind a dam, you're creating the energy potential that could be used more readily, but it's not truly creating the potential, it's still a natural cause.

Offsite fuel transportation. This is delivery of the fuel to the fuel storage facility or location that would then designate whether it's onsite or not. These transportation expenditures do have an impact on electricity generation because if they're not there, you can't generate electricity, but no matter how much energy you put into the delivery, it's not changing the amount of fuel that you have. For

example, if you're delivering biomass from a sawmill that's next door, you're going to get the same energy content out of a truckload as you are if you're getting the biomass from a sawmill three states over, you're going to exert a lot more energy moving the fuel, but it doesn't change the amount of generation that you get out of that same unit of fuel.

Also, this transportation energy could be expended in the absence of the electricity generation facility. We all know that sawmills need to dispose of their waste, and if there's a biomass plant next door to it, it's a lot less of an energy need, but if that biomass plant goes away, for example, they're still going to have to dispose of the waste to some degree, as well as forest clearing and fire protection, there's another reason. Often times the generation of electricity does impact and change the amount of fuel use that's required, but it's not always an increase, or fuel for transportation.

And then also, maintenance and miscellaneous processes. We didn't consider maintenance to be Station Service activities because they don't directly contribute to the

production of electricity. They're absolutely necessary to operate a facility, but generally maintenance occurs when the facility is shut down, when it's intentionally shutdown for a period of time.

And then also other miscellaneous activities such as security work or transportation inspection work. To start including these, we'd need to start looking at lifecycle analyses and we are not in favor of doing that, and it wouldn’t be a benefit to the RPS, necessarily, to do that.

Construction and initial operations. Construction of a plant is similar to transportation of fuel offsite. They can be done in many different ways and you can expend more fuel for economic reasons because it's easier and you're able to do the process differently, but it doesn't directly contribute to the electricity generation process. Additionally, the initial operations such as at a solar thermal plant that is using molten salts, you need to get the salts into a fluid state so that you can move them around, but once they get into that fluid state, they very rarely go back to a solid, there's

typically not allowed to do that. And so that initial energy use to liquefy those salts wouldn't be considered. But as you start generating electricity, then you need to start considering that process.

Additional considerations that the Energy Commission staff has -- I want to take a minute to introduce Commissioner Hochschild; he's the Lead for the RPS.

Additional considerations that the Energy Commission has in regards to Station Service, we're concerned that people may choose to begin powering processes with non-electrical energy. If you're able to switch from electricity that the power plant generates to, say, diesel or natural gas burned on the same site to directly power a pump, by the definition currently in the WREGIS Operating Rules, that may be assumed to get out of being considered Station Service, and that's concerning.

Also, time of the Station Service loads relative to the generation of electricity. Looking at the time of use can be difficult in some cases because you can adjust when a certain process is going to occur relative to the

generation of electricity. Normally, those are fairly minor, but staff chose to look at it instead at is the load a Station Service load or not, not when is -- can a load ever not be Station Service load? And we thought that that wasn't really the case. We thought if it's a Station Service load, it's a Station Service load whether or not you're generating electricity because it is still providing the same function.

Also, the location of the energy consumption. As I talked about earlier, we wanted to prevent people from redefining facility boundaries, to get out of calling something "Station Service Load". As I've been made aware by folks, you can have the boundary of a facility immediately surrounding the electricity generation device itself, and that manipulates what you would call Station Service or not if you have a location requirement attached to that, that's very stringent to the facility boundaries.

Staff position on the additional considerations. As discussed before, Station Service Loads can't cease to be Station Service Loads simply by changing the source of the power at the time of operation, or at the legal

boundaries of the facility. It just provides a lot of gaming if you allow this type of thing to say, you know, "this plant, if you move the border 10 feet, changes the inputs." And so we caution that we need to be careful on these options.

We wanted to give a little specific input on the geothermal well pumps, as most comments were in regards to the geothermal well pumps at the adoption for the RPS Guidebook in April. Most of the arguments that have been presented to us were saying that the geothermal brine is the fuel for the facility, and that geothermal well pumps are a form of fuel delivery. However, we believe this is a flawed approach to look at it; specifically, geothermal is of or relating to, or produced by the internal heat of the earth, and that's a definition I believe I found in several locations. The geothermal brine itself is a hot concentrated saline solution that is circulated through the crustal rocks in an area of high heat flow from the earth. Given that, just to make the argument that the geothermal brine is a fuel, when fuel is defined as a substance that is burned or otherwise modified to produce energy,

the only change that brine undergoes when giving off energy to the geothermal facility is a loss of heat, and that can be done either through an expansion in the generation turbine itself, or through a heat exchanger. And by looking at it that way, we find it hard to view the geothermal brine as a fuel itself.

And then looking at what would the geothermal brine then be, we would look at it more as a heat transfer fluid in binary systems, similar to a solar thermal system with binary. For example, the SEGs plants, which you can see on the left-hand side of the screen, uses a binary system where there's synthetic oil flowing through the solar collection fields, similar to the brine that flows through the geothermal field. In both cases, there is a heat transfer that occurs between the initial fuel that collects the heat, either from the sun or from the earth to water or another fuel -- or, sorry, another working fluid in geothermal facilities that actually turns the generation turbine, and is the true working fluid of the facility. But in both cases the geothermal brine and the synthetic oil in the SEGs plants is necessary and

it's a heat transfer fluid that really can be considered a secondary working fluid. If you take the analogy of calling geothermal brine as the fuel for a geothermal facility to a solar thermal facility, you'd be essentially making the argument that a solar thermal facility, such as a SEGs, is operated with synthetic oil as the fuel, which that is kind of concerning to say that a solar facility is truly powered by synthetic oil. It raises some questions that we can't seem to find good answer for. We fully recognize that there are significant differences between the two technologies, for example, geothermal brine is not necessarily cycled through a closed loop as synthetic oil does in the SEGs plants, but it's also the case that geothermal brine is not a requirement for the existence of a geothermal resource. Many geothermal resources need to be fracked apart so that you can get water to flow through enough to generate electricity.

So the question comes down to what truly powers a geothermal facility. Staff believes that geothermal facilities are powered by the earth, not the brine itself. The brine is an integral part of getting the heat from the

geothermal well to the generation equipment, but it acts more as a heat transfer fluid, similar to the synthetic oils in a solar thermal facility than it does as a fuel transportation process.

At this time, we're going to open up the floor to commenters. I believe we have a number of blue cards. Please, if anybody has blue cards, let Emily know, or if you need them she will be passing them out, as well.

The first one we have is Paul Thomsen of Ormat Technologies.

MR. THOMSEN: Great. Thank you very much, Mark. My name is Paul Thomsen for the record. I'm the Director of Policy and Business Development for Ormat Technologies. Ormat Technologies is a geothermal energy company specializing in the development of binary geothermal power plants. By way of introduction, we operate about 400 megawatts of geothermal power in the WECC, with about 202 megawatts of geothermal generation in California.

We want to start by commending the Commission staff for agreeing that the energy use for offsite fuel transportation, for fuel delivery from the source to the electric

generation facility, should not be considered Station Service. Staff goes on to say that, consequently, if geothermal brine is in fact a fuel for geothermal facilities, then the delivery of that fuel to the geothermal facility should not be considered Station Service, consistent with other renewable technologies.

Obviously, this brings the conversation to this discussion of fuel or working fluid, and we just want to make a couple observations, I think, in this workshop that we think need kind of further examination or exploration because, right now as we see the situation, we think it's unfair, it's inconsistent, and unfortunately it harms one industry in California. And so, based on those three criteria, I want to kind of walk through this.

