JOINT COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	Docket No.
Preparation of the 2009 Integrated Energy Policy Report (2009 IEPR)	)	09-IEP-1G 03-RPS-1078
	)	
Joint Integrated Energy Policy Report and Renewables Committee Workshop	)	
	)	
"Exploring Feed-in Tariffs for Renewable Energy Projects over 20 Megawatts"	)	

ORIGINAL

09-IEP-1G

DOCKET

03-RPS-1078

DATE MAY 28 2009

RECD. JUN 11 2009

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

Thursday, May 28, 2009

10:05 A.M.

Reported by:
Peter Petty - Certified Electronic Reporter
Contract No. 180-08-001

CALIFORNIA REPORTING, LLC
52 LONGWOOD DRIVE
SAN RAFAEL, CA 94901
415-457-4417

CEC COMMISSIONERS PRESENT

Jeffery D. Byron

James D. Boyd

Julia A. Levin

CEC ADVISORS and STAFF PRESENT

Susan Brown, Advisor to Commissioner Boyd

Jim Bartridge, Advisor to Julia Levin

Lynette Green

Pamela Doughman

Brendan Keeler

CPUC COMMISSIONERS PRESENT

John Bohn, Commissioner

CPUC ADVISORS and STAFF

Steve St. Marie, Advisor to Commissioner Bohn

ALSO PRESENT

Presenters

Toby Couture, Independent Energy Consultant

Matt Karcher, Contractor to KEMA

Bob Grace, Contractor to KEMA

John Crider, Gainsville Regional Utilities (GRU)

Panelists

Karin Corfee, (Moderator) KEMA, Inc.

ALSO PRESENT

Panelists

Marci Bergorf, Southern California Edison (SCE)

Randy Howard, Los Angeles Department of Water and Power (LAPWP)

Jon Bertolino, Sacramento Municipal Utility District (SMUD)

Valerie Winn, Pacific Gas & Electric (PG&E)

Anjali Sheffrin, California Independent System Operator (CAISO)

Greg Morris, Green Power Institute

Steven Kelly, Independent Energy Producers Association (IEP)

Jim Metropulos, Sierra Club

V. John White, CEERT

Public Comment

Michael Theroux, Theroux Environmental

Michael MacDonald, Self

Craig Lewis, Right Cycle Enterprises

Bob McConnell, Amonix

Mary Kimberlin, Self

I n d e x

P R O C E E D I N G S

10:05 a.m.

MS. GREEN: Okay, good morning, everyone. And welcome to today's Joint Integrated Energy Policy Report and Renewables Committee Workshop.

COMMISSIONER BYRON: Projecting.

MS. GREEN: Good morning. Can you hear me now?

COMMISSIONER BYRON: You're still faint. Go ahead and --

MS. GREEN: Hello.

COMMISSIONER BOYD: Yeah. You're on, you're just not loud.

MS. GREEN: Good morning again.

COMMISSIONER BOYD: You have to project.

MS. GREEN: Welcome to today's workshop on the Joint IEPR and Renewables Committee Workshop on feed-in tariffs for renewable energy projects over 20 megawatts. I'm Lynette Green, and I'm the 2009 IEPR project manager.

Before we get started, I'd like to mention a few housekeeping items for those who are not familiar with the building. Restrooms and water fountains are outside this room to your left. There's also a snack room up on the second floor under the white awning. And in the event of an emergency and we need to evacuate the building, please proceed to Roosevelt Park located diagonally across the

street.

COMMISSIONER BYRON: But only walk.

MS. GREEN: And also, this workshop is being broadcast and recorded to the WebEx system. So for those parties using this system, please note that we've put your phone lines on mute. You may also send a chat to our WebEx host if you have any questions or comments related to the workshop. This WebEx recording will be available online after the workshop and the transcript will also be posted about a couple weeks after the workshop.

Just to give you a little bit of background, the Energy Commission is required to prepare an Integrated Energy Policy Report every two years that provides an overview of major energy trends and issues facing this State. And we conduct an extensive public process to get input on the topics to be covered in the report.

As indicated in the notice, the intent of this workshop is to further evaluate and get public input on feed-in tariffs for renewable energy projects larger than 20 megawatts in size.

The 2008 IEPR report update identified feed-in tariffs as a potential mechanism to provide more financial certainty to renewable developers to help bring more renewable projects on line. The Energy Commission recommended that the California Public Utilities Commission

immediately implement such tariffs for projects up to 20 megawatts in size.

In addition, the IEPR recommended the Energy Commission collaborate with the CPUC to develop a report to examine the feasibility of establishing a feed-in tariff for projects greater than 20 megawatts. The 2009 IEPR Scoping Order directed staff to build on information and analysis for the 2000 IEPR update on feed-in tariffs and report in progress implementing the IEPR recommendations.

The Committees are interested in your input and encouraged you to submit written comments to our dockets office by June 11. Please make sure to include Docket Number 09-IEP-1G and 03-RPS-1078 and indicate in the subject line Joint IEPR and Renewables Committee Workshop on Exploring Feed-In Tariffs for Renewable Energy Projects over 20 Megawatts.

We will have three public comment periods throughout the day and for those in the room who would like to speak, please make sure to fill out a blue card located in the lobby and I will be collecting them throughout the day.

Also, when you speak at the podium, if you could state your name and affiliation and provide a business card to our court reporter so that we can spell your name correctly in the transcript, that would be great.

Lastly, for those who wish to speak through our

WebEx system, we will open up the lines after we take all the comments in the room. And with that, I'd like to turn this over to the Commissioners.

COMMISSIONER BYRON: Thank you, Ms. Green. Welcome, everyone. Good morning. My name is Jeff Byron. I chair the Integrated Energy Policy Report Committee here at the California Energy Commission.

With me at the dais this morning is my associate member on that Committee, the Vice-Chair of this Commission, Mr. Jim Boyd and his advisor to the left, Susan Brown.

Also, this is a Joint Committee of the EIPR and renewable -- joint workshop of the IEPR Committee and the Renewables Committee. And with us from the Renewables Committee is Commissioner Julia Levin, to my right.

But, our special guest at the dais, as always, from the Public Utility Commission we have Commissioner John Bohn and his advisor Steve St. Marie. And I'm very please, Commissioner, that you're here. This is the latest in one of many workshops on this topic. As Ms. Green indicated, the staff is following through on a recommendation in last year's IEPR to look at feed-in tariffs for sizes greater than 20 megawatts.

And we certainly have covered this topic a number of times. I have -- I looked back and was able to find two recent binders from workshops on October 1st and December 1st

of this last year, and I don't think -- I think there was one other in '08 as well, but I'm not sure.

We've covered this topic in some detail. I was very impressed with the material that I read, looking through the binder last night, the presentation materials. There's a lot of content here. I think we'll have some interesting discussion around this.

But it's -- in my mind, it's most important to answer the question why are we standing on this topic? And I think, I hope we all agree, the answer is because we're not getting to where we need to be on renewables in this State, we're behind. And the feed-in tariff offers a significant opportunity to perhaps accelerate that. So we -- we're -- it's incumbent upon us to look at this closely.

And I'm pleased to have the participation of my fellow Commissioners. I will turn to them and ask of they have any opening remarks. Commissioner Boyd.

COMMISSIONER BOYD: Thank you, Commissioner Byron. I just want to welcome everybody here today and I agree with everything Commissioner Byron said about we keep repeating this subject; one, because we care a lot about it; number two, because we'd like to see more progress than we've seen.

And I'm particularly grateful to our friends and partners from the PUC have joined us today because we are trying very hard to work, collectively work together to push

this stone up what is turning out to be a very steep grade together.

I see familiar faces in the audience and one's I've known for years who have been trying to push this subject perhaps even harder than some of us have. So I look forward to this day and I look forward to some positive results that come out of this workshop that allow us in our Integrated Energy Policy Report and the CPUC in its deliberations to make whatever changes, improvements and suggestions are necessary to finally score the big touchdown in this subject area.

And so, I thank you all again and really look forward to today's discussions. Thank you.

COMMISSIONER BYRON: Thank you, Commissioner. Commissioner Levin.

COMMISSIONER LEVIN: Good morning, everyone, and welcome. I think this is a very important topic and as Commissioner Byron and Boyd have both said, we are a long way from our RPS goals and we have to figure out what the additional tools are in the toolbox that will get us there.

I also just want to thank staff for a lot hard work that has gone into preparing for this workshop and in general on renewables. This is a really important topic and we're looking forward to working with all of you to figure out how to make it work better. So, thanks.

COMMISSIONER BYRON: Thank you. Commissioner Bohn, do you have any comments?

COMMISSIONER BOHN: Thank you and good morning. I want to thank both, my friends and associates here at the CEC for permitting PUC to appear.

I represent the forces of collaboration and not necessarily agreement in this really very important topic. It's one that is intriguing for a whole series of reasons. It crosses the broader picture, at least from my perspective, of how one deals with the trajectory toward distributed generation in general. That's a much bigger issue than this one, but it is, in fact, in my judgment, related.

It also traverses an issue that is near and dear to my heart and that is how we deal with controlling the cost of some of this transitional things that we are trying to do as a matter of policy. It is no secret that the State of California needs a little help in minding its own budget, but it is our obligation to try to connect issues of cost and cost effectiveness with the objectives that I think we all share. And I value very much the invitation to come up and sit in and listen with the CEC folks and to you all in terms of trying to figure how we balance these various interests, because at the end of the day, somebody pays. And it's important that we keep that in mind. Thank you.

COMMISSIONER BYRON: Thank you, Commissioner.

Well, as I indicated, we have, I think, a full and rich agenda. Let's go ahead and get started.

MS. DOUGHMAN: Okay. Our first speaker is Toby Couture.

COMMISSIONER BOYD: While the gentleman is coming to the mike, I want to thank Commissioner Bohn for raising something that I didn't, but wanted to and that is distributed generation. I think there's an alliance of Commissioners up here who are really trying to push that subject. Thank you for reminding us of it.

MR. COUTURE: Good morning. First off, I'd like to thank the Commissioners and the California Energy Commission for making this possible and inviting me to speak today on feed-in tariff and feed-in tariff policy design.

A lot of research has been going into this, as you can well imagine, over the past few years. And a lot of important lessons and insights have emerged in the research on this and there's a lot more analysis taking place in the U.S. and in North America on these policies. And I think there's a lot of progress yet to be made on policy design.

One of the first lessons, or points I'd like to make before getting into the presentation is that from the experience we've seen around the world, aside from the term, I mean, a lot of people have issues with the term feed-in tariff, what should we call it, renewable energy payments,

renewable energy dividends, those issues aside, one of the crucial points that comes across from all the analysis and all the literature and all the data that we've seen, and I've seen in my research is the design matters.

In other words, it's not just -- what's important is not just to get a feed-in tariff in place. The actual design of that policy will be a crucial determinant of it's overall effectiveness in delivering renewable energy as well as it's cost deficiency in doing so.

COMMISSIONER LEVIN: Mr. Couture, I'm sorry, could you either speak closer to the mike or speak more loudly?

MR. COUTURE: Sure. Sure.

COMMISSIONER BYRON: Maybe it's the volume is not --

COMMISSIONER LEVIN: Yeah, I don't know if we can adjust it.

MR. COUTURE: Okay. All right, how's that. A little clearer?

COMMISSIONER BOYD: A lot clearer.

MR. COUTURE: Okay, I'll get started.

COMMISSIONER BOYD: You're still right on the edge of -- there, she's taking it. Okay.

MR. COUTURE: Okay, I'll make an effort to stand closer. Okay, so first things first, definitions. So feed-in tariff is a renewable energy policy that typically offers

a guarantee of three things. First, payments to project owners for the total amount of the renewable electricity they produce. Second is access to the grid and the third is stable, long-term contracts. Now, there are a number of different design features that can be bundled with these basic elements, but these are really the cornerstones.

And this revenue, the payment that's actually awarded, is and can be designed to be either for electricity sales or electricity plus RECs in markets where RECs are used. And there's a number of different examples on the bottom there that outline some of the terms that have been used to discuss or to describe feed-in tariffs in the past.

This has actually caused cost problems because there's a lot of confusion over terminologies. One of the efforts that I've been making in research at the National Renewable Energy Lab over the past year was precisely to clarify some of these consensual distinctions and try to get the language clear on this. So I think there will be progress on that going forward.

Here's a map of the United States outlining some of the activity taking place. There's a few outline. This is in a state of debate as of February. It's a bit of an outline of where different states have different kinds of feed-in tariffs and different utilities within those states.

Some key differences. So there are some important

lessons to be learned just looking at the U.S. versus the European context. Clearly, first things first, feed-in tariff policies in Europe have had far greater success than feed-in tariff policies to date in North America. And it's an important point.

And when you see the data on this, it begs the question why. So why are there these fundamental differences in the actual effectiveness? And again, these differences often come down to issues of design. So I'll get into some of that in a minute.

First things first, U.S. FIT Policies have not been based on the cost of generation allowing for a reasonable. The only feed-in tariff policy in the United States, we'll actually hear from one of the representatives later today, is Gainsville, Florida. The GRU, Gainsville Regional Utilities, is the first utility in the United States to offer a cost-based feed-in tariff policy. And I'll get into why that's important later.

So the second thing, feed-in tariff policies in the EU can be used by everyone generally speaking. There are some exceptions, but they're open to residential/commercial/industrial customers or consumers, different types of government and non-government entities, as well, as private businesses, utilities and investors of various -- of any kind. So the open -- the market is open, anybody can

participate and benefit from the feed-in tariff crisis offer. So in that way, it's not a discriminatory, but it's also equitable in that everyone has access to the same terms, and presumably to the same rates of return provided that the debt equity ratios and the overall cost of capital is comparable.

Third point, feed-in tariffs in the U.S. have imposed numerous caps. So when you take -- when you look at the different policies that have been implemented and keeping that math in mind, we often see a number of caps, either on project size, on overall program capacity, either on an annual basis or just in general, as well as caps on total costs. And the focus tends to be on annual increments. So very baby steps approach to renewable energy development under the FITS.

Where as in the EU, not only are the goals longer term, but the caps are set, where there are caps, are set in a much longer term way, often with -- often more understood as a target than as a cap and that's an important distinction for a number of different reasons.

A target sort of sets a goal, something you aspire to in the future, whereas a cap provides kind of a ceiling on overall market development. And from a -- take a quick example, from a manufacturers standpoint, I've been discussing with some of the manufacturers in the solar and wind energy space, and for them entering into a market, if

they're entering into a capped, we'll say a capped policy environment, for them it's a very different investment because they don't know -- it's harder to guarantee long-term market growth on the basis of a capped policy environment. So they tend to go and take a greater interest in markets where there's a more open-ended growth market for renewable energy development. And that's been seen in countries -- the results of that have been seen in countries like Germany.

And the final point, there are longer term caps, if there are caps at all, their targets can provide investors and developers as well as manufacturers with greater certainty, a crucial point to getting capital fund.

Fourth point, feed-in tariffs in the U.S. have yet to fully differentiate the feed-in tariff payments. So that term, I want to highlight, differentiation. This is one of the really crucial aspects of feed-in tariff policies, again, from a design standpoint, is the level of differentiation. It's possible to differentiate the actual prices offered in a number of different ways. So either by project size, by technology type and increasingly, we're seeing a move towards even differentiating the actual payments by the quality of the resource so that windier areas don't get windfall profits from developing wind sites in those windy areas.

So differentiating the actual payment as a function of the actual quality of the resource. And this can also be

done on a locational basis. So, for example, for an offshore wind, proportionally higher payments can be awarded to projects offshore in order to encourage development. Again, following the principal that the payment offered should be adequate to cover project costs plus a reasonable rate of return.

So if you adopt the principal that the actual payments should guarantee cost of recovery plus a reasonable rate of return, then the question becomes, okay, what does it cost to develop wind offshore? What does it cost to develop solar power? What does it cost to develop solar thermal power? And then you set a feed-in tariff accordingly to ensure that the investments in those technologies are profitable over time.

So addressing a few misconceptions. This is always fun. There's a lot of different, I can go on about this, but keeping my remarks relatively short. First and foremost, feed-in tariffs are not a foreign policy. Utilities across North America have been signing costs recovery plus profit contracts for conventional generation for decades. This is not a foreign notion.

The key difference is with -- between feed-in tariffs and conventional utility contracts, so for example, if you're building a nuclear power plant, you'll want cost recovery under capital costs, your own OEM, your variable

OEM, your fuel costs, et cetera, you bundle all that together and you get a purchase price, usually indexed to inflation over time. And that purchase price will be required to actually guarantee that investors will step forward.

Feed-in tariffs operate under the same principle. The two key differences are that they apply to renewable energy technologies and the second is that anybody can participate. So the prices are set forward rather than established bilaterally or non-transparently between the utility and the developer. So the prices are known. They're set forward and everybody knows what everyone is getting. And that also helps. There's some analysts in Europe that really emphasized that point as a driver of broad-based investment because everybody knows, everyone is aware of the respective prices offered.

Second point, feed-in tariffs are not the same as PURPA or a standard offered contract, contracts that were offered previously nor are they the same as net metering. There are some important distinctions there and I can get into those further, but first and foremost, PURPA, as you're most likely aware, were based on the notion of avoided costs. So essentially, the utility would analyze what their avoided costs were. PURPA worked particularly based on projections of avoided costs based on fuel and electricity price estimations. And naturally those ended up being wrong

because energy forecasts are rarely as accurate as we'd like them to be and that led to problems.

With feed-in tariffs, there's a different approach in that you don't -- you're not concerned with what's happening externally. You're looking at what the technology costs and setting a price on the basis of that. So it's a bit more methodologically grounded on known quantities. So you actually know, we know based on market trends and data that's publicly available what the trends are, for example, in solar PV costs. And that can be determined within a relative degree of -- a relatively tight margin of precision. And it's that on which feed-in tariff prices are generally based in order for them to be successful and actually leverage the investment.

The third point there, feed-in tariffs are compatible and they often can be designed to complement RPS mandates. This has been a big issue, I've had a lot of questions concerning this. RPS has, strictly speaking, set a target or a goal or a cap, however you want to frame it, for renewable energy developments. So they essentially guarantee demand, 10 percent, 20 percent, 33 percent, will be met by renewable energy sources by a certain date.

The real question hinges on the procurement mechanism that's used. I want to emphasize that point. If you set forward a target, an RPS, which 28, I think 29 U.S.

states have now done, for renewable energy development, the question you then have is, okay, how are we going to meet that target. And you can meet that target in any of the number of different ways.

Utilities can develop the projects themselves. They can offer RFPs or requests for proposals to private developers and then solicit bids and work on the basis of that. Or they can set forward feed-in tariffs to actually meet those targets. So feed-in tariffs could be understood as simply an alternative procurement mechanism for meeting those targets. And it's interesting to note that European countries also have targets under their eager directives. So they operate under a very similar type of compliance environment, they just choose, overwhelmingly, feed-in tariffs as the option to help meet those targets.

The third point is all feed-in tariffs -- or the fourth rather, all feed-in tariffs are production based, but not all production-based incentives are feed-in tariffs. So PDIs are much more familiar in the U.S. landscape, but there are some, you know, some key differences between basic PDIs and FITs. So we've been considering, the research at National Lab, feed-in tariffs as an advanced form of production-based incentives. And they're advanced in a number of different respects primarily tied into the way they're differentiated, but also in the fact that they're

cost-based where production-based incentives, in the past, have traditionally not been cost-based.

And finally, if the goal is to create jobs and economic development or to stimulate the flow of capital, states likely should be entities to implement FITs because utilities aren't necessarily concerned or interested in job creation or any of those other objectives.

So in order for them to really be successful, we've seen that the successful ones are often the ones implemented by states because that's how they'll get designed properly in order to leverage the investment and offer prices adequate to actually drive market growth.

So a few further points on PURPA. Again, they're tied on inaccurate -- tied to inaccurate projections of avoiding costs. Electricity prices actually did diverge quite a bit due to lower costs of natural gas, particularly in California. And when that came in, made the PURPA contracts seem expensive by comparison.

Feed-in tariffs are based on project economics, not on external factors like projections or of fuel costs or fossil fuel, price volatility in the future. So you have more known quantities which actually improves the accuracy of the price setting. And most often the payments are levelized so you can actually flatten them out over time just as you do in any other contract.

And feed-in tariffs can offer, we've actually seen this, particularly in Spain and Denmark, that they can offer a price hedge. And this is a crucial benefit and probably will become more so for jurisdictions that realize it and seize the opportunity going forward with volatility that we've seen, I think it would be fair to say unprecedented volatility, in last year, particularly in oil and natural gas. We happen to be at the low now, oil is on the rise again at over 60.

But with volatility going forward, the hedge benefit, there's no question that that will become a much more important factor in stabilizing electricity prices in the future. So I make that point to -- that's one of the advantages and we've actually seen some of that hedge benefit in, particularly in Denmark and Spain where they've seen lower electricity prices as a result of their feed-in tariffs primarily because of the wind development.

Okay, some of the complementary issues between the two feed-in tariffs and renewable portfolio standards. I won't spend too much time on this because I've already gotten into some of the details.

Traditionally, the most common method in the United States to meeting those RPS targets are competitive solicitations or RFPs. And this can either be bundled with or without rapid trading between the developers. A feed-in

tariff policy can be compatible with an RPS mandate, as I've mentioned before. Project financing is facilitated because you ultimately integrate the cost into the rate base generated under feed-in tariffs.

And this is not necessarily the case. In other words, you could do it through state, through the Treasury. But traditionally feed-in tariffs are most commonly are integrated into the rate base so that the purchase guarantee is backed. And whatever impacts, as well as whatever benefits occur accrue to the ratepayer at the end of the day.

All eligible projects are typically assured to the utility contract. As I mentioned, this is sort of the must-take provision that some of the folks from KEMA will get into later. The must-take provision is often one of the key design features to ensuring, again, that the RPS targets can be met.

And again, focusing on reasonable cost renewables as opposed to least costs. One of the dominant principals of implementation behind the RPS policies traditionally has been the least cost provision. In other words, we should only focus on the least cost renewable energy development at the expense of everything else. Now we currently have half a dozen or more different types of renewable energy technology with markets that are poised to expand dramatically in the years to come.

Focusing on only the least cost resources could be considered an opportunity cost over time as those other technologies actually start reducing costs. And we've actually seen an analysis from the EU demonstrating that some of the policies, because of the gains offered by feed-in tariffs, they've actually been able to deliver lower costs average electricity, renewable electricity, than policies under the recent competitive solicitations or that are only focusing on least cost resources.

So it's a bit of a counter-intuitive result, but we have actually seen that some of the benefits that feed-in tariffs offer with lower long-term contracts actually lead to a lower cost of financing over time which increases the cost efficiency of the policy framework. And that is actually often compensated for the fact that you're also allowing for costlier resources like solar and some of the biomass, geothermal or offshore resources.

So some of these distinctions I've touched on already. Some of the distinctions, production-based incentives, I think all this should be fairly familiar so I won't spend too much time.

A point that is important to raise is between -- the distinction between utility-based and state-based feed-in tariff policies. So we have seen a number of utilities take it upon themselves for various reasons, some to meet their

RPS targets, others for different reasons, to implement feed-in tariffs. So some utilities have actually gone forward and said that we will voluntarily offer a buy-back price for renewable energy technology.

So currently in California, PG&E, SCE as well as STG&E or ST -- anyway, Xcel, MGE, Madison Gas and Electric in Wisconsin, all have what could be considered feed-in tariffs. So we have to expand the umbrella a little bit. There are different kinds of feed-in tariffs and this comes back to the first point that I made about the importance of design.

So none of these are cost-based. None are really meant to stimulated large amounts of renewable energy development. They often have caps and numerous other provisions. And none of them are fundamentally are made to create jobs or to really increase substantially the investment in the renewable energy space. But again, that's not a utilities role. So this is why the point earlier, that states are arguably in a better position to implement effective policies on this because ultimately, states are the ones that benefit from that job creation, investment and private sector development that occur as a result of feed-in tariffs. I'll get into that a little in a moment.

So how can feed-in tariffs help me, state goals? So naturally there's the RPS target, but there's also some of these job creation benefits. I mentioned the price hedge.

The four-point is one that I'll spend a moment longer on to address some of the issues.

Creating a stable investment environment. Now, this is one of the -- taking a step back and you look at the markets, one of the benefits, one of the provisions that feed-in tariffs allow for and that we've seen in the research is that they create a stable framework for investors.

So with a guaranteed price and with must-take contracts and a long term commitment to the policy, with all the stability that that brings, investors are much more willing to enter the market. And that's at all levels of the supply chain. That's from the manufacturing all the way up to the actual project developments side.