Talking about why it's unfair: other technologies have fuel delivery systems that they do not have to net out. We have seen from the geothermal sector that we have lost baseload contracts or competitiveness because a baseload binary system has to net out its fuel delivery system, where other technologies such as biomethane and others do not have to do so. And

that is what we are trying to rectify here and finding a policy that treats them all equally.

Second, we think defining the geothermal brine as a working fluid and not a fuel is inconsistent. We've reached out to academia, we've reached out to FERC, and we've reached out to other jurisdictions that have looked at this issue and decided that, indeed, the delivery of the geothermal brine is part of a native system in its native form, the hot water that we are blessed to find in the earth with the heat is a fuel, and the delivery of that fuel should be defined as so.

Trying to elaborate just a little bit on the fuel issues in the White Paper, and again, just areas that may require some closer examination, the first comment we wanted to point out is the definition of fuels, I think it's actually used on Slide 29, says "fuels are substances that are burned or otherwise modified to produce energy." The first law of thermodynamics holds that energy cannot be produced or destroyed, it can only change form. And a fuel is not produced energy. It transports it to a place where it can change form, and into

electricity. And so I think we should not be using that definition of fuel in the fact it's inherently wrong. And most academia would have an issue with the idea of the ability to produce energy.

Second is this concept that geothermal is relating to or produced by the internal heat of the earth, and therefore, unless we use the rocks from the heat of the earth, we don't have a fuel. And I think the question there is, this is applicable to fossil fuels, which store the earth's heat potential. As we all know, hydrocarbons are a result of the anabolic decomposition of organic matter buried to great depths in the earth. The geothermal temperature and pressure gradients at depth alter the organic material into kerogens and with even more geothermal heat eventually into liquid and gaseous hydrocarbons, explodeable volumes of mobile hydrocarbons, commonly require some means of isolation and concentration. And then they are delivered to a power plant. So I think this definition needs to also be looked at because I don't think we're trying to exclude or say that all of our fossil fuel power plants don't indeed

use a fuel because they're created by the heat of the earth, and therefore, unless it's the rocks from the earth.

And this gets into kind of an esoteric discussion on this, but I think our mission today is to say, in the native state, this hot geothermal fluid is the fuel source. Going back to chemical change is a definition used, it says, "Brine, unlike a biofuel, does not undergo any chemical reaction or other modification to release its energy." We obviously think that this should also be closer looked at. Geothermal fluids actually do undergo many chemical changes in the process of modifying temperature, pressure and entropy, during production. And we have many citations that we'll submit, obviously, in our written comments. But for example, "Minerals precipitate out from the brine and produce scale. Controlling the complex temperature pressure dependent liquid solid chemical equilibria is fundamental to a geothermal facility." This doesn't even discuss kind of the phase change of geothermal brine, and you can elaborate on this in the fact that fuel change is the discussion chemical reaction has been expounded upon.

Nuclear power plants are believed to use fuel and don't undergo a chemical reaction, and so we think this is also the case with the geothermal fluid.

The last point I would like to make before I introduce my colleague to kind of talk about the real world harm of the current situation is the discussion of the solar thermal facility to the binary facility. I think we had a slide, and I don't know if we can go back to it, but there's a key step that I think staff keeps pointing to that we're slightly missing, which is, when the geothermal fluid -- first of all, the solar thermal cycle on the left is not a binary cycle, it has three phases, the photons from solar heat, the thermal oil, which then heats water to steam, that steam turns to vapor and spins a turbine. Our geothermal fluid heats a working fluid in the heat exchanger, as you see in this slide. That working fluid is iso-butane in this picture, it can be iso-pentane, and it is what we believe is the working fluid in the Station Service load. And any pumping of that is absolutely Station Service, and we believe should be netted out. But at no time does the geothermal fluid go

across the turbine; 100 percent of that fluid is re-injected back into the earth, back into the rocks in its native state, we don't change anything with that geothermal brine. Typically in a binary process, we keep it under pressure to stock heavy metals and scalant from building up and coming out of solution and so forth, and so that is the native fluid. And we would compare that geothermal heat to the heat coming into the photons, the transfer to a working fluid occurs in the heat exchanger. And there are many examples in the history of geothermal where projects have purchased geothermal brine or the fuel from a separate deliverer of fuel. And what my colleague is going to talk about is the fact that today many geothermal facilities share a single production pump, and that production pump then has to go to multiple facilities. And the current metering process has caused the harm for us because we can't account for it the way that the CEC currently defines the station usage. So I think, with that, that will conclude my comments and I'll let my colleague, Rahm Orenstein, kind of introduce the practical matter of how we can't account for this. And I believe

we have a slide. So with that, I want to thank you for the time to make these comments and would open it up to any questions or observations you might have.

MR. ORENSTEIN: Good morning. My name is Rahm Orenstein. I'm a Director of Business Development with Ormat Technologies. So further to Paul's presentation or explanation, I want to focus on why is this so painful to us. So just starting with a very simple diagram on a typical binary power plant, you can see a production well on the bottom left, that's where we have a production pump that we claim is a fuel delivery system that brings the underground natural resource, which is the geothermal brine, into the power plant. Then, typically the brine, which is like depicted in red, would go through heat exchangers, you see a vaporizer and a preheater, then will be re-injected in the injection well, and then you have a secondary fluid that is called binary, but you see green, a motor fluid pump where man introduced material, usually pentane or butane, is circulated, vaporized, and spins the turbine.

As Paul said, we have no disagreement that

all the electrical load that is used to circulate the motor fluid is Station Service, and this diagram will include the motor fluid pump, but the bottom right, it will include -- you see the air condensers, there are usually multiple fans that are electrically driven, that cool the motor fluid, we don't disagree that this is Station Service; moreover, you see the injection pump and FERC also has determined that getting rid of the colder brine is like getting rid of ashes in a biomass plant, it's part of the plant, meaning it's part of the Station Service. We don't disagree with that. Our whole focus is on the bottom left, on the production well that we believe, again, as Paul said, the brine is not the equivalent to synthetic oil, which is a man introduced chemical in the process that man designed, the brine is the natural resource that we are tapping into. We did not put the brine where it is, Mother Nature did that. We did not determine the depth of it, the temperature, the chemistry, unlike synthetic oil, and we do a conversion from the natural resource, which is the brine, to then the pentane, to electricity. So much like in solar, the designer can choose to

use photovoltaic, that directly convert photonic energy to electricity, or they can use solar thermal, that in that example had two conversions. You know, maybe an engineer will come with an even less efficient process with five conversions, all of these should be Station Service. But in our case, we claim that only the motor fluid is man introduced. If you can move to the second slide.

I want to show you something here to explain why this is so painful. This is a typical -- this is kind of a simplified representation of an existing complex that we have in Mammoth Lakes in California. You can see two generators -- I call them Generator 1 and Generator 2 -- each for the sake of simplicity is assumed to have a 10 megawatt gross in the generator and it has a separate meter because each plant has a separate contract with a separate utility. Each has its own Station Service, but you see that little bubble, which is what I showed in the previous diagram? These are the motor fluid pumps, the brine re-injection pumps, the fans, all that is Station Service. Now, these are kind of typical numbers on a

typical 10 megawatt gross facility, roughly one megawatt would go to power, the real State Service, and then roughly one megawatt would go to power production pumps. And in this case, we have production pumps that consume two megawatts that are physically three miles away from the power plants, so it only makes economic sense to have a single well and a single pump and a single pipeline push that natural resource, the brine, into the complex. And in reality, it doesn't make sense to have a pump being fed by two generators. Then what we do, and that's what geothermal operators do, we picked which one of the two generators should be the one physically wired to the pump, which is the thin black line, what you see in the diagram, the thick green line represents the pipeline with the brine, and the thin black lines represent electrical wires. So you see each generator wires its own Station Service, and one of the two, in this case it's Generator 2, we decided would run the pumps because Generator 2 uses, in that case, a greater portion of the brine.