So there's a tremendous amount to be said for the importance of policy stability and creating an actual stable framework for renewable energy development over time because that sends signals to investors that there's a guaranteed growth market and there's a market that's worthwhile investing in. So we've seen private capital flows into countries like Germany and Spain where these long-term stable conditions are in place of tens of billions of dollars annually in the renewable energy sector alone. We've see in countries like Germany. And a lot of that hinges, when you speak with investors and manufacturers from Germany, a lot of it stems from the stability of the policy environment

that the feed-in tariff framework has offered. So a lot of countries are starting to actually implement feed-in tariffs more because of those reasons than, you know, specific renewable energy objectives.

The fifth point, if they can foster cost efficient renewable energy development. So I noticed in some of these slides, and I'll probably leave that to John Crider later on in the day, but one of the benefits of feed-in tariffs is that they have been shown to be more cost efficient.

Now, I want to take a moment to elaborate a distinction. So I've talked about effectiveness. Now effectiveness is a desirable policy objective. Effectiveness interpreted as megawatts in the ground. So if your policy is effective, it's delivering growth, delivering megawatts or megawatt hours, technically speaking.

But the second point around cost efficiency, so we had cost efficiency and then you can think of just efficiency or economic efficiency. So cost efficiency can be understood as offering a payment that's adequate to ensure investment and to ensure your return on investment, but without allowing for windfall profits. So if you're ensuring, you know, 45 to 55 percent internal rates of return, that's probably not a very cost efficient policy.

So using that as a metric, we can actually gauge different country's policies on the basis of their overall

cost efficiency, interpreted in that sense. A cost efficiency as allowable profit margin essentially. So cost efficient development would be allowing for a modest, a reasonable rate of return, it's adequate to drive investment without overpayment. Now, different jurisdictions will have a different take on what is a -- on what constitutes a reasonable rate of return, but the principal, I think, holds.

And the final point about efficiency, so some -- it could be argued that wind power, for example, is a more economically efficient choice because it's cheaper per kilowatt hour than, for instance, solar power. And that gets into issues of which technologies should actually be eligible for the feed-in tariff terms, so whether you should include only the lower cost resources or include a diversified portfolio.

I could go on about some of the benefits of diversifying the energy portfolio instead of just focusing on least cost resources, but one of the major drivers, at least for states as I interpret it, is that you stimulate investment in all of those different sectors. And consequently, the job creation and manufacturing growth that comes with a policy framework that actually targets all of those different sectors instead of just focusing on the least cost resource.

So although there's a trade off between paying more

for your kilowatt hours from solar PV systems, you get some of those longer term, medium term and longer term benefits of actually stimulating investment in all of those different technology sectors. And that, in and of itself, can be thought to have significant benefits for society, both in the near term and the long term.

So it becomes a bit of a -- it's a value commitment, but it's also a decision that has to be made on a state-by-state or a jurisdiction specific basis. And from policies that we've seen elsewhere, they've opted for that trade off. So the trade off between the job creation and all the benefits on that front, you know, while paying slightly more for the electricity, for instance, sharing from solar power. So again, that trade off is a crucial policy decision or public policy commitment.

So a seven-point diversifying is naturally GHG benefits which will become increasingly important. I could -- all of -- each of these could be expanded upon and independent reports could be written on any -- on each and every of these.

A further final benefit I'll take a moment on, the local ownership. Naturally, if everyone is able to participate in the feed-in tariff framework, in other words, as I mentioned at the outset, if both homeowners, business owners, utilities, government and non-government entities can

invest, it tends to diversify the nature of your ownership. In other words, the nature of who's actually investing in the markets. And that can be a tremendous contributor to market growth and to economic development by diversifying the actual nature of the ownership of the electricity resources.

Now, feed-in tariffs and the financial crisis. I could -- this is another topic that -- or point an independent report can be written on each of these points. I'll try to keep them short because I realize I'm probably getting to my time.

As at the beginning of 2009, the United States is down to four tax equity investors. This is a staggering shift in the U.S. energy investment space. Up until mid-2008, there were anywhere from 14 to 18, by some counts 20, tax equity investors investing in the U.S. renewable energy market. Primarily wind power, but there's some solar in there.

So that meant that the health and growth of the U.S. renewable energy industry hinged on those tax equity investors. A lot of this is the product of the production and investment tax credits that are offered at the federal level. But because of the financial crisis, a lot of the tax liabilities on which those tax-based investments hinged have gone out the window. So we now, we're now down two as of the beginning of 2009. Things have probably picked a little, but

I don't see it being much higher than that.

Now, there's hope that the market is becoming more diversified and there are new entrants, new companies, new investors entering into the U.S. market, but this is a pretty staggering fact. And one of the benefits that feed-in tariffs could offer is diversifying again that investor pool so that the health of the renewable energy market does not hinge solely on large tax-dependent or tax liability holding companies. And again, the benefits of that, I think, are clear.

Feed-in tariffs can facilitate project financing through guaranteed long-term contracts. Again, this is a -- we've seen a trend away from long-term contracts and that's probably in the context of a lot of other factors that are shifting in the electricity markets in the United States. But and more reliable market growth and, in most cases, a lower cost of capital which actually puts downward pressure on the actual costs of your renewable energy development.

So all those factors create a pretty compelling case in favor of reintroducing or readopting a long-term contract approach, particularly for renewable energy development because you that hedge benefit because there's none of the, at least in -- except for the biomass types, there's no exposure to fuel price risks because you're dealing with wind and sun, et cetera.

Naturally helping to track capital, I've emphasized that point a few different times, so I won't belabor it here.

And reducing dependence on tax equity. Now there are new provisions. I believe that some of the folks from KEMA will get into the tax provisions and the new AAR -- ARRA was passed. But the crucial element here is that feed-in tariffs can actually help reduce that dependence on tax equity which is arguably an important point, again, of diversifying and stabilizing the growth of the renewable energy markets in the United States. This is a pretty crucial one that I think we'll see a lot more activity on under the new incentive structures.

And again, the final point, FITs provide the opportunity for low risk returns on local energy investments. So for jurisdictions or states that are interested in driving that and encouraging more local investment with all the multiplier effects that that brings, the policy framework offered can actually help solidify those benefits and make it possible.

So I decided to integrate this at the last minute and thinking on this and the options. So one of the different ways, so I've talked more about the fixed price, long-term contract approach. So there are two different ways of structuring the feed-in tariff. One is to offer, again, that fixed price over time for renewable energy development.

The second is to offer a premium above the market price. So a bonus on top of the prevailing spot market price.

Both of those options are currently used around the world. So Germany has the classic fixed price model where they offer the long-term 20-year contracts. Spain, on the other hand, uses the premium model. So this is actually a depiction of the 2008 wind-power, policy framework for Spain where they offer a premium above the prevailing spot market price.

The key thing to note about this and it's a bit of an -- the graph is hard to appreciate, so I'll try to explain a little bit just to get a sense of what it is that's actually happening here.

So they have the premium fluctuating as a function of the market price. So if you had a fixed premium, in other words, say you offered three cents on top of whatever the spot market price is doing, or the MPR, say in California, the market price referent, if you add that bonus on top of that and the MPR went way up, or the actual electricity price went way up, you would have that premium still being awarded regardless of the market price. And that could lead to that previous condition that I mentioned of overpayment. So that would -- that could be a concern.

What Spain has done in response to that is they've differentiated their premium. So they make it a variable

over time. Again, to improve the cost efficiency of the policy. So they set a bottom limit with both a cap and a floor on the total premium amount which actually helps limit the rate of payer impact. And you can see, on the bottom axis, as the market price evolves to a higher level, the actual premium declines to zero.

So this arguably can be considered a more market-compliant model because you're still riding on the actual market price signals, recreate the incentive to produce in times of peak demand which is very important in jurisdictions like California, where peak electricity is extremely -- much costlier than your base loads imply. And you aggregate policy costs can be more clearly known because you can actually do the sum of your premium payments. When your premium declines to zero, as in this instance, you're paying -- you're not paying anything above the market price.

So there's the benefits of that and it retains those competitive price signals, so there are a few more points on this same graph.

The variable premium keeps a lid on the overall policy costs. Again, because if the market price rises, you're not paying anything extra. Developers just get that prevailing market price. And it can be differentiated by the technology types. So you can offer a larger bonus or like a premium payment to different types of technologies that

require a larger premium to be profitable investments. And it could be argued that this is a more adapted structure to restructure the electricity markets, again, because you retain the competitive price signals.

Another benefit of the premium model that's often highlighted in EU, and it's one of the reasons why Spain continues forward with this model, because it arguably offers a better allocation or better distribution of ancillary services and some of those electricity grid level benefits, by actually targeting some of the investments in locations where they're needed most. So in peak areas, where you have really high electricity prices, there would be a much greater incentive to invest in renewable energy systems there because your price signals create an incentive to do so.

And that's, again, distinguished from the fixed price model where you're completely oblivious of price signals because you're just setting a fixed price regardless of location on the grid or peak, supply and demand factors.

So this is -- I introduced this because it's often not raised in the literature or in the analysis on this. But it is a second approach to designing the feed-in tariff that's -- that can be thought to be more designed -- more compliant with whatever competitive price signal model. And this gives a bit of depiction of that.

So in the future, I'll try to wrap up real quickly

here, some of the best practices, so we're just in the process now and still working as a consultant with the National Lab on these feed-in tariff reports. And we're coming, within the next month or two, this large design options report should be published. It covers pretty much A to Z on feed-in tariff policy design. And it will act essentially as a guide, invest practices guide to feed-in tariff policy design. It would cover this spectrum of what's done and what's been done. And our hope that that will be useful for, particularly for jurisdictions in the U.S. who are looking at implementing feed-in tariffs going forward, to actually understand the nuances and all the different details and all the advantages and disadvantages of different kinds of policy design choices.

So some of the best practices, real quick. The long term commitment and it provides, again, stability and reduces investor uncertainty method that -- the fact that the feed-in tariff should be method or logically based on the costs of renewable energy generation.

Now, that second point, I've emphasized that at the beginning, but I think it's really the crucial -- it's arguably the most important design feature of all, that they be cost-based and it is a natural methodology to back, that cost-based formula. And that's necessary if you're going to stimulate, again, investment and all of the different -- or

in your -- whichever renewable technologies are considered eligible under the framework.

The third point is that feed-in tariffs, and I believe the most successful ones and the most cost efficient ones, are differentiated by project size, technology type and increasingly by resource quality. So that you're not just setting one fixed price for all different technologies, you're differentiating them to improve, again, the cost efficiency and to avoid over paying for certain projects or certain types of technology.

Longer term contracts, 15 to 25 years. We've actually seen small -- recently the new amendments in Germany allowed 30-year contracts on their hydro projects. But traditionally in Germany, it's 20. Spain tends to favor 25, but for their biomass types, they only offer 15. So again, you can differentiate the contract length according to the technology type.

And again, the fifth point is another, what we call tariff digression, that there's a built-in step-down over time in the actual payment offered. And usually, that digression rate is based on historical trends in cost reduction. So PV, for instance, has experience cost reductions anywhere from 7 to 12 percent annually on average since the early 2000's, just before -- since '99.

So if you factor in those historical cost

reductions, you can actually build in a digression rate so that you're paying a lower amount next year than you are this year. And that's designed not only to encourage lower costs, but also to drive technological innovation and improvement on the manufacturer side.

So if manufacturers know that the feed-in tariffs will only be offering, you know, eight percent lower next year, they have to really ramp up the R&D or improve their efficiencies or find other ways of cutting the costs of their panels, otherwise they will be competed out of the market by other players that can gain that market share and keep up with the digression rates.

So digression is an interesting feature that I think more -- that we will be seeing more of. There are a few countries in Europe that do it, but it is -- again, it's one of the design features that's starting to gain in popularity.

So the final slide, just a few reports. One of them is already published. There will be a few more coming in the next -- another one should be out this week on the website. I don't have a link to that one yet. And then the third is the comprehensive one that I mentioned earlier on the design options. That one is not published yet, but it will be in the next two months. And that will provide a detailed analysis of all the different design features, a number of which I haven't gotten into, but to help, again, frame the

benefits, the advantages and disadvantages, both in the feed-in tariff policies and of their individual design choices.

So thank you very much for your time and I look forward to taking any questions that might emerge from this.

COMMISSIONER BYRON: Thank you, Mr. Couture. I have a question and then I'll turn it over to my fellow Commissioners.

If I recall, in an earlier slide, you indicated Denmark and Spain have seen lower electric prices due to their feed-in tariffs, and I think you indicated primarily wind.

MR. COUTURE: Yeah.

COMMISSIONER BYRON: And, of course, I think we're going to hear opposing views to that notion and that's good. We want that discussion. My question really has to do with the inventory. This workshop's about looking at feed-in tariffs in excess of 20 megawatts in size --

MR. COUTURE: Yeah.

COMMISSIONER BYRON: -- when we tend to fall in that category. What -- do you know what our stock is here, our current stock, of renewable projects that might be feed-in candidates, such as, you know, biomass plants and others that are in that above 20 megawatt range?

MR. COUTURE: There's been a lot of interest lately and this probably will grow based, again, on the American

census and the cost in solar/thermal technology. They're concentrating on solar power. So those are projects that could be well above 20 megawatts. We're already seeing projects in Spain that are well in excess of that.

Similar are PV fields, you know, if you can get land, can exceed 20 megawatt. Naturally, there's the wind, both onshore and offshore that could exceed that. And biomass, arguably, you could get CHP biomass systems.

COMMISSIONER BYRON: Sure. These are all potential systems. Do we have -- what's the existing stock? Do you have any idea?

MR. COUTURE: In California?

COMMISSIONER BYRON: Um-hm.

MR. COUTURE: I haven't actually seen data on that.

COMMISSIONER BYRON: How about these projects in Spain and Denmark that you were referring to?

MR. COUTURE: So most of the -- if you do a bit of an analysis on the project size dynamics of the markets in countries like Germany and Spain, Spain is at overwhelmingly larger projects. I mean, vastly disproportionate to the smaller projects that get built. Mostly because it's larger investors, larger utilities, taking advantage of the feed-in tariffs there. So in Spain, the market structure is skewed for projects above 50 megawatts, I think it would be fair to say on average.

Whereas in Germany, you get a bit more of an even spread. So they can to encourage projects like rooftop scale and large, you know, over 20, over 50, over 100 megawatt scale. So we've seen full spectrum size development.

And again, the key there is to differentiate payment based on project size. So, for example, a smaller rooftop system would receive a higher payment than, you know, an open ground mounted field. And that's again following the principal that it should be cost-based. Your open field ground mounted system for PV is going to be less costly per unit than your roof mounted. So if you differentiate by project size, you can actually capture the full market share.

COMMISSIONER BYRON: And those payments are all known and published and adjusted periodically?

MR. COUTURE: Yeah, absolutely. So there are different ways to adjust the payments. They can either be adjusted annually or based on a formula that's set forward as well in the terms. Generally, they're adjusted annually. Germany chooses to wait, so they actually only adjust -- there's the digression rates and they adjust every four years. But the idea again is again to track market trends.

So if there's a substantial drop in prices, you can adjust accordingly. And (coughing) down. They actually have to increase the payments in certain technology classes because of supply and demand, environments and things --

COMMISSIONER BYRON: And these projects are going to in excess of 20 megawatts or so, these larger projects, are they doing it with tariffs or are they entering into agreements with the utilities?

MR. COUTURE: No, that's a great question. The countries that use feed-in tariffs use it as the primary procurement mechanism for projects of all sizes. So whether they're rooftop systems or 150 megawatt mainframes, they all operate under the same structure. Again, the key is that the feed-in tariff is differentiated to account for those size differences. So you don't want to offer the same price that you would offer for a rooftop systems.

COMMISSIONER BYRON: I understand.

MR. COUTURE: Or for a, you know, single wind turbine than you would for the, you know, 150 megawatt wind farms. All of them operate under the same framework. And the prices, again, are posted and known which encourages -- investors from around the world can look online and see what California is offering for wind projects from 20 to 50 megawatts and from 50 to 100 megawatts. And they can basically do their internal financial analysis and see whether, based on the wind resource available, they feel they could make a profit, you know, enough to drive them to the market.

So, the transparency of that is a huge mobilizer of

capital and really helps because you can, again, look at it online and anyone can see the prices offered. We can go, you know, you can go online now and look at what Germany's offering for all of its technologies, all of its different differentiations. So it's a great, again, a great mobilizer of that -- of those investments.

COMMISSIONER BYRON: Okay. Commissioners?

COMMISSIONER BOYD: The question -- well, let's take Germany or Denmark which you've used as examples. What -- examples of success. What's the development there meant to their transmission distribution system? I mean, what's the status? Have they had to make substantial improvements, changes, expansions, et cetera? And if so, how did they handle that?

MR. COUTURE: Okay. Well, that's another great and increasingly important question in all this.

Germany has mobilized teams of analysts looking at grid issues in particular. So aside from all the project's specific dynamics, they look at grid local issues. And there's been a lot of -- maybe first to address the cost issue. There are different ways of designing that.

You can say either the developer pays for connection, full costs, plus grid upgrades, full costs, wherever they occur. You can say the developer will pay full costs for connection, but will cost share for any grid

upgrades. Or you can just -- you can say developer pays the cost of connection and utility bears the costs of the upgrades, wherever they occur. There are different ways of structuring that. There's different formulas to differentiate that.

There have been issues, particularly in northern Germany, where most of the wind development has taken place and they had to have grid networks substantially. And all of those -- all those projects, they require -- often it's done on a cost sharing agreement. So the developer, if they still find it financially viable when they have to get into this cost sharing agreement to develop a wind farm, they will. Otherwise, they'll choose networks, places on the network where they can do so already.

So in this, I guess what would be a good point raise, the Rule 21 that allows essentially for some of those -- that builds in some of these provisions. So essentially you could say that if grid upgrades are required, the developer will bear them. If not, then it encourages a more efficient project siting on the existing grid.

So without needing upgrades, we can incorporate a lot of renewable energy development, a lot of energy development, a lot of electricity development, on the existing networks provided they're sited intelligently. And that's really one of the key challenges there is looking at

where on the grid there is free capacity and where you can integrate that.

If -- and that can be considered limiting. If you only allow places on the network where no grid upgrades are required, you're going to get a lot less renewable development. And that could actually impede the success in meeting the RPS targets.

But if you want to get into a cost sharing agreement, there are various ways of structuring that. Either the developer bears the cost or you get a shared arrangement between the ISO and the developer to upgrade according to the desired capacity.

Now, there might be ways of even, again, on a siting level, you can partner projects, like wind and biomass, for example, to make better, more efficient use of capacity additions. And that can be done on a case-by-case basis.

But I guess the key point there would be that the provisions are made clear at the outset. So, again, developers and investors anywhere can see, okay, what are the transmission interconnection procedures. The key is that those are made open and transparent so that anybody can essentially educate themselves and act accordingly. And provided those are made clear, whether cost sharing or however that's done, then I think investors know what they're in for when they look at projects in the various areas.

It would be important to consider, or at least to encourage efficient project siting so that you minimize the need for new transmission upgrades. But again, in some cases, if you want to meet targets, transmission upgrades may be needed and that has to be provision, the provision should be included to address that.

COMMISSIONER BOYD: Thank you.

COMMISSIONER BOHN: Yeah, what you've described is a state run, cost plus, publicly financed jobs plan governed only by what is, in somebody's mind, reasonable.

You have to go that far to make the case for feed-in tariffs as a useful complement? Incidentally, my mother was a fanatic on English. Complement is with an "E", not an "I".

Do you have to go that far to make the case for feed-in tariffs? Because what you've essentially created is a tax-based, publicly run system which then becomes a competitor for tax revenues. Or it becomes a surrogate, that is to say, we go out and we take from Peter to pay Paul. I don't think you have to go that far, do you?

MR. COUTURE: The first thing is that it's not tax-based. That's a crucial distinction. This is not necessarily, in most cases, coming out of the Treasury.

COMMISSIONER BOHN: Where's it coming from?

MR. COUTURE: As I mentioned, you can rate base the payments. So if there's --

COMMISSIONER BOHN: So it's coming out of the taxpayer's other pocket?

MR. COUTURE: It's electricity-based. So then you encourage the use of --

COMMISSIONER BOHN: So the ratepayers, who are also taxpayers, are paying, right?

MR. COUTURE: Well, in order to encourage renewable energy development, where is it's --

COMMISSIONER BOHN: Hundred percent, but I want to make sure that we're in agreement on -- the ratepayers are paying. You know, it's a rate as distinguished from the tax, what it is, whatever it is, out of the taxpayer's/ ratepayers' pocket.

MR. COUTURE: No, I think that's a good point and an important point to raise, but I think I would also -- it would have to be emphasized that not only -- where there is the cost, that cost would be passed on. Where there is a benefit, that benefit should also be passed on.

So, as I mentioned, in both Spain and Denmark, there's actually a cost reduction due to the wind power that's come on line. In other words, the wind power was cheaper than the marginal cost of supply with is natural gas. When natural gas peaked, wind was actually coming on line for significantly cheaper per unit than the natural gas.

So in those markets, particularly in Spain where the

price signals were passed on, or the price dynamics were passed on to ratepayers, the price benefit, they actually benefited from lower electricity prices.

So, yes, the ratepayer -- in the event that the renewable energy that's coming on line is costlier, if you're rate-basing it, they will cover the difference because you're integrating into the rate base. But, by the same reasoning, they should also take the benefit.

So, if there's rate stabilization benefits, electricity cost reductions over time, which we expect, again, with volatility and the upward trend in fossil prices, we do expect that those benefits should be passed on to ratepayers as well. So there may be a near term, upward pressure on electricity prices, by all means. Especially if you're going to include large amounts of solar PV, for instance, there are going to be upward pressure on electricity prices. But if you diversify it to incorporate lower cost renewables, you could actually get a net -- or ratepayer positive benefit in the not too distant future, if not in the near term.

COMMISSIONER BOHN: Yeah, I hope that's going to be in your study because I haven't seen anything where the price comes down.

My concern, I guess, is tying this to a jobs plan. I mean, one could make the argument that you may get

different jobs, and you may get, however, net job destruction, if in fact, they're going from one place to another.

So I'm trying to hand you a bit of a lifeline so that you're not stuck with the jobs promotion argument in the feed-in tariff exercise. I mean, if you don't want to take it, that's okay, but I just don't understand why you need to connect those in order to make the benefits of feed-in tariffs okay.

MR. COUTURE: Yeah. No, like I say, that's a great question. I think back to a great quote from Winston Churchill on this. He said, "No matter how brilliant the strategy, you should occasionally look at the results." And I think you're absolutely right, there are always trade-offs in this and it's not just to be sold on the back of the jobs creation agenda or even intent. It doesn't need to be.

There's ample argument to be made for some of the electricity cost benefits that I've mentioned. But also just in terms of the greenhouse gas, environmental benefits, some of the -- diversify your energy portfolio, making a more resilient grid that's less vulnerable to disruption. All those different kinds of benefits can be considered to be part of the justification for a feed-in tariff. Jobs don't even need to be on the table.

There are a number of benefits intrinsic to

diversified, distributed and large-scale renewable energy development that have nothing to do with job creation. Those are benefits that are intrinsic to the resource. And I think, naturally, this is always considering the fullness of those factors. So you do have to look at the results, you do have to look at the impacts, absolutely. And I think every state and every jurisdiction that chooses to go in this direction will not be doing so for, you know, merely job creation reasons. There will be this bundle, package of reasons that make this a sound public policy decision.

COMMISSIONER LEVIN: Gentlemen, with all due respect, I don't think this is really the issue we're here to discuss today. The Legislature has given us a mandate to get to 20 percent renewables. And I think where we really need to focus is, the Energy Commission and the Public Utility Commission, is what is the most efficient ways to get there. We don't need to debate the pros and cons of renewable energy more generally, but we do need to figure out --

You know, what I would really like to hear more about is how do you see this in comparison to other tools in our toolbox? We have an RPS, its not accomplishing what we need it to. Hopefully, it will accomplish more in the coming years, but how much does this help? How good a complement is it? Are there more effective tools in the toolbox? But I think that's really where we need to focus, not on the merits

of renewable energy generally.

MR. COUTURE: Okay.

COMMISSIONER LEVIN: We've been told what to do there and now we have to figure out how.

MR. COUTURE: Okay. No, that's a useful corrective, I think.

COMMISSIONER BYRON: Commissioner -- wait just a moment, are you looking for a response here or can we press on on our agenda?

COMMISSIONER LEVIN: I know we're getting behind, but I mean, if you have a quick response. I mean, it sounds like you would recommend this. You haven't presented a lot of negatives in feed-in tariffs.

I would ask each of the subsequent speakers sort of to hit that head on. You know, are you recommending this, are you not, with what qualifications, what are the downsides, which you haven't spoken much about.

MR. COUTURE: Yeah.

COMMISSIONER LEVIN: How does this compare to the other tools in the toolbox. That's really what we need to figure out as an agency, is how are we going to get that 20 percent and then 33 percent standard.