So if you click this animation, there's -- right, so the Station Service is the motor fluids

pumps, the fans, the brine re-injection, so far as suppression and air-conditioning, all that stuff, we're not arguing that -- one more click, please -- this is an example of the harm, the commercial harm that we are coping with because of the current interpretation of what is and what is not Station Service as expressed in that Advice Letter that WREGIS issued.

So if you look at that table, the gross generation -- lets look at the complex -- we have 10 megawatts at Generator 1, we have 10 megawatts at Generator 2, so total for the complex is 20 megawatts gross. Then, what the meters actually meter in this configuration, so the meter of the first generator would show the 10 minus the one, which is the local Station Service, which puts you at net of nine, meaning it does not reflect that the brine just gets into that plant. The meter on Generator 2 would show 10 minus one, which is the Station Service, minus two, which is the shared load of the production pump, and it would show seven megawatts because Generator 2 runs the pumps that pump for both generators. So the net would only be seven. On a complex basis, it's 16. That is assuming that we do net out the

production pump load. And just for the sake of argument, in our existing facilities in California, as well as in Nevada, regardless of whether regulations allow or don't allow us to use other forms of feed like the local grid, we have always -- or for many years, we have used our own generators because it's usually -- it's cheaper, meaning it's almost the case, at least in California and Nevada, buying retail service from the local utility to run the pumps is more expensive than what we would be selling as a net. So we have no financial incentive to do that. Though, as you probably understand, if the rules -- if you look at the pumps as fuel delivery system, it wouldn't change the net of the complex, but at least would get additional -- I believe it will be Bucket 3 RECs for the load of the pumps because that will be RECs that are not bundled with net energy.

So in the current situation, we are harmed, the ones by the fact that we do not get those Bucket 3 RECs for those two megawatts in my example, and this harms us financially and, as Paul said, we have come across business opportunities where this was the make or break

for our customer, where he compared us with a biomass plant, for example.

But I want to focus on the next two rows on the table, which I think most people here don't realize where we are harmed even more, and that is if production pumping load in geothermal is Station Service, then each and every meter that is registered with WREGIS has to be corrected to show the specific consumption of Station Service attributed to that plant. So the third line in my table, the theoretic adjusted meter should have been -- for Generator 1, it should have shown eight, 10 minus one, minus another one megawatt, which is the shared use of brine. And I'm assuming both plants consume each 50 percent of the shared brine, that in a perfect world, to try to cope with the Advice Letter, we should manipulate the meter to show eight, and the second generator, instead of showing seven, should actually show just eight, right? Because we should be netting the full two megawatts from the second generator, we should net just one and the other one to Generator 1. So it's the same total of 16, but it should have been eight on Generator 1 and eight on Generator 2. And by the

way, we have been in discussion with WREGIS trying to implement that, and they told us, yes, that's exactly what they expect us to do, but apparently this is not supported in reality. CAISO, for example, would not allow that, they would not allow real time meter adjustment using any external source, and we have confirmed that. So the fact, though, what will happen is the utility to which you are buying or selling the output of Generator 1, we would have to tell that utility, well, even though the meter is showing nine megawatt, we should only be charging you for eight because that extra one is not in compliance with the current definition of the WREGIS Operating Rules. But the utility to which we are selling the second generator, the meter is showing seven, they will not pay us for eight because they would say we're going to pay you for what the meter says. So in practicality, even though we're making 16 megawatts net -- net including of all the production pump load -- we'll be paid as if we made 15 just because we're in this limbo where CAISO does not support in their actual procedures this product share of load. So we're harmed twice, once we're not

getting any RECs for the production pump load, and second, we're losing even an extra megawatt just because the rules cannot be implemented in reality. That concludes my comments.

MR. KOOTSTRA: Thank you.

MR. THOMSEN: If I could just -- in closing, I want to again --

MR. KOOTSTRA: Can you state your name again?

MR. THOMSEN: -- sure. Paul Thomsen with Ormat, for the record. And I just want to thank you for your time and also just say, again, that Ormat agrees with the policy that Station Service should not be eligible for the creation of a WREGIS certificate, wholeheartedly. The confusion arises, and this whole issue arises, with the Advice Letter that Rahm brought up, that was adopted by WREGIS, issued May 12th by the Program Administrator, which is the only place that we find that geothermal brine is defined as a working fluid instead of a fuel. I think the discussion you just heard highlights the need to define the geothermal brine as a fuel, which would immediately rectify any issues and definitions of Station Service by WREGIS, the

California Energy Commission, FERC, and the Public Utilities Commission of Nevada, which is now dealing with the fact that the State of Nevada has also said that geothermal pumping loads are part of its fuel delivery system and not its Station Service. So that's my closing comments. Thank you very much.

MR. KOOTSTRA: Thank you. The next commenter we have is Steven Kelly.

MR. KELLY: Thank you. I'm Steven Kelly, Policy Director for the Independent Energy Producers Association. And I'm here representing a wide array of renewable technologies that are impacted by this. This is not just a geothermal issue, it's broader than that.

First, I want to thank you for having this workshop, you and Kelly, too, for scheduling this and planning this so that we could have this discussion. I for one have been advocating for this for a while, we've been raising concerns over the last year and a half about the direction that not only WREGIS was going, but the direction that it seemed like the Commission was going in their last guidebook revisions. So I thank you.

And as background, I want to point out to

you that there are no two RPS eligible facilities that are alike. This description of the complexity of one unit is probably symptomatic of a lot of units. This is a highly complex issue when you start boring down to this level of detail about what is or is not going to be treated as Station Service. And I just want to bring that to your attention because it becomes increasingly complex, and in many ways you end up, in order to figure out exactly what's going on mechanically with these various facilities, you end up dancing on the heads of a pin for what purpose? And I'm hopeful that we can get out of this discussion kind of a better sense of what the purpose is that the staff and the Energy Commission have promulgated in moving toward this direction because I think that it will be critical for helping the industry work with you for a solution that is acceptable and works for everybody.

I want to make a couple concerns that I've raised in the past and want to bring up now. One is an observation that, just to show you the complexity of how this can become, the netting protocol, if you're going to net out Station

Service, which is fine, everybody agrees that Station Service, what the definition is, moving, but everybody agrees that Station Service shouldn't be counted. The problem is when you -- one problem that occurs when you do that is what are you going to net out? In California, with a 33 percent RPS, we might be at a 50 percent RPS in four, five, 10 years. Nevada may be at nine percent. Arizona may be at something different. At that point in time, netting out 100 percent of the Station Service, when 30 to 50 percent of it is RPS power, makes little sense to me. And I only raise that to point out some of the complexities that rise to the surface when you move down this path of trying to figure out exactly what's going on, and what should be netted out with some of these facilities.

What we have been asking for, for a long time, is a reasonable measure of certainty and a consistency in the application of Station Service. And the reason why that's important is because developers are out throughout the West, geothermal, biomass, whatever, are out looking at the sites to develop projects, and finance those projects, and to do that they have to finance

them under a PPA. And in the PPA they're making commitments to the utilities to sell a certain amount of RECs. And the utilities are operating on certain assumptions about how much they're going to get. And this direction that the Energy Commission is going has the potential for certainly undermining the traditional -- the existing contract treatment for the amount of RECs that we deliver to a utility under those PPAs, probably forcing the utilities to go out and buy more to replace the ones that are no longer going to count. And it will set a standard for going forward that will change some of the development practices. Maybe that's a good thing, maybe it's not, but it's going to make it more difficult.