MR. COUTURE: Absolutely. So I think certainly from the National Lab, when I was up at National Lab, our standpoint was not to advocate particular policy options at

all. That's not the role of the Lab and it never has been. We look at data, we look at what works. And when we started doing the analysis on this, which is fairly new in North America to be fair, we've been doing research on this for four or five years, tracking the results and looking at the data and looking at the market growth trends, looking at the cost efficiency effectiveness, economic efficiency arguments.

And again, I think the data are fairly clear on this. It's not a controversial statement to say the feed-in tariffs are and have been, at least in the last decade, the most cost effective efficient, cost efficient mechanism for encouraging renewable energy development. I don't think that's a hyperbolic statement.

Reams of data from the European union confirm this. And this is why in most countries where they have actually done the research and have done the analysis, have found that this is the most cost efficient policy mechanism to achieve the goals stated in the EU directive.

They went through the same debate in 2001 and 2 after the directive came out, what's the best policy mechanism. The big debate in the EU was between tradeable green certificates and feed-in tariffs. So green certificates are like the RECs that we have here. And they underwent that in detailed debate.

They shied away from saying that every country

should adopt feed-in tariffs because that was thought to be a bit heavy-handed. But they said, do the research. So when the research was done, and they were done in all the different countries and they had to do their analyses and compile all the cost comparisons and pros and cons and advantages and disadvantages of all these different choices, there were also tax incentives included in there and some other option, they came to the conclusion that the feed-in tariff has been the most cost efficient and effective mechanism at trapping renewable energy development. And that's recently been confirmed by an international energy agency report, data that can be found, at least part of it, online. And the data on this, again, are fairly uncontroversial.

So I think that's clear, if I can answer your question in that way. I think the data on this in our standpoint and certainly my standpoint as an independent consultant, is not to advocate for a particular policy. That's not the interest. But I think we do have to look at the data and the facts. And I think the data on that are fairly clear.

COMMISSIONER LEVIN: Just a very quick follow-up. Are those, any of the studies you mentioned about the cost effectiveness finding in the two studies you have listed here? Or is that information you could get to us? Because I

think that really is the crux of this.

MR. COUTURE: Absolutely.

COMMISSIONER LEVIN: What's the most efficient, cost effective way to get to our renewable electricity goals.

MR. COUTURE: So there are two that come to mind. I can certainly -- I could forward those or provide the links, but there's one in particular that was tasked with examining that question precisely. So I can certainly -- and there's data and graphs and all the numbers you need to back, to look at it on a case-by-case basis. So that's certainly, I'd be more than glad to provide that.

COMMISSIONER LEVIN: Thank you.

COMMISSIONER BYRON: Mr. Bohn, are you finished?

COMMISSIONER BOHN: Um-hm.

COMMISSIONER BYRON: Mr. Couture, thank you very much. We're going to try and press on on our schedule. I think our next speaker is -- I actually have two names here. It looks like Matt Karcher and Bob Grace.

MR. KARCHER: Good morning. My name is Matt Karcher. I'm with Deacon Harbor Financial, but I'm here as part of the KEMA team. And I will be giving the first part of the presentation. Bob Grace from Sustainable Energy Advantage, who should be on the phone hopefully, will be giving the second part. Also with us today is Karin Corfee from KEMA. And on the phone we have Wilson Rickerson from

Meister Consultants Group.

We're going to be talking to you today about the financing implications on various FIT characteristics. It's framed from a financing perspective. So what we're going to do is we're going to explore how different FIT characteristics and designs impact renewable energy financing. It's not meant to be a comprehensive FIT designer view. What we'll do is summarize the current conditions in the renewable market, expand on what Toby did, talk a little bit about what's going on, give some background on the difficulties the projects are having.

We're also going to discuss some policy marketing infrastructure conditions that would be necessary to attract the lowest cost financing for renewable energy projects. Then we're going to outline in greater detail some FIT options and their financing implications.

And finally, we say here we're going to recommend a FIT design that primarily what it does is allows access to the lowest cost financing available while addressing some stakeholder interest to the extent possible. And it could be applied to different credit areas.

But I will make the point to be clear. The presentation is framed, as I said, from a financing perspective. So it needs to be balanced with larger policy goals and objectives, but from a pure financing framework,

this is how we might look at a FIT.

So what is the current financing challenge. It's totally alluded to that the renewable energy financing market has been hit as hard, if not harder, than the economy in whole from the financing crisis. And it's important to look at where we were. Pre-crisis, the market was characterized by tax-based incentives. You had your investment tax credit, your production tax credit, your accelerated depreciation. And that limited the number of investors that could take part in renewable energy projects because a significant amount of the return came from those tax benefits, but in order to use them, you need a tax liability.

And so what that did was spawn very complex, well-defined structures that allocated those tax benefits to the tax investors or the parties that could use them most efficiently.

You had a demand supply dynamic where you had more money chasing the demand for projects, so you had some competition in the market as far as financing goes. And the tax equity market, which was the real driver, the folks that could use these tax benefits.

It was limited in size. There was maybe 15 to 18, 20 financial institutions, banks or insurance companies that were -- that made up the tax equity market. But within that limited universe, you had a robust, pretty robust market with

a number of different participants and the competition was leading to a lower cost.

You also had the same dynamic occurring in the debt markets, again, a robust market, a lot of players, projects with long-term contracts could get longer term tenures on their debt at low spread, so you had a decreasing cost of capital there.

This overabundance, if you will, of money, financing available let to a development pipeline that was very full. For example, wind last year had 8500 megawatts installed, according to ARRA, which was an annual high. And overall, it was a -- capital was readily available. What was available was available at an attractive price. You had many different financing products available. Energy creative structuring that was going on.

Now, post-price is what you have, is a market that's illiquid, it's not moving, characterized by uncertainty, re-evaluation of structures and lower risk tolerances. You also have a decrease in the supply of capital relative to the number of projects, so there is a demand and supply in balance.

The tax equity market has been hit very hard and that was the driver of the market before, but on a number of areas, it's been hit hard. One is the number of tax equity players has dropped dramatically and Toby had it right, it's

roughly about four now as best anyone can tell, down from the high of 18 or 20. That's through consolidation. As I said, most of these entities were in large banks, financial institutions, insurance companies that either were acquired or actually just went out of business.

The participants who stayed in the market have less capital to invest and there's concerns about not only short-term, but long-term profitability. Again, to use the tax benefits which represent a large part of the return, you have to have tax liability, and to the extent you don't, those incentives becomes less and less valuable.

On the debt side, same dynamic. You have fewer participants. The terms that loans -- that projects can get are shorter and shorter, widening spreads. The cost is going up or staying the same, depending on the cost of borrowing and how that moves.

Your development activity has been severely restricted because of the limited capital available. If nothing's getting financed, nothing's getting built, nothing's getting developed. It has a domino effect. Overall, there's limited capital available, it's more expensive and there's a flight to quality. Only the best projects are getting financed. And when I say best, I mean lowest risk.

The ARRA tried to, and I think will, combat or spur

the tax equity market in particular with a number of different provisions. One being the idea that PPC projects, where you need a long-term tax appetite, can now take a ITC, all in the first year. So it reduces a lot of the risk going forward. And that ITC can be taken as a cash grant which is a step away from tax-based incentives because now the grant can be taken in cash which everybody can use. It also expanded the DOE Loan Guaranteed Program and it extended the bonus depreciation for projects in 2009.

The near-term market drivers are going to be the ITC and the cash grant because it reduces uncertainty going forward associated with, say the PTC. It increases the pool of investors. It also allows for different structures to be used and different options. And it's -- I see the cash grant is where the market is moving toward in the short term.

The issue there is the ARRA, while these provisions were set up, the rules of how the program works were not written. So the market is a whole from a financing perspective is actually held back a bit until the rules of the road, so to speak, are outlined and they can understand, excuse me, how the process is going to work.

The longer term trends, there is discussion of a national RPS and a cap-and-trade that will certainly effect the market. In the medium term, I think, the sunset date on the cash grant is going to be a big driver. That incentive,

which again is cash based, is due to go away at the end of 2010. And to the extent that that does go away, we move back toward tax-based incentives. And that leaves you susceptible from a financing perspective to the ups and downs of the economy. If this profitability waxes and wans, that will impact how valuable those tax benefits are.

In summary, again, capital is limited, what is available is available at a higher price, and only the best projects are getting financed. I think for the longer term recovery, regulatory policy will certainly be important, but it will also be tempered with the general economic conditions, especially if we maintain tax-based incentives.

So we've seen the market has moved to less risk tolerance. How do we minimize the cost of financing? Well, let's minimize the risk. From a policymaker perspective, when we talk about, which we will in the next couple of slides, policymaker influence, that's the policymaker ability to increase or decrease that risk. And risk is obviously very important in the investment decision because it's the overall project risk relative to a return that will guide that decision. And in general, the higher the risk, the higher the required return is going to be.

So from a policy perspective, I think it's useful to look at a project, how a financier might look at a project and identify some of those risks, some mitigation strategies

and what kind of influence the policy and the policymaker can have.

When you think about the risks of a project, they start with the development along the early stages of the life cycle. They move to construction, associated risks and then operating risks. And I'll go over these briefly in the interest of time.

Development there's a couple. Will the project be done on time. Will it meet milestones if it has any. Will I get a contract at the end. If I am a developer and I put in the time and the money, will I secure a contract or will I not and the project will fail.

I think some mitigation strategies from a policy standpoint are clearly defined processes for siting, permitting, interconnecting and then maybe some flexibility on your commercial operation state, knowing that things are fluid in the development process. And as far as contracting, as Toby had said, an assured off-take contract reduces that development and contracting risk.

As far as contract price risk, this is certainly a risk that developers are facing where they sign a PPA with a certain price without their cost being fully finalized. And this is the norm. Should those costs move higher than the price may not be tenable.

Revenue risk, is it adequate, is there going to be

volatility and I think this is where a long-term fixed price contracts for both energy, excuse me, energy and RECs are important. And from an operating perspective, I think that the risks that can be addressed from a policy standpoint are performance penalties or curtailments which is volume risk. And that can be handled from priority dispatch or maybe some flexibility in performance standards.

Continuing on with project risks, I think two that jump out at me here from a finance perspective, they're all important, but the two that really jump out is the first one, regulatory. That's if an incentive structure is short-term, unstable, not transparent, overly complex, it becomes a barrier to entry and increases the risks associated with a project. And that's why, as we've heard today, long-term, stable and transparent incentive structures are very important.

The other is credit risk. The market right now will not take credit risks. And what I mean by that is the counter-party to the contract, the person buying the power, needs to be a credit or the entity. There needs to be security that they're going to live up to their obligations.

Some of the other risks are transmission and interconnection. Those deal with cost allocations, differing from maybe what was expected or changing over time. Fixed cost allocations or contract provisions that allow for some

movement in price, perhaps, deal with those.

The final that I'll talk to that has a high policymaker influence is legal. And that's associated with the time and the cost of negotiating a contract and then any appeals that may take place or challenges in a, excuse me, bidding situation. Those can be handle through an incentive policy that is well-defined and has a standardized contract.

Wrapping up this slide, the last three; construction, resource, technology risks, those have a very low policymaker influence as we see them. Construction delays overrun, cost overruns, resources, is the sun going to shine as we thought it was or the wind's going to blow; technology, is the technology going to work as we expect it to. Those things are usually handled from a project standpoint contractually; fixed price contracts for construction, guarantees as far as operating goes, and then third-part assessments, bring in some experts to look at our wind and our sun and make sure we're comfortable that it's going to do what we think it's going to do.

So we've looked at the risks from a project perspective. Now, how does a FIT, perhaps, minimize those risks? Well, the short answer, unfortunately, is it depends on design. Design is very important. Why you would want to minimize the risk is, one, to reduce the cost of energy, the lower the risk, the lower the required return. But also

increase the likelihood of financing for projects, especially given the market we're in when it's a flight to quality market and only the lowest risk, best projects are getting done.

The map shows FITs worldwide. As you can see, they've proliferated all around the world. And when we think about FITs and project risks, as with all policies, again, design is critical and not all FITs are created equal as we heard Toby talk about.

Some of the most well-known FITs are in Europe and you can see from this map, the FIT structure is actually very widely, even in Europe. As Toby walked us through, we've got a different pricing structure, fixed price in Germany, but we've got a premium structure in Spain. So the -- while there are successes there, it's is important to note that they are, they're different.