And I just want to reiterate the perception from the industry that we are risking the potential of going down in a level of complexity that is probably unwarranted given the goals of the RPS and the way that these projects are developed, and the complexity associated with those.

There are a number of potential solutions that we think should be considered, and in this

workshop hopefully we'll get into more detail on this. One is -- and I just want to emphasize that the level of precision that is being sought here is critical, and how much is really being affected at the end of the day. As California moves forward to achieve its 33 percent RPS, millions of megawatt hours of energy are being used for the utilities and load serving entities for compliance. The level of precision that is going to be required to determine the exact amount of energy to get the purity that seems to be sought here is, in my view, probably unwarranted given the scope and scale of the bigger program that we've got in place.

Secondly, we have an existing definition of Station Service that has been used for many many years across the West, across the country, and indeed in California. This is the FERC definition of Station Service. This was the definition that the industry was comfortable with using and was essentially modified in that Program Administrator letter to the WREGIS in 2012, which is why this is an issue today, it was not an issue before that point in time.

Most people, including myself, who have

been working on WREGIS issues for a number of years, had presumed that this definition of Station Service that has been developed at FERC was an appropriate standard for using in California, and hopefully other states as well, through WREGIS. It was only until there was a change that this issue got triggered.

I want to again emphasize the de minimus impact that is at stake here, and the need for a solution that takes that into consideration, I think that going forward we could probably develop a program that keeps the Energy Commission out of the details of potentially technical assessments of hundreds of projects to determine the exact level of megawatts that fully should be netted out under the direction you're going. Stay away from that kind of complexity and maybe we can develop a program that is simpler and less resource intensive for you, and provides a better standard for the industry as we move forward. That may speak for consideration of some grandfathering for the existing contracts that were developed under the old paradigm if you change, going forward. Recognize that any change going forward is going to impact resource

selection, development of resources to meet the RPS, and so forth, it will probably raise costs. It certainly may make it more difficult to configure projects such as these geothermal ones, where it's not often the case that you can directly cite your generation right over the geothermal well -- for a lot of reasons -- land use reasons, or whatever.

When people develop these projects, it is a highly complex and complicated environment. And what I'm urging the Commission to do is to develop a protocol that hopefully you will advocate at WREGIS so that it applies West-wide, that is simpler and provides a measure of consistency, and a standard of review for the industry so that we can see that and develop our projects around that to help the state meet the RPS. And I look forward to that discussion today. Thank you.

MS. FOLEY: Thank you. Kelly Foley, Advisor to Commissioner Hochschild. Steve, I wanted to ask you a question and maybe Mark the same question. The FERC definition, is that promulgated for all types of power plants, say, fossil fuel plants, nuclear plants? And does it

contain any element of a green determination?

MR. KELLY: First, I have my FERC expert here, Brian Cragg, who I would invite to also answer this question. But I can answer it, as well. The FERC definition does not distinguish between generator types, between green or fossil. It was designed originally to determine when retail sales were occurring vs. wholesale. It actually applies in that context in a slightly different reference space, but the definition is one that has been used for designing projects because it does distinguish between Station Service. It's a common definition of Station Service that the developers use when they develop their projects. So even though it arose in a slightly different context, the pricing of power used for generators behind the meter, retail or wholesale, it has some -- it's provided some guidance, I think, for developers in this context for developing renewables. It does not address environmental attributes, for example. And it wasn't really meant to do that, but I do have an expert here, too, who can answer that with greater precision if you want.

MR. CRAGG: Good morning. I'm Brian

Cragg, outside counsel to IEP. And in response to your question, you know, FERC has actually used "Station Power" is the term that it uses, that definition and similar concepts, including the definition of "Auxiliary Load" in about three different contexts; one is the one that Steven had mentioned, which is the definition that's been quoted in the staff paper 2, that arose in the context of a program to net Station Power against generation, which is no longer in existence because of some court rulings that are no longer affectively in existence, but it was highly disputed for about eight years, including several court cases settled FERC decisions. So that decision was used consistently throughout that process. People referred to it, they fought about it, the Courts accepted -- or at least acknowledged that that was the FERC definition, so it has a little bit of the authority of having been tested in a controversial context.

FERC also used basically the same definition for Auxiliary Load earlier for the original renewables program, the QF Program under PURPA to determine the net capacity of the qualifying facilities. Now, those were not just

renewable units, they were also qualifying co-generation units, so they're different technologies and also waste products at some point, but there were different technologies involved, it wasn't exclusively used for green technology or renewable power.

And the other use that FERC has made of this definition is to determine its jurisdiction. You know, basically one of the dividing lines between Federal and State jurisdiction is whether it's wholesale power or retail power -- wholesale sales, or retail sales, and FERC has used the station power definition to determine where the boundary is between State jurisdiction and Federal jurisdiction. So using the FERC definition has the benefit of having been tested in a variety of contexts over a number of years, it's widely accepted, it's basically a national definition that's been relied on, as Steven pointed out, by industry up until recently. So it's one way of maybe developing some uniformity and consistency for this program, as well. Thank you.

COMMISSIONER HOCHSCHILD: I just had a question for the gentlemen from Ormat. You were

commenting about how the brine is a naturally occurring fluid, if you will, and I'm trying to follow your logic. Are you suggesting that if someone were to do geothermal with a synthetic oil, you know, a closed loop, that that would be counted as Station Service? Is that the case you're making?

MR. THOMSEN: Thank you, Commissioner. For the record, Paul Thomsen with Ormat Technologies. I think if you were going to make the comparison to SEGs, then, yes, the concept of introducing a synthetic oil into the reservoir would have to be counted as Station Service. And you bring up another point that, today from the geothermal industry, there is no geothermal system producing electricity that doesn't involve a fluid in water. This concept of EGS is in the early R&D phase and every -- the MIT report from John Tester and everything talks about the fact that there are three criteria needed for geothermal, you know, heat, permeability, and the fluid. And if you don't have any one of those, you have to then engineer the system, if you will, and to date that's never occurred without geothermal brine. Even the models for EGS and

even Ormat, we have the first, I think, successful EGS project in the United States in Nevada, we did a simulation in an existing reservoir using the existing brine of that reservoir, which then brought that heat source to the surface. So I think, if you were going to make a comparison to SEGs, if there was a thermal fluid introduced, or manmade in any point, you would have an argument that that would be Station Service at that point.

COMMISSIONER HOCHSCHILD: So I just want to be clear, basically you have no argument against our interpretation of SEGs Station Service, right? It's really --

MR. THOMSEN: Not at all.

COMMISSIONER HOCHSCHILD: Right, so --

MR. THOMSEN: Heat transfer in our system occurs -- if you were to go back to that slide with the two, the two circles, the comparison points would be if you circled the vaporizer on the binary model and where the SEGs solar -- right, the slide with the two -- sorry -- that is where the natural renewable resource -- so in this picture, the yellow trough is where the photons, the natural energy source, are converted

to a manmade working fluid, and then that working fluid is pumped and that should all be Station Service. Our geothermal fluid interacts with our manmade working fluid at the heat exchanger just like the solar panel at that point. Once the fuel is delivered to the facility, we then take it from there and everything from that point on is Station Service.

COMMISSIONER HOCHSCHILD: Right. I'm just trying to get my hands around, though, the case you're making. So in the event down the line it becomes feasible for the geothermal industry to, for example, have a synthetic oil, on this bottom pipe, and have that be a closed loop, but that's obviously not a natural thing, that's a manmade thing, in your view at that juncture that would be considered Station Service? It's really by virtue of this being a naturally occurring brine that it shouldn't be?

MR. THOMSEN: I think that's a logical breakpoint. And keeping that policies consistent, when you talk about kind of these naturally occurring fuels, whether it's coal in the ground, whether it's biomethane or biomass, the transportation of that fuel to your facility

is typically always defined as a fuel delivery system. It's at the point that then you encounter that fuel and start to convert it to electricity that we start counting Station Service, and this is where we get into this unique concept, that geothermal is the only technology that has to net out its fuel delivery system and, in our case, I mean, it's even more difficult because we're trying to power that pump with our own gross generator and are unable to do so, as Rahm talked about, the multiple harms. And I think this brings the bigger question is, if we are going to count the production pump for geothermal, to keep policies consistent we should start to dictate what kind of trucks bring in the biomass, whether it's electric or diesel, and subtract those electric charging stations from the net output of the facility. If we're using biomethane, we need to start looking at compression stations, whether those compression stations are driven by fossil fuels or by electricity, and netting it out again. There came this divide at some point where we said the fuel delivery system for geothermal, I don't know if it was easy, or if it just was going to be

treated differently. And I think we are -- from a policy perspective we want fair and equitable treatment, so if the question is we're going to include that fuel delivery system, we would encourage the CEC to include all fuel delivery systems to have to be netted out from development or treat our fuel delivery system just like every other one. There was a lot of comment about moving the boundaries and worrying about what the fuel source was for these production pumps, and I guess my question to that is, why? In no other technology do we worry what type of energy source powers the fuel delivery system. This is the essence of calling it the fuel delivery system to say "we are not going to go into the supply chain that far to try to figure out or to deduct that from the facility." But we're more than happy to do that if it's going to be fair and equitable and treat all facilities the same.

COMMISSIONER HOCHSCHILD: Yeah, I would just say, you know, thank you, by the way, and I would just say that certainly consistency is a very important thing for us because the program does have to be defensible and, you know, across technologies, and I just would ask the indulgence

of everyone here as we plow through this issue, just to understand, you know, the line has to be drawn somewhere, and it has to be defensible and consistent, and there's no way to do it in a way that's going to make everybody happy, but I will say the reason I was late this morning, I was just meeting with Chairman Weisenmiller, and one thing I would like to do on this issue is just to actually pull together a roundtable geothermal meeting to get input from industry just more broadly on what can be done to help break down some of the barriers industry is facing, and what's it going to take to unlock greater success. We do have this GRDA program we're going to be giving out, I think, on the order of $6.5 million early this spring, so the context for me is I really want to see geothermal succeed, I really believe -- I treat all the renewables -- it's like raising a family, you want everyone to graduate and succeed, and I think there are some big challenges the geothermal industry is facing, in particular, but as we go through this we have to be very sensitive to consistency and so we're balancing that. I just wanted to share that with the

audience, with folks, and I haven't talked about this with Kelly yet, but I do want to pull together a sort of bigger picture meeting of just what it's going to take for geothermal to succeed above beyond just this issue, I know it's the focus of the agenda today. So, thank you.

MS. FOLEY: Kelly Foley. I had a quick question for Paul as a follow-up. And excuse my ignorance of the name of the process, but I think in the geysers the plants are not binary, they inject water into the well and then steam comes up? Are you familiar with that kind of process? Or am I even correct?

MR. THOMSEN: Paul Thomsen for the record with Ormat Technologies. I would inquire if there's someone from Calpine or the Geysers here who wants to discuss their process.

MS. FOLEY: Well, it's not per se that process. My question to you in the context of fuel analysis is, if there is such a geothermal application where it's not the brine in the well, it's an injection of water into the well, would you consider that fuel?

MR. THOMSEN: Absolutely.

MS. FOLEY: Okay.

MR. THOMSEN: And I think you bring up an interesting point. Again, not only do we have a discrepancy among different technologies, but even in the geothermal sector it appears that the CEC or WREGIS defines the fuel delivery system for the Geysers differently than it does for a binary system. In their situation, I believe they inject water into their reservoir, which then -- and it turns to steam, and it turns a steam turbine -- we believe that is a fuel delivery system and should not be netted out from their gross output, which is exactly the way we think we should be treated with the same fuel delivery system for that geothermal brine because, again, in the definition of fuel, that energy is going through a phase change to create geothermal power there.

COMMISSIONER HOCHSCHILD: That feels a little inconsistent with the what you just said because, in the case of the Geysers, right, it's actually -- it's not what is wastewater, right, so it's a manmade -- right?

MR. THOMSEN: And again, I'm not intimately familiar with the Geyser situation and I think they should comment on it, but I think we

believe that if that is the geothermal fluid that they're working with, it should be considered a fuel delivery system.

COMMISSIONER HOCHSCHILD: Okay, I thought the case you're making, if it's a manmade fluid, it would count as Station Service; if it's not, it wouldn't.

MR. THOMSEN: Right, well I think -- I'm sorry, I was reiterating -- I think the question from Ms. Kelly -- I believe that is how they are treated today. And again, I'm not the expert on this issue, but there is some inconsistency there on the difference between the two technologies, and I think someone from the Geysers would have to speak to that specifically on whether it's netted out and how the RECs are accounted for that situation.

MS. FOLEY: Thank you. And I kind of have a question for staff, too, maybe staff can illuminate on the Geysers, and then the second question for Mark. And I don't know if this structure exists, I think in Southern California there is a DWR canal that pumps water up a hill, and then there is this hydro facility on the other side, and I think that is RPS eligible.

Assuming again all these facts are correct, does it net out the pumping -- and do you know -- does it net out the pumping on the uphill side from the downhill flow?

MR. KOOTSTRA: I don't know offhand -- this is Mark Kootstra -- I don't know offhand specifically, but I do know that conduit hydroelectric facilities are in a special category, and Gabe Herrera, our legal counsel, could probably elaborate on that because they are called out specifically in law as RPS eligible.

MR. HERRERA: Yeah. Good morning, Kelly. Gabe Herrera with the Energy Commission's Legal Office. I mean, I think we're going into a slightly different issue there just in terms of defining what is, and if it is not an eligible or renewable resource. The Legislature has always obviously by statute defined what constitutes a small hydro facility, what constitutes an eligible conduit facility, etc. Geothermal resources are obviously an eligible renewable resource. The issue here, folks, is on Station Service. I don't believe our Guidebook addresses that situation or would define the pump allowed to get the water over the hill to that small

facility, small hydro facility or small conduit hydro facility, as Station Service. You know, perhaps it should, I don't know, it's just we don't address it. Steven Kelly looks like he's eager to jump to the mic. Steven, if you want to comment on that?

MR. KELLY: Well, Steven Kelly with IEP, and I think that's an interesting question about how you would treat pumped hydro, for example, if it was eligible. Even if it was ineligible, and it looks like small pumped hydro could be eligible, but not large; so the complexity of figuring out the answers to those kinds of questions on that particular project, or that technology of projects, illustrates the concern that I've got, that you're going down a path that is just going to require a measure of consistency across all the different technologies and all the different projects that is going to require an investigation about how they operate, that I'm not convinced is warranted at all. And as was commented earlier, if you go down this path, people will say, "Well, that's fine, let's go down this path, lifecycle analysis of RPS resources, but we want that to apply to

everybody." And it will open up a huge huge can of worms. And the effect will be an unnecessary measure of uncertainty in the industry as we move forward while you work this out. And it will take a long time to work out, I can guarantee that. So that's just my caution.

MR. HERRERA: Well, Steven, just a quick question. This is Gage Herrera. But you would agree that it makes sense for the Energy Commission and other regulating agencies to make sure that there's not an arbitrage of, say, brown power and converting it to green power; obviously green power sells for a lot more than brown, right? And you want to discourage situations where you could have a generator that is perhaps converting brown power essentially into green, right?