When we think about FITs, obviously we've heard about Germany and Spain and some others, they often come to mind because they've been successful in driving new market growth. And some of the general characteristics of successful European FITs, and this isn't meant to be Germany specific or Spain specific, but generally speaking, you see this is very similar to what we heard from the previous speaker, fixed price payments, long term, guaranteed interconnection, must-take, differentiated by size,

technology.

One of the important things to note here, though, is the FITs in Europe are generally the main policy driver, but they're cash-based incentives. Whereas in the United States, our main policy driver have been, as we've talked about, these tax-based incentives. So when we examine European FITs and FITs in the U.S., if we maintain the tax driven policy incentives, there will be a difference. It won't be apples to apples and I think that's an important consideration going forward.

To achieve the lowest cost financing, we've talked about it a number of times, we lower the risk and we increase investor security. And the way that's done is through a simple, transparent, long-term, stable policy environment. And some of the characteristics of a successful FIT that we'll talk about, and this is again from a financing perspective, stability. Avoid a boom-bust cycle.

I think a good example of the implications a policy can have is seen in the production tax credit. The short-term extensions or even expirations of that credit have been a barrier to entry for developers, investors and equipment manufacturers. A policy needs to be -- have long-term political support, long-term contracts at a fair rate of return. Simple is better. It reduces the complexity which can add or act as a barrier to entry. A more transparent

policy allows the financial community to identify and evaluate risks more clearly and lead to a better informed investment decision.

Pricing contract certainty, the market won't take price risks at this point. So when we talk about either fixed price or a premium, I think the preference from a pure financing perspective is a fixed price with no market exposure, with a credit worthy counter-party again, and then contract certainty, if I build a project that meets these criteria, I will have a contract.

And then, as far as interconnection goes, minimize curtailment. That's volume risk, eliminate volume risk. And then, be very clear and transparent on the cost allocation for interconnection.

So we've looked at the investor considerations of a project in general and now we apply them to FITs specifically to see how FITs can be designed to maximize investor security, lower project risks, attract investment. Now, again, this is from a purely financing perspective. It doesn't take into account larger policy goals and a balance will have to be struck there to do that.

We talk about -- I'll go through these quickly because we've touched on them. But a cost-based, fixed price revenue with a bundled product. And when I say bundled, I mean the energy and the environmental attributes. RECs, for

example, are sold together. That actually decreases market risk and counter-party risks. So it is preferable to bundle those things together and deal with one counter-party.

As far as quantity and costs limits, we've seen that some change there, some European structures actually change their incentive every year. I think from a financing perspective, no limits or ample time to incorporate the risks associated with those changes is obviously preferable. And then, from a queuing perspective and the application or performance milestones, only as needed to address the quantity or costs limits, but generally speaking, the fewer the better, from a financing perspective again.

The next group of FIT design characteristics that we took a look at were contract terms and conditions. And, again, I'll touch on these very briefly. Long-term contract, 20 years, is preferable. Contract with a credit-worthy entity to ensure payment. And then, from a security standpoint, pre-operationally no credit or minimal credit or development milestones. And then, you'll see our note here, that's a trade off with queuing issues obviously.

From an operational standpoint, must-take, no minimum performance requirements to speak of, again, is preferable from a financing perspective. And then contract breakage, I know that has been expressed previously as a concern, that a project will break a contract midway through

to go pursue a higher priced contract. I think that can be handled through explicit contract language to discourage or even prevent that from happening.

The last set of characteristics are related to how tariffs can change over time. And in general, any changes, it's preferable that those are governed by a very simple, transparent process. So there is no ambiguity on what's going to change or when its going to change.

And it's preferable that tariffs are adjusted to take into account current market conditions. And digression may be the goal, but as Toby pointed out, some have actually increased prices over time given current market conditions. A perfect example is what we're seeing now, that the cost of financing has gone up significantly. That may make a price that was negotiated in the fall untenable at this point.

There is a careful balance between the adjustments for market conditions and then the frequency of those adjustments because a more frequent adjustment might indicate policy instability that could act as a barrier to entry and scare away some of the financing community.

A summary slide here of the lowest cost FIT designs. Again, we've gone through most of these and, again, I'll reiterate just from a purely financing perspective. Fixed revenue, a cost-base long-term credit worthy counter-party, bundled product, minimal security or performance requirements

and, again, contract breakage penalty we can handle contractually.

So how does this LCF, as we call it, the lowest cost financing design compare with the California RPS from a financing perspective? And when you look at a FIT relative to a competitive bid situation, most of the differences are going to be early on before the contracting and competitive bid is awarded.

Once the contract is awarded, the difference in the two structures actually start to converge. So you'll see that relative to an RPS, a FIT -- the benefits of a FIT are mostly up-front in the development. You've got development risk, if you have a guaranteed contract, a stable policy environment, that's going to decrease your development risk. It's also going to decrease your cost because the developer no longer has to incur the costs associated with putting together a bid package and negotiating a contract.

It will also shorten the development life-cycle because now, if the developer doesn't have to take part in a bid and then negotiations, if they know a contract is coming if you meet certain requirements, then it shortens the development life-cycle.

The contracting, having worked with many developers, I've seen the contracting process be a barrier to entry for quite a few smaller developers that may be more thinly

capitalized and who would get project financing from large institutions if they got a contract and got the project done. But it can act as a barrier to entry, the costs, the time, to put together the bid package, but also any security deposits or requirements that are required for a bid. And if you lower those risks and take down those barriers, you should see the number of developers increase.

And also from a financing perspective, if you lower the development risk, lower the regulatory risk, you should see a number of developer -- or a number of financiers, again, come into the market. This will be tempered some if you keep the tax-based policies and tax-based incentives, but still, lowering the complexity and the risks associated with it should attract additional financial parties.

Now, I'm going to turn the presentation over to Bob Grace who, I think, is on the phone with us at this point.

MR. GRACE: All right. Can everyone hear me okay?

COMMISSIONER BYRON: Yes, Bob.

MR. GRACE: Great. All right, thank you, Matt. Again, this has been the work product of the team here between Karin Corfee from KEMA, Matt, myself and Jason Gifford from Sustained Energy Advantage and Wilson Rickerson who is also on the line. And thank you to the Commissioners and staff and stakeholders for the opportunity to contribute to this dialog. Again, sorry I'm not able to do it in

person, but I hope this remote connection works well for everybody.

So the next slide here basically, there's a perception that's been voiced throughout the dialog on feed-in tariffs. The feed-in tariffs will raise costs in meeting policy objectives. So let's explore that question.

The cost of meeting fuel energy goals is ultimately influenced by design which is related to your objectives. So what are you trying to accomplish? A feed-in tariff can allow the diversity goals and growing emerging technologies, those that are commercially proven, but might not be cost competitive under RPS solicitations to reach a more cost effective scale more quickly, if that's your objective.

Feed-in tariffs may also allow price differentiation and that price differentiation works both ways. Our earlier speakers, Toby in particular, had talked about how that differentiation can allow access to generators that would not be effectively in a competitive solicitation context. But it can also allow you to potentially pay less than a competitor solicitation may yield in some cases for some of the lower cost removals.

So as we've been discussing throughout this presentation, feed-in tariffs can reduce the cost of financing. What are the implications of that? Well, the basis of comparison and the details are critical. There have

been a number of studies, one study here, Diager (phonetic) in 2008 in particular, have suggested that feed-in tariffs or rather providing the type of stable investment environment that feed-in tariffs can create could lead to cost savings of 10 to 30 percent possibly resulting from maximizing investor certainty.

Now, some of those benefits are relative to spot rent markets, for example, who are already captured under the long-term contracting structure that is currently present in the California marketplace. So I think it would be overreaching to suggest the feed-in tariffs in California would lead to a 30 percent incremental cost benefit.

So to illustrate this impact, we've just taken an example here, reducing costs to the lower end of that range. If financing benefits, increasing that investor certainty, was able to reduce costs on the order of magnitude of $10 a megawatt hour, it would appear that that took place in large part in the supply curve into a more economic range. And this is shown on the next slide if whoever is advancing could do so. Thank you.

So, I put together an illustration here. This is a what if feed-in tariffs could reduce real energy costs by $10 a megawatt hour.

Now, this curve is solid -- I'm sorry, that the dashed price curve comes from the database behind the RETI

Phase 1B analysis. And basically shifting the cost -- I created this for (indiscernible) purposes, first of all. This is one set of data. It will implicate the nature of the impact. A lot more analysis would need to be done in terms of the specificity of the impact and the design of particular feed-in tariffs, but this is meant to give an important illustration of the nature of potential cost benefits.

So if the feed-in tariff could be dropped, could be implemented, that would have the impact of reducing renewables costs across the spectrum by $10 a megawatt hour, that would effectively shift the supply curve down. This is the supply curve that is drawn, the Y axis is basically dollar per megawatt hour premium over market, over the MPR. I believe that's a 2007 MPR was the basis of that data. And the X axis here is cumulative megawatts, a little bit different than what's shown in the RETI study which is shown in gigawatt hours on the horizontal axis.

Now, the results here suggest that this shift could, among other things, result in over 16, almost 17 gigawatts more renewables that would be cost effective under the MPR, or would effectively not have a renewable premium. That's one way you can read this graph. And if we were showing this graph in a more traditional sense, with gigawatt hours, with energy on the horizontal axis, the area under the curve would be related to the annual savings that might result.

So this is important to drive home the point that financing does -- that financing benefits of the feed-in tariff that result from the greater certainty, that Matt has been discussing, has the potential to lead to cost reduction at the lower end of the curve as well as the ability to access some of the resources that might be desirable for other policy objectives, but might be at the higher end of the supply curve.

Let me go to the next slide, please. So shifting gears, we were also asked to address a number of the other stakeholder concerns that have been raised earlier in the ongoing IEPR feed-in tariff dialog and we'll go to the next slide to talk about those.

Now, first of all, we want to point out that a number of the concerns that have been raised; siting, permitting, cost control, things of that sort, really have very little to do with the financing benefits of feed-in tariff policy design. In other words, feed-in tariff policy design details won't impact and are not tools to solve explicitly at least some of the concerns.

However, there are a number of stakeholder concerns that do relate in one way or another to financing. They include interaction with the current RPS, that the role of tradeable renewable energy credits in the marketplace, resource and transmission planning and transmission

strengths. So I will discuss each of these within the next few slides. If we could go to the next.

So, most of all, to discuss the RPS versus feed-in tariff interaction. I'd like to clarify this slide. It's important to point out here that really what we're talking about is feed-in tariffs could be part of meeting RPS goals or policy targets. What really does -- the questions that are addressed on this slide are the possible issues associated with contemporaneously having RPS solicitations and the feed-in tariff, both operating in the marketplace at the same time. That's a situation that Toby, earlier, was describing something that hasn't happened or generally wouldn't happen, but that has been an issue that has been brought up to the California context.

So what would happen if you had both the RPS/RFOs and feed-in tariffs in place at the same time for generators over 20 megawatts? Well, certainly you could create additional opportunities for developers between our -- excuse me, RFO cycles, we have necessarily detracted from those solicitations.

On the other hand, you could result in projects gravitating towards whichever avenue, either the feed-in tariff or the RFO, offer more lucrative contracts, potentially to the exclusion of the other, at least for certain technologies. And that's been raised as a potential

concern.

Where technologies specific to feed-in tariff, are priced higher than where the RFOs might clear, then this would represent a policy decision to encourage those technologies beyond the level in which they would result under the RFO.

When feed-in tariffs might, on the other hand, be below the MPR-based price that might be driven through an RFO outcome, developers might choose to participate only in the RFO, or alternatively they might prefer the terms and conditions, the avoided transaction costs and the certainty of the feed-in tariff even if the price might be lower than the possible RFO contract price which, again, there's no guarantee they'll get that.

I think anecdotally we've observed in a range of market situations and policy situations throughout the country, situations that might suggest that this could happen, that there would be times when that certainty might be preferable to competing in an RFO. But I think ultimately, that is largely a hypothesis that has never been tested in the market.

So to the extent that we do have these concerns about contemporaneous solicitations and feed-in tariffs operating at the same time, there are some opportunities to mitigate. Those opportunities are somewhat limited, but they

deserve some further consideration.

One would be to impose restrictions so that once a generator participated in an RFO and has a contract, they can't later decide to switch over to feed-in tariff or vice versa. Basically, the generator is going to have to take earlier -- early on which policy platform they'd like to play in.

Another would be to limit the feed-in tariff to a narrower area, perhaps to a priority competitive renewable energy zone or zones near a permitted transmission line and have the competitive RFO context to elsewhere. And that's -- I'll be returning to that issue shortly. Let's go on to the next slide.