MR. KELLY: Well, you know, I think that's -- I don't know -- when you say that, I'm not sure what you're talking about, and this is kind of getting to your intent, right? We have a definition of eligible renewable resources, and if that definition includes pumped hydro, then they're not going to be pumping it with the hydro that's coming down the hill, probably. They're

probably pumping it from wholesale power. But the Legislature or the statute says it's going to count. So, 1) we want the definition of eligible renewable resources to be clear, and we want that to apply, 2) the determination of when you're browning or greening brown power is a complicated process and I think there's probably other ways to get at that issue. To the extent that there's fraud going on, and in RPS eligibility, that's a separate question. And I think it begs for a separate solution that is simpler, too, if you see that occurring. I mean, you can declare that's not an eligible resource and you can have a fight about it, but blanketing the entire industry across all the technologies with the complexity that you're proposing, in order to prevent that occurrence that might happen, I think, is a problematic way to go.

MS. FOLEY: This is Kelly Foley. I just wanted to make it clear, I wasn't referring to pumped hydro, which I believe is storage, in a totally different issue, it only came to mind because I was trying to think of all the various scenarios where, whether it's fuel and whether fuel and therefore fuel delivery, or some other

station-like service is in mind. So I only came up with that -- it may be4 the only scenario in the hydro world in all of California, but I just wanted to throw it out there to think about it.

MR. KELLY: Well, I think it's a perfectly legitimate question, and the Commissioner has asked kind of a detailed question, too, about how these things are designed and operated, and so forth. But it's illustrative of the issues that you'll have to address going forward, not only for existing facilities, but new facilities, to try to ferret out exactly is anybody greening a brown megawatt hour, even though they're an eligible renewable technology. And I think we've got the definition in the Legislature fairly good on this stuff, I don't know that there's a lot of fraud going on in the industry right now, if there was I think we'd correct it in the Legislature first, but it's perfectly legitimate to call somebody to the carpet if they are not operating as an eligible renewable facility. And that's fine.

MR. MULLER: Phillip Muller here on behalf of Ormat, and I thought I could provide a little bit more light onto this discussion. First,

regarding the hydro issue, Kelly, I think the point that you were making, they're pumping the water up and what they're doing with the hydro facilities with the conduit hydro and the small hydro that they're using from that, is they're taking energy that would otherwise be wasted as they throttle down the pressure. So they're not actually -- you're not using brown power, you have to get the power up the hill to get the water there. And that's what they're trying to do. And regarding the geothermal at the Geysers, the equivalent -- pumping the water -- injecting the water into the ground at the Geysers is really the equivalent of the feed water pump from a binary system because it's producing -- the Geysers up in Northern California are producing steam. You don't need to pump the steam up to the generators, the steam will flow as long as you've got enough liquid down there to make the steam so that it will go up through the pipes and through the turbines, so there's no need to pump it up in order to get that resource to the surface. The need is to pump the water down into the reservoir so that it creates enough pressure that the steam will come back up and generate the

electricity. Does that help?

MS. FOLEY: I think the question was whether it was a fuel.

MR. MULLER: And without the water being put in the reservoir, nothing comes up, so it certainly would appear to be a fuel, I mean, what they're doing is taking the water, underground, the water is turned into steam, and when it comes up the steam is then used to generate electricity.

MS. FOLEY: I actually recall, I think that -- I can't speak for the Geysers, but I recall now that I'm thinking about it, that since they're pumping their water up from a wastewater facility, they pay the utility for that --

MR. MULLER: Correct.

MS. FOLEY: -- so it's not an issue.

MR. MULLER: But it's also not considered Station Power, and without that, the generation would be a small fraction of what it is today.

MS. FOLEY: Well, I don't know that it's been considered at all since it's paid separately through a retail utility rate, as I recall. So I'm not sure that's the case. So you're saying, though, that that water, that wastewater being

put in, is the fuel?

MR. MULLER: Correct.

MS. FOLEY: What's the heat?

MR. MULLER: The heat is the heat from the geothermal rocks underground that is turning that water into steam.

MS. FOLEY: But it's not a fuel?

MR. MULLER: Well, the heat is the source of the energy, it's just like the ground is -- just like the earth is the source of what turns all those old dead dinosaurs into gas and oil, it's the same thing. The stuff that comes up is the fuel that you're using to generate electricity. I mean, it's not a closed cycle system where you're just keeping -- you're working fluid going through the process, you have something that you are taking out of the ground that is there, it's there naturally, but it's put there obviously by being pumped in the ground, in this case from the City of Santa Rosa, or Sonoma County, or wherever it comes from.

MR. KOOTSTRA: Thank you. The next commenter we have is Jeremy Weinstein with Pacificore. I said that wrong, I apologize, Jeremy.

MR. WEINSTEIN: That's fine, thanks. Greetings. Thank you very much for holding this workshop. I'm really pleased to see the kind of seriousness with which the issue of Station Service has been taken.

COMMISSIONER HOCHSCHILD: I'm sorry, sir. Could you introduce yourself again?

MR. WEINSTEIN: I'm Jeremy Weinstein with Pacificore. And I wanted to compliment the staff for the seriousness with which they are taking this issue. From Pacificore's standpoint, and I would dare say from the standpoint of most investor-owned utilities, the primary issue is one of compliance. The utilities are interested in complying with the rules and that's pretty much it. And there's a multiplicity of rules that kind of overlap when it comes to Station Service. The rules include the California RPS Guidance, but they also include the FERC rules in terms of reporting generation. So there is a document called the FERC Form 1 that utilities file a report that shows what their generation is.

Additionally, what utilities are interested in doing is the certainty of knowing

that their contracts are certain. So if the utility has entered into an agreement to buy a certain amount of renewable energy, it wants to know that when it's received something from its seller, for which it has paid a certain amount of money, which is electricity plus an associated REC, that it actually retains those. And so from our standpoint, an important thing, important concern to avoid, is destruction of RECs, so after RECs have been generated and delivered and purchased and show up in the meter, that there's not some process through deduction of station service that says, "Oh, those RECs that you have, those RECs go away, because there was a period of time when you were off line, and the facility engaged in the activity that we are seeing is Station Service that requires to be deducted and therefore you lose those RECs."

Now, I think there's a lot of savings clauses in what's going on here that prevent it. Pacificore prepared a couple years ago while we were working on this issue on WREGIS a paper on off line Station Service demonstrating why we believe that Station Service did not require -- the Station Service rules did not require a

deduction, a netting out of Station Service while the facility was off line. So does off line Station Service lead to a deduct of RECs? And the conclusion with which I think most stakeholders agreed was, no, it doesn't. And the reason why is because the rule says no RECs shall be created for Station Service. And so I think it's pretty straightforward -- no RECs shall be created for Station Service. That means that -- that's a different sentence than RECs shall be destroyed if there is Station Service.

So this issue of off line Station Service is -- can I tell you from our perspective, we want to be sure that if we've bought something, we've paid for it, that we still have it, and that if a facility goes off and does something that can be characterized, like for example in the second bullet point on page 9, at the end it says "energy consumption power these processes should be provided by the electrical generation facility before the electric generation is measured for RPS purposes," so that's before. So that's consistent with what I've just said, "…or subtracted from the gross output of the facility." And it's the subtraction of the gross

output of the facility that we want to be sure is not leading to saying, "Well, gross output, that's what you've got, and so we're going to come back and we're going to subtract." So I'm probably saying a lot of words for what I hope is a very simple concept, which is that, if the unit is off line and it's doing something that could be Station Service, that you don't go back in time or subtract it. All we're looking for is certainty and, then, if we actually bought something, we know we've got it.

And I want to compliment the staff for really serious dedication to all the other issues and this one, as well.

MR. KOOTSTRA: Thank you. Our next commenter is David Branchcomb with Sierra Pacific Power Industries. Sierra Pacific Industries, I like to add that extra "P."