Another issue that's been raised is the potential interaction with tradeable RECs. Now, the feed-in tariffs as proposed, as discussed by Matt and in most cases, discussed by Toby earlier, are generally bundle purchases. In most current purchase power agreements in California and elsewhere, RECs are bundled with electricity and so are the long-term contracts. So the existence of RECs by themselves will not likely be an aide to or detriment to project financing in that context.

But the sale of the RECs separately from electricity, unbundled commodities definitely increases investor risk, even under long-term contracts. Generally,

you're likely to have a mismatch in terms. There are fewer opportunities for term contracts for as long as RECs, there may be available for energy, there may be differential creditor market risks, as I discussed some of these issues earlier.

Short-term REC markets, has been concluded through a number of studies, is inherently risky and therefore need the higher risk premiums and financing costs. Financiers have almost universally deeply discounted projected revenues from future spot market sales or short-term RECs. Generally finance communities sees spot REC in markets as inherently risky and subject to extreme amount of political risk at a decision to make the value of RECs swing rather radically in the stock market and that's very difficult to anticipate.

And mentioned earlier by Toby, empirical studies from the International Energy Agency, European Commission and others have demonstrated that the spot tradeable REC markets are less cost efficient than policies that are based on solicitation or feed-in tariffs that have long-term bundled RECs and energy. Let's go on to the next slide, please.

So how can -- the other question that's been raised is how can utilities plan for the price paid, the location, the total amount of renewable energy interconnected with the feed-in tariff related to a planning perspective and a challenge raised by the lack of the central planning aspects

of feed-in tariff. Or as posed in the workshop question in the text box here, should feed-in tariffs vary based on renewable energy located in a priority grid with proximity to a permanent transmission line.

So in the next couple of slides, we explore the idea of a conceptual design without the implications of a conceptual design for utilizing a feed-in tariff within the context of a credit and associated transmission.

So here you have additional policymaking agenda, that being not only to drive more renewables into the marketplace and to do so cost effectively, but also to efficiently utilize new transmission capacity to do so quickly and to do so at least societal costs.

One can apply a feed-in tariff to also address the (indiscernible) interaction concerns touched on on prior slides by applying the feed-in tariff only with this cash context only to a limited footprint, in other words the credits, and leaving the RPS solicitations to the rest of the marketplace.

So additional issues beyond the feed-in tariff in general are raised in this context. And I'll treat each of them in turn.

First of all, timing, an issue that Matt brought up earlier. In the RPS context, generally the timing associated with a credit permitted transmission isn't really consider or

is not a basis of the targeting of the RFOs and the credit transmission limits aren't really factored into the general request for offers.

In the feed-in tariff design context, we would see the offer of feed-in tariff that would be timed to be effective once transmission was permanent. The implication of doing that would be, first of all, that more development would be expected to happen or more development activity investment would likely happen earlier while the transmission is being developed. Developers basically don't need to wait for selection and contracting to decide to move forward. They already know that they will have the contract and what the revenue will be.

We would also expect to see more flexible timing and less risk placed on generators so that they can unleash a faster development and you're likely to attract a wider range of participants for the reasons that Matt had discussed earlier.

Let's look at the quantity perspective. In the RPS context, if the RFOs were relied upon to describe prejudice, well, signed contracts that failed to materialize may leave the creditors and the associated transmission under-subscribed. So really, two things here, the number of signed contracts may be inadequate to fully subscribe the line and contract failures may also be transmission under-subscribed.

When you look at the feed-in tariff as a way to try to get enough generation in play to effectively utilize and fully subscribe a new transmission line, you can set technology specific rates using the supply curves, so effectively saying prices to attract sufficient quantities to fill the line. To avoid using a price cap, which effectively would increase developer risk and unwind some of the benefits of the feed-in tariff, you would potentially set rates at a level seeking to avoid over-subscription in the lines.

So some of the issues here and implications, whether a project pays for transmission, whether the transmission cost is ultimately socialized, we just have the ultimate feed-in tariff rate level. And you may need, if there were feed-in tariffs left a transmission line under-subscribed, you might need a second pass or to go back and offer a somewhat higher feed-in tariff to attract additional capacity onto the line. That raises it's own issues.

One question raised by this, of course, is is the supply curve data accurate enough to know that you wouldn't over-subscribe the line. And that's another question in following these thoughts whether or not to design.

The next will be pricing rates. Well, in RPS compared to bid situation, now we have a good deal of study that's been made public on supply curves within credit area. So in other context where there's been a lot of price

transparency to the supply curve, we tend to see strategic bidding leading to prices clustering around where prices are expected to clear. So you don't always see the lower end of the supply curve, getting at their actual costs. But you see pricing clustering a little bit closer to the anticipated clearing price.

In the feed-in tariff context, if you were to apply the design recommendations, the price could be set for feed-in tariffs differently. You would basically set rates for each technology just high enough to yield a reasonable return on enough generation to subscribe the line without over-subscribing the line.

And the implications here that you're effectively and more transparently making policy choices on how aggressive or conservative or differentiated to set your feed-in tariffs. Differentiated prices can be achieved with a combination of technology and size diversity and cost limitization protectors. You have the ability potentially to price (coughing) for some resources below what would be the MPR, and I'll touch on that in more detail on the following slides in just a moment.

Finally, the allocation of available capacity among technologies on -- this is capacity on the transmission line. The RFO/RPS contracts favors larger and least cost, the least cost, the FIT projects under feed-in tariff context, it

really depends on the policy objectives. You can, as noted above, decide to set prices in order to allocate the cost and allocate the transmission line capacity among different technologies based on policy objectives. You could decide to seek greater diversity project, technology, size and any type impact developer. All these things are possible.

So if we move on to the next slide to try to illustrate some of these concepts, first, this is a very simple slide illustration of a factitious credit example based loosely on the RETI Phase 1B supplying curves. I wanted to use realistic data. The costs here are within the range. I didn't actually use a subset of the RETI data, but this doesn't represent any particular curves, rather I put together a set of data that would be effective in demonstrating a variety of points.

So what does this graph show? Well, again, this is a factitious supply curve to be associated with a transmission line that we will assume has a 4,000 megawatt limit.

So point A and C, really, the intersection of the vertical curve at the 4,000 megawatt limit represent the intersection with the supply curve, that the higher dash line represents the supply curve, the all-in bundled costs supply curve and in this case, including both generation and transmission costs. And in this example, I'm assuming that

the generator pays for transmission upgrades.

And point A basically -- well, point C shows the bundled price that would effectively clear the market. Point A shows the clearing price premium now. This is the solid blue line at the bottom here represents the supply curve for just the cost premium over MPR.

Now, the intersection of that vertical line and the premium supply curve on the vertical axis at point B represents the clearing price, about $26 per megawatt hour, that would be needed to effectively fill the supply curve. I will note that the point identified as E is going to cross over point with zero premium. So this shows, in this particular case, that roughly 15 or 1600 megawatts of renewable generation potential is available with no or negative premium.

Going on to the next slide, and I'm going to ask Matt to jump back and forth between this slide and the following one, in a moment, to be able to show -- too much to show on one slide.

First of all, let me explain what we're seeing here. Here I've broken up the premium supply curve, the solid blue line on the prior slide, into separate supply curves by technology. And in this case, we have very radically different prices and quantities here. There's a small blue line in the upper left quadrant that is the available

biomass, more expensive and very little available. Geothermal in this particular area, a lot of it was very inexpensive, but then had a very sharp inflection point and more was available at higher prices. And then we have quite a bit of both wind, the purple lines, and solar thermal, the green lines, available at a variety of costs.

The line across -- the horizontal line that's labeled with an intersection with the vertical axis at PE represents that same $26 per megawatt hour clearing prices shown in the previous slide. So basically, if you were to develop a feed-in tariff with the objective of having an equal premium across all renewable energy types, that's where you would draw the line. And the quantity that you would expect from each renewable generation type would represent the intersection of that line with the individual supply curves. In this case, you would get no biomass and you would have a fairly substantial amount of solar thermal, geothermal and wind in decreasing order.

I'm going to ask you to go on to the next slide for a moment to illustrate a couple of different illustrative feed-in tariff pricing designs and their implications. And then I'll go back to the current slide and show how these line up there.

Basically, I've laid out three different tables here. The first one being the equal premium feed-in tariff

philosophy that I just described. So here, the premium is shown on the first row, $26 per megawatt hour, for each of the four different technologies applied.

The associated feed-in tariff rate capturing both the generation of the energy and transmission costs is shown in the next row. For solar, $183; geothermal, 101; wind, 137; and for biomass, there's none available in the $26 premium, so you wouldn't bother with one in this example. And the last row shows the applied megawatts that would be expected to meet or respond to that feed-in tariff at those prices.

Again, the reason for the differentiated feed-in tariff rates here is because you're putting a fixed premium on top of different market values. So each of those, in sum, would add up too roughly 4,000 megawatts.

The other two tables here shows some different philosophies. The second one would be a set of feed-in tariffs shows you get a more diversified mix. Here you've basically done a couple of things, lowering the geothermal rate, you're still getting almost as much, or effectively the same amount of geothermal, but paying a lower price for it. You're rating the biomass price in order to get what biomass potential is available within this price. And the feed-in tariff price has been for wind to get more of an even spread. And again, you're roughly 4,000 megawatts of supply here.

This third case is one which might be, say there's more cost minimizing. So here maybe you don't choose to have the biomass feed-in tariff. Your solar feed-in tariff might be set at about the same level. Geothermal, again, you can set it lower and still get about the same level because of its own supply curve.

And here I've taken a rather crude example of differentiating, in this case, the wind by resource quality for those wind resources that had a higher capacity factor or a stronger wind resource, a lower premium would be paid, a lower feed-in tariff rate, and you would still expect to get quite a bit of wind at that level. And then a higher feed-in tariff would be available in this example for wind that had a weaker resource.

Going back to the prior slide, then, you can see I've identified here with the stars, showing the intersection of the feed-in tariff price with the supply curves and those show the indicated volumes that would be expected from different resources under the equal premium case. The lightening bolt represent the expected volumes and prices for the diversified case and the circles show the respective volumes and prices under the cost minimizing case.

So the bottom line here is that if you were to apply the feed-in tariff within the competitive renewable energy zone, there are a number of policy choices to make which can

lead to different outcomes, but if you have faith in your supply curve, you could choose prices to achieve those outcomes and effectively look to engineer an outcome that would result in the quantity of megawatts desired to fill up a planned and permanent transmission line.

So at this point, I'm going to turn the floor back over to Matt and I think we'll take questions at the end.

MR. KARCHER: Sure. Thanks, Bob. Wrapping up some of the next steps that may be considered from a financing perspective, I think to quantify any of the cost reductions of the benefits that we talked about here, from lowering the cost of financing, including the LCF and the lowest cost financing design that we have talked about and put forward, we also should consider the implications in our actions with system planning, transmission, other policies, policy objectives, more of a global perspective.

And as far as the process goes, involve as many of the stakeholders as possible. That's developers, manufacturers, communities, utilities, financiers, in the process of the FIT evaluation and development. And then dig a little deeper to determine the price-setting process. And then as far as tariff design goes, identifying appropriate technology differentiation if that's the way you decide to go, policy decisions on how aggressively or conservatively to set prices in that this relates to global policy goals and

objectives. And then some more work on actual price setting, again, in conjunction with global policy objectives. And I think now, we'll thank you for your attention and we'll take any questions that you may have.

COMMISSIONER BYRON: Very good, gentlemen. I'm going to turn it over to my fellow Commissioners, but make a comment first.

It's great to see -- it's a tremendous presentation. It's great to see all this renewable energy transmission data, initiative data being used. And I hearken back to a comment Mr. Grace said. It kind of depends on the confidence you have in these supply curves.

Now, I accept the validity of the RETI data on a relative or comparative basis, but remember, this is 25 plus stakeholders that are pulling together this information. I think we want to be careful drawing these kinds of absolute economic conclusions based upon this data, particularly that early Phase 1 data.

I open it up to my Commissioners for questions.

COMMISSIONER LEVIN: Yeah, I've got a question for either one of you and it is exactly related to RETI. Once we have established renewable energy zones, under RETI or under processes, the Desert Renewable Energy Conservation Plan, we're trying to figure out how to incentivize development within those zones. And I'm curious whether you think that

feed-in tariffs would be a useful tool for doing that, maybe not the only tool, but -- or is that too complicated a tool to incentivize development in particular locations?