MR. BRANCHCOMB: Thank you very much. My name is David Branchcomb. I'm here today for Sierra Pacific Industries. We are an integrated forest products production company here in California. We operate five biomass fuel co-generation facilities that are integrated completely with our sawmill operations. And so

when we start talking about what is Station Service and what is not, my mind begins to spin with actually how we draw the lines and break that out because our power plants are integrated directly with our sawmills. We raise steam from sawmill residue to dry lumber. As part of the production process, the pumps that are feeding the boilers are operating whether or not we happen to be producing electricity at our generators that are also co-located onsite.

So I'm very concerned that we get too much into the weeds on this because I question the value of getting down at that level, especially for facilities such as ours, to be able to break that out becomes almost a nightmarish accounting problem.

I just wanted to comment on a couple of issues that staff raised in their paper, and they certainly did a nice job laying out all the combinations and permutations, or at least beginning to lay them out because I think as we get into this we'll find there are more. I am concerned that they talk about inter-temporal accounting for Station Service. This is the same issue that Jeremy just raised. Some biomass

facilities, not necessarily ours, but others are known to go off line for extended periods of time just simply in response to economics. I don't know how you're going to account for the power that's consumed at that facility to keep the lights on and keep the transformers warm during an extended outage. Will that then net against RECs that were already created? Or will they be disappeared, somehow? And I don't know how a compliance entity is ever going to be able to get their arms around that. So that's a concern. I think and recommend strongly that we limit the accounting for Station Service to situations when the power plant is operating; other than that, it's an industrial load.

Secondly, I did want to make some observations on the paper and its interrelationships with WREGIS. I've been involved with WREGIS for several years and I'm currently the generator representative on the WREGIS Committee. This paper seems to suggest that the Station Service Working Group that pulled together this Advice Letter, upon which WREGIS is relying at this point, was comprised of all stakeholders that are involved with WREGIS.

And it's not. And I want to make that clear. This Advice Letter was pulled together by a working group that was composed of Program Administrators. Generators were not involved. End-use customers were not involved. This was simply Program Administrators, so it was their view as to what should be done, rather than the balance of the stakeholders that actually have some skin in the game in this process. And I think that needs to be noted for the record.

My final observation is on a phrase that was in the conclusion in staff's White Paper, and that was one where they say, "Staff also recommends that further clarification regarding how to apply the definition of Station Service be deferred to the WREGIS Administrator." I will argue that that's not the right way to go, and frankly if staff wants to weigh into this briar patch, they should wade their way out of the briar patch and not abdicate their responsibility to the WREGIS Administrator in this particular situation. These are your regulations and your rules, and you should be required to explore them in forums such as this, where we have public input, where we have policymaker input, and not

rely on the WREGIS Administrator to conclude actually how your regulations should be deployed.

The final comment and observation I would like to make, and this is really a question for staff as we see the room with several people -- a lot of people gathered here, a lot of time being spent on this, this is being kind of a kick-off of what could be a long and arduous process -- I guess I kind of wonder why. Current energy demand in California roughly is 300,000 gigawatt hours a year. If we go to a 33 percent Renewables Standard, that's about 100,000 gigawatt hours a year that will be supplied by renewable energy, or about 100 million kilowatt hours. How much of that 100 million do you expect to influence by tightening down the screws on what the definition of Station Service is? I'm just really curious because it seems like a lot of work for very very little incremental benefit. So those are my comments today. I will be available for any questions if anyone has them. Thank you very much.

MR. KOOTSTRA: The next commenter we have is Nick Goodman.

MR. GOODMAN: Thanks, Mark. For the

record, my name is Nick Goodman. I'm the Chairman and CEO of Cyrq Energy. And I want to start again by thanking staff for this process. We, I think more than most, really appreciate the opportunity to have an open process. I've listened to a lot of the comments this morning and I'll try not to repeat myself.

But for us, we've had our challenges with WREGIS and one of the comments that I appreciate the most, and I just want to echo here, is the ability to have an open forum and an open discussion where there is participation. Specifically relating to the last comment, we are confounded by the current status with WREGIS and this sort of staff Advice Letter, if you will, as it pertains to the Operating Rules. We are not a member of WREGIS, but we do have an account through an aggregator who was on the WREGIS Committee, who continues to advise us that the Operating Rules do not encompass this separate sort of side letter on Station Service and that, really, if we are bound under the CEC Guidebook process to the Operating Rules, there's a little bit of a disconnect there because this opinion and side letter on what Station Service is and is

not, while it did not go through a public process, it did not even get vetted by the WREGIS Committee, so I think that's a comment I'd like to second.

But most importantly for us, you know, again, I echo the comments of Ormat, I think it's very possible to get into lots of very granular discussions about what is a fuel, what isn't, does it heat; we believe that the brine is a fuel, we believe that it is currently being treated differently within geothermal, both flash versus binary, and we've had some discussions on that, so I just want to state for the record it seems to us that the consistent approach is fluid or water, whether it's manmade, it's actually not the manmade components in a flash system of the water, the wastewater, it's just the water naturally occurring that becomes steam, and that's the same naturally occurring water that we use. So that's how we arrive there.

But at the end of all days, I think we come down upon looking for consistency and looking for not just consistency amongst the various renewables, but more importantly looking for consistency within the industry and getting

projects financed, which is really the hardest thing for geothermal projects to do today. And this inconsistency between FERC and what may happen on the East Coast versus the West Coast, the FERC definition versus the various definitions here, we desperately seek clarification. And so I'll come full circle again by thanking you because I think this is a process that's going to get us there, it feels like you guys are very actively engaged now, and we would just push for looking to some sort of industry standard that is fair and consistent, and we believe that's the preferred definition. Thank you.

MR. KOOTSTRA: Thank you. Our next commenter is Sandra Aria (*sic*). I know I'm butchering this name, I'm sorry. Assistant Vice President of LS Power Development. Oh, I'm sorry! Sandeep, okay.

MR. ARORA: Hello, good morning. My name is Sandeep Arora. I work for LS Power. I want to again echo everyone else's comments, thank you for this opportunity to be here, participate, and we will continue participating in this forum.

This is an important topic for LS Power.

LS Power is the owner, builder, developer of solar generation projects in California, developer of transmission projects all across the United States, and also developer and owner/operator of natural gas-based projects all across the U.S.

In the context of Station Service, you know, we specifically wanted to talk about the Station Service requirements as they apply to the California projects that we have recently built in our operation.

I know there has been a lot of discussion on geothermal, biomass, and other technologies, but I think the whole issue of Station Service and the accounting rules and whether RECs are available, how RECs are accounted for, they are applicable to pretty much all projects, not just specific technologies.

And essentially I want to take a minute and talk about just the complexity of electrical design. When we design -- and I'm more familiar with solar PV projects, so I can speak for those -- but when you design a solar PV project, it's 100 megawatt plus, a big project, it takes about 1,000 acres, 1,000 plus acres, it's huge. The

way you're setting up electrical service for the project is typically you get backfeed service from the point of interconnection, and then very often you also have a design where you get a distribution feed from the local utility, so that essentially there are two sources of power coming into a plant of this size, and back- feed is essentially to cover for your transformer losses, your line losses, and so on. And then distribution services for essentially other Station Service, auxiliary service requirements that the plant has.

When the plant is generating, it's on line, then whatever net consumption -- the back-feed requirements are netted off of the revenue meter, which measures how much the plant is delivering towards its point of interconnection. However, when it's not generating, the meter is likely spinning in the other direction and it's consuming some energy. So some plants could have a dual design where there could be a Station Service fee, which is a distribution fee. Now, that's a completely separate electrical system, but that Station Service feed is essentially to meet the auxiliary loads that exist at the plant,

and also to offset some of the inverter losses, inverter transformer losses, and so on. So when we're talking about Station Service, trying to separate Station Service in a sense, you know, based on this definition, from overall consumption for a project of this size, which comprises of backfeed requirements and Station Service, is going to be definitely a complex task to achieve.

We're going to have to try to meter and account for what transformer losses, line losses versus what's typical Station Service that is being discussed under this. And again, it's been discussed before, during the nighttime when the project is not running, there is some amount of consumption coming in from the transmission site; again, there's no RECs that get generated during that time, so what clarification we are seeking is that the production level that was achieved during the daytime, the RECs generated for those do not get offset by the consumption that takes place during the nighttime. So we support other comments that are made earlier that nighttime -- because when we designed the project a few years ago, this was not really modeled into the

financial models for the plan, and that's what the expectation from the utilities is for which we have PPAs. I'm sure everyone else is pretty similarly set up. So if you're trying to change some rules for projects which are already operational and functioning under a certain financial arrangement within these PPAs, I think that is going to be, 1) it's going to be complex to achieve, and 2) it's going to cause a lot of financial impacts -- to not just our projects, I'm pretty sure there is going to be several other projects that have similar set-up over the last few years which will be financially impacted by this. So we urge the staff to -- I guess there could be a way to address this, which is by allowing a de minimus requirement, a de minimus input that comes into the plant for meeting Station Service, or backfeed, or other requirements, and keeping the problem at a very high level, or a simple level, rather than trying to get into the details and just trying to split the meters and seeing how much is backfeed and how much is station service, again, when the plant is on line versus when the plant is off line. And also, their additional complexity is,

are the megawatts that are generated going towards, for instance, CAISO, versus the energy coming into the plant, is that coming from a distribution facility, which could be CAISO distribution usually, or a non-ISO distribution. So there is going to be a lot of complex arrangements, metering arrangements, that would have to be made if we go by what's being proposed. So we definitely urge the staff to re-think that and, again, thank you for this opportunity to participate.

MS. ZOCCHETTI: Thank you. This is Kate Zocchetti. I'm Acting Office Manager of the Renewable Energy Office. And I just have a question. A lot of folks have been mentioning that it's very complex and we're getting into the weeds, which I agree, that seems to be our job. I just have a question for you and then I have a comment. My comment is that I just think it's interesting that the utilities are very interested in getting into the weeds and they will argue with us about a kilowatt hour when we're verifying electricity, so we're already in the weeds, and that's what we do every day.

I do have a question, though. If we were

to consider the off line versus on line issue, and if off line was taken off the table, would that reduce complexity immensely or just a little bit?

MR. ARORA: It would definitely reduce the complexity, however, I think even during the daytime, if there is a certain amount -- because every project who is going to be delivering or generating renewable energy is going to need some minimum amount of electrical consumption. Now, whether that's coming from 100 percent brown power, or as others said, maybe it's 33 percent green versus, you know, the rest is brown. So I think to the extent certain de minimus is factored into the equation, that would simplify the problem a lot.

MR. KOOTSTRA: Okay, thank you. The next commenter is Shawn Bailey.

MS. BAILEY: My name is Shawn Bailey. I'm with Sempra U.S. Gas and Power. We operate a number of wind projects across the United States and we have, in particular, a wind project in construction in Mexico, serving Imperial Valley Substation and San Diego Gas & Electric, as well as two major solar sites, one located near Palo

Verde, Arizona, and the other near Las Vegas, Nevada.

I'm feeling really lucky this morning after hearing that geothermal fuel discussion. Operating wind and photovoltaic projects should be a lot less controversial, however, there are a couple elements to the staff's proposal that appear somewhat problematic and I would echo many of the comments that have come before about the nature of trying to split end uses at the site location between those that are required for plant operation versus those that were ancillary. And in our particular cases, we may or may not have distribution service from a local utility; at night, we may simply backfeed from the wholesale system to meet our essentially computer loads at the site, lighting loads, SCADA systems, security systems, essentially systems that don't have anything to do with operation. And so it concerns me that the definition may have a gray area as proposed by the staff about trying to divide end uses in between those that are required for operation of the plant versus those that aren't.

I think, as has also been suggested, that

you already have in statute this de minimus multi-fuel use exclusion at two percent, and it seems to me that that is a very appropriate metric to use to deal with these ancillary loads, and that it should be straightforward to review a solar photovoltaic site, for example, to determine that a lot of the gaming opportunities that you're concerned about really don't apply to those facilities, they're very simplistic: when the sun is up, you generate; when the sun is down, you don't.

So I would suggest perhaps, you know, one size doesn't fit all when it comes to developing metrics to dealing with the Station Service concept, and it may be a more technology specific assessment is in order, so that you target those cases where you've got some potential for gaming where you have a lot of gray area versus those that you don't. And that wraps up my comments.

MR. KOOTSTRA: Thank you. That's all the commenters we have in the room at this time, unless somebody else has a comment they'd like to bring up. We're going to go to the WebEx if there's anyone there, Brian? Okay. And then we can unmute the phones if anyone on the phones

have a comment. Please be patient with the fact that you might have several people talking at once, but we're going to unmute the phones so you can comment. Let me know when you get that unmuted. And again, while people are commenting, if anyone in the room has a comment, please feel free to fill out a blue card, let us know, as well as anybody on the WebEx to raise your hand.

COMMISSIONER HOCHSCHILD: While we're waiting, I'll just say, actually I'm having lunch today with Charlie Warren, who is the original member of the Legislature who created the Warren-Alquist Act. Next year will actually mark the 40-year anniversary of that, and I think he will be pleased to know that we're at the point where we're debating these kind of fine tuning issues for a 33 percent RPS because the state has indeed come very very far from when the Energy Commission was first created. Do we have folks on the phone who are going to comment?

MR. KOOTSTRA: We do have it unmuted, so if there is anyone on the lines, please unmute your line and speak up if you can and have a question? Okay. Is there anything on the WebEx that's come up, Brian? I think at this point, we

don't have any commenters on the WebEx or the phone that have gotten it to work. So I believe that's what we have for comments. Again, if anyone in the room has comments, please speak now.

COMMISSIONER HOCHSCHILD: Great. Well, let me just add my thanks to everyone. I really appreciate you all taking the time to get here and to share your thoughts as we try to get this right. I really am grateful for that. And also to the staff for working very hard on this issue and, Mark, particularly for the paper. Thanks to everyone.

MR. KOOTSTRA: I just want to close with some next steps. So everyone is aware, comments on this are due by 4:00 p.m. on September 20th. There are instructions in the notice for the workshop on how to submit the comments. We do request that you email them not only to the docket, but -- I don't remember which address, it's either the RPS Track or the RPS 33 percent, email address there so that we can get the comments as soon as possible. It takes a few days to go through dockets, and we appreciate advance notice as much as we can get. Staff does

recommend, as we said in the paper, with revising a future edition of the Guidebook to clarify Station Service so there is true clarity across the board, and we also do plan on having a scoping workshop in early 2014 on the Guidebook, which may potentially bring up some comments on this, but it will be focused on other open issues, as well. Thank you very much.

MS. ZOCCHETTI: So, Mark, just to clarify in the notice it does say also the RPS33@energy? That's the other email address.

MR. KOOTSTRA: Thank you. All right. And this is contact information if you have any questions, you can contact either myself or Kate Zocchetti, who in addition to being the Acting Office Manager, has also been the RPS Lead for many years, and I believe still fulfills part of those duties. So thank you very much for coming.

MS. ZOCCHETTI: Thank you, everyone.

(Thereupon, the Workshop was adjourned at 11:22 a.m.)