And I guess a related question is, could you do feed-in tariffs only for particular locations or would you need to have a higher tariff for those locations, but have feed-in tariffs elsewhere? Or are they both options? And has it ever been tried somewhere?

MR. KARCHER: Sure. And I'll turn this over to Bob who is vastly more knowledgeable about the subject than I.

MR. GRACE: Well, I think we had a number of questions and let me see if I've gotten them all.

First of all, is the feed-in tariff a useful tool to potentially utilize with the Desert Renewable Energy zone and RETI context. I think the -- as the example layout here illustrates, I think there are a lot of very attractive features to the feed-in tariff that may be a good fit for the variety policy objectives that are in play within the CREZ context.

I think we're very early in that exploration, though, and as I believe it was Commissioner Bryon who mentioned, you know, we should be very careful about trying specific economic conclusions from what is preliminary supply curve data.

In order to apply feed-in tariffs, effectively, I think you would probably need to have either a good deal of faith in your supply curve economics or -- and ultimately, to apply a feed-in tariff, you're going to need to have a degree of faith and put a lot of analysis to the actual price setting.

You'll just need to be more careful within the feed-in tariff context because you -- if you're going to have a feed-in tariff that is not capped, then you need to be sure that you're not going to over-subscribe the line. And therefore, if you had a very broad flat supply curve as opposed to a fairly steep supply curve, that perhaps increases the risk that you would pick the right price. So, I think the specifics probably matter quite a bit.

Even with a feed-in tariff that was capped, we cautioned any ideal design here, if you cap the feed-in tariff, you are definitely undermining some of the certainty of access to a contract that enables a lot of the feed-in tariff benefits. But to apply a feed-in tariff within a CREZ, depending on the supply curve specifics, the policy objectives and the compens in that data, it might be necessary to provide or impose some degree of a cap in order to pull it off.

So I think there is, to wrap this up, a lot of potential there, but definitely a need for further analysis

and consideration before taking the leap that a feed-in tariff is definitively the right tool for the RETI and CREZ context.

I think the other question asked here was could you have a feed-in tariff only for certain locations and not for others. I don't see a reason why not. It certainly is an opportunity to perhaps experiment with feed-in tariffs in a very targeted fashion and if they tend to work as well as the routine experience suggests that they might, then potentially use that experience to develop and implement a feed-in tariffs for a broader context. Did I get in all of the questions that were answered? Or asked?

COMMISSIONER LEVIN: Yes, thank you.

MR. GRACE: Okay.

COMMISSIONER BYRON: I have a couple of blue cards with questions and I believe these pertain not necessarily just this presentation, but the earlier one as well. And so let's see if we can do these quickly and break for lunch.

The first one I have, Mr. Theroux, you had asked a question, an opportunity to speak in the first comment area.

MR. THEROUX: Commissioners, Speakers, Michael Theroux, Theroux Environmental. And I will be brief since we have lunch coming.

Many of our resources that we look to are quite dispersed. You're looking for 20 meg and better. We had

very early in this discussion approached the question of the potential for multi-site conglomerate, if you will, aggregating a number of smaller sites toward a 20 megawatt or greater target. I wonder if that's still on the table? If we may be able to approach the ability to use a feed-in tariff to wrap around a number of elements within an infrastructure?

From the perspective of the financing, I found very clearly that if we can see replicability, we can both increase the interests and the scale of the project overall to the financiers and we can reduce the price on the specific technologies that are provided to that set of projects. So the question then is one of infrastructure, can we aggregate smaller projects toward the 20 megawatt cap?

COMMISSIONER BYRON: Well, it adds another element of complexity, obviously, to moving forward with feed-in tariff. And I don't think we're going to be able to provide the answer for you here, but certainly, Mr. Theroux, we'll take that into consideration. And I assume that you have some possible projects in mind when you ask a question like that?

MR. THEROUX: Yes, I do.

COMMISSIONER BYRON: I have two more. Michael MacDonald's on the phone and I'll go ahead -- I'll ask Mr. MacDonald if he's -- can we release him to ask a question?

Okay, let's go ahead and let him ask his own question, then.

MR. MACDONALD: Hi, there, thanks for taking the question. How do the European FIT programs differ between the sub-20 megawatts and those that's greater than 20 megawatts?

COMMISSIONER BYRON: And I believe you're asking that question of Mr. Couture, correct?

MR. MACDONALD: Yes, the first speaker.

MR. COUTURE: Different in which way? With relation to the cost or the actual design?

MR. MACDONALD: Well, are the programs for -- are the FIT programs for projects greater than 20 megawatts? Do they differ substantially from those less than 20 megawatts? And if so, you know, in what ways?

MR. COUTURE: Well, naturally transmission considerations are different for larger projects. I don't think 20 is the break-off point for any of the feed-in tariffs in Europe that I know of or that I can think of off the top. Some differentiate at 10 megawatts and at 50 megawatts. Again, these are all grid specific and jurisdiction specific issues.

But naturally, your permitting process, where there is one, is much -- well, is greater or longer and more detailed in your application if you're building a 50 megawatt project than if you're building a 10 kilowatt rooftop system.

So your application may be, you know, one to two pages long for a rooftop system where if you're dealing with larger transmission issues at a larger scale, you may need to have, you know, a 10 to 20 page application to adequately cover the different -- to cover the details that need to be bundled in.

So those -- there are difference on that level. The second level, I guess you could -- that would be worth raising is the cost level. So because of the economies at scale you get from larger projects, the costs, the actual payment, rather, awarded to those projects tends to be lower to prevent windfall profits at the larger end of the project size scale. So you differentiate the project size, or the price as a function of the project size. So projects above 20 megawatts would get a lower feed-in tariff payment than the ones below to account again for those economies at scale.

MR. MACDONALD: Okay, thanks a lot. I appreciate you taking the question.

COMMISSIONER BYRON: I've asked a similar question to my staff and I think 20 megawatts is sort of a natural cutoff for a couple of reasons, at least in this country. One is FERC case and interest of 20 megawatts becomes a transmission interconnection issue and also it's technically somewhat of a break point as well, that that's sort of a, you know, rule of thumb break for a single distribution circuit --

MR. COUTURE: Okay.

COMMISSIONER BYRON: -- to a transmission level capacity.

MR. COUTURE: Yeah. As I understood it more, I'll take Spain as an example, they can make the cutoff 10 megawatts. It's not a cutoff, I mean you can have bigger projects, but 10 megawatts and above, they actually also require a forecasting requirement. So, for example, if you're wind, you need to forecast your output 30 hours in advance. And then you're essentially dealing with the ISO at that level. So that's another requirement, actually, that's worth pointing out. As projects get bigger, often a forecast requirement is imposed upon the developer, project developer to facilitate the grid interconnection and balancing issues, regional balancing issues. So that's another important consideration.

COMMISSIONER BYRON: Thank you. I have one more card, Mr. Craig Lewis, RightCycle. Did you want to speak now, Mr. Lewis?

MR. LEWIS: Sure, why not. Craig Lewis of RightCycle which is a consultancy/advocacy that is focused right now on bringing the intelligent feed-in tariff legislation to California and then leveraging that and bringing it to the national scene and to other states if we can't get the national scene to act fast enough.

I want to start by thanking the CEC for being a real leader on this most important renewable energy issues, the feed-in tariff. I'd like to encourage the CPUC to listen very carefully and follow the recommendations which are being very well researched here at the California Energy Commission. I know that the energy staff is paying attention, but I want to make sure that the CPUC in general is really taking close pulse of what's going on here at the CEC.

Before dedicating myself to the feed-in tariff legislation here in California, I was vice-president of government relations for Greenvolts which has the unique distinction of being the very first solar technology company to navigate a solar project through California's RPS program. So I've got a lot of experience with how that RPS program works and how it doesn't work. And I can tell you that there's a lot to be desired for the RPS program.

Most importantly, going to a point that Commissioner Levin made earlier, the main objective we have here is making the RPS real. And the feed-in tariff is the only policy mechanism that I'm aware of that can make the RPS real.

We've fumbled around for seven years now without moving the needle one percentage point. We started seven years ago. The renewables were at 12 percent of delivered energy in California. We are still at 12 percent and we're

suppose to be at 20 percent next year.

So we don't have a very good track record with the policy mechanisms that have been used so far. The feed-in tariff can really be the game changer that makes the RPS real.

I want to just touch on a couple of points. The most importantly the cost effectiveness issue that was brought up by Commissioner Bohn. One of the analyses that we've done for our feed-in tariff legislation here in California, which, by the way, it incarnates essentially the policy recommendation from the CEC that was made in December for a cost-based technology differentiated 20 megawatt and under feed-in tariff.

The feed-in tariff legislation I'm pushing essentially incarnates that. And we've done a very thorough analysis on the ratepayer impact from doing that. And basically what we did is we said between 2010 and 2020, to get from 12 percent renewables to 33 percent renewables because 33 percent's likely to become law this year, we need to get two percent per year. If we did that entirely with a feed-in tariff, bringing on two percent of renewable energy in the whole sub-distributive generation market segment which is the 20 megawatt and under distribution interconnected market segment, the ratepayer impact, worse case, would be less than 10 percent cumulatively over that 10 year time

period. That's far lower than anticipated inflation for energy rates.

And basically, the basic math here is that you have two percent a year and the worse case scenario is that it all comes in in solar PV. And solar PV for the 20 megawatt and under will be priced around 22 cents a kilowatt hour. I've studied the cost trends for solar very carefully, having been involved in the solar industry for many years; 22 cents a kilowatt hour is the rate that will be paid for solar PV. And 22 cents is 50 percent -- is a 50 percent premium over the avoided costs, if you look at the MPR.

So two percent per year, 50 percent premium, that's a one percent worse case impact on the ratepayer annually, over ten years, that's ten percent. So the basic algebra is what I just laid out, but the sophisticated analysis actually reinforces that same conclusion. And I'm happy to share that and I'll submit that with written comments after this workshop.

The last thing that I want to mention is that, you know, it's clear that the utilities are going to resist the feed-in tariffs. Feed-in tariffs take leverage off the table that utilities currently have. If I was a utility, I would resist feed-in tariffs as well because I currently control the game. If you have standard must-take contracts, you're taking some control away from the utilities. Obviously,

they're going to resist that.

So, I just encourage you all, anticipate the resistance from the utilities. It's logical. We would all do the same thing if we were in their seats. And, but you all have to do your jobs and make sure that we're providing intelligent legislation to serve the State of California. So thank you.

COMMISSIONER BYRON: Thank you, Mr. Lewis. If there's no other questions or comments in this period, we're a little behind schedule. Let's take a break for lunch and that clock is just a little bit behind, but that's okay, that's the clock we'll go by. We'll start promptly at 12:30, restart promptly at 12:30. 1:30, 1:30.

(Lunch recess)

MS. GREEN: We have a slight change on the agenda. We're going to start with Mr. John Crider with Gainsville Regional Utilities. Are you on?

MR. CRIDER: I'm here.

COMMISSIONER BYRON: Welcome, Mr. Crider. We're glad to have you. Thank you for accommodating our schedule here.

MR. CRIDER: Sure, you bet. Thanks for the invitation. Are we all ready to roll?

COMMISSIONER BYRON: Yes, please go right ahead.

MR. CRIDER: All right. My name is John Crider.

I'm an engineer and an analyst with Gainsville Regional Utilities and I'm sure all of you know we recently implemented a feed-in Tariff as an -- for an experiment here in the United States in Florida. So I'd like to talk a little bit in general about addressing some of the questions you all had about feed-in tariffs in general and then towards the end, I'll talk a little bit more about what we have found already as some practical implications of doing the feed-in tariff.

The first thing I'd like to talk about is the question should we have a feed-in tariff. And that's usually the first question that I'm presented with with someone's who's starting to inquire about this. And for myself, I'd like to go back a step from that and say the real question is about being committed to renewable energy, not about the policy decisions about feed-in tariffs so much.

If the question is, yes, we are committed to renewable energy and whoever "we" is, whether that's your city, your community, your state or a nation, when we say -- when we make that commitment to renewable energy as California has, then you can start addressing the question of well, how are we going to do the implementation system and get away from the question of why we want to do it.

And when you start talking about the implementation part and how, you actually have, well, a number of limited

options that you can do. In the past, we've done -- rebasing grants, doing cash payment basically up front for equivalent. The federal government still likes to give tax credit, tax deductions as their primary incentive for doing renewables. And, of course, the implementation of RPSs or RESs, renewable portfolio standards with RECs.

Basically all those are -- I call them all quota systems. It's where you have a certain percentage of your power will be produced by renewables, usually by a certain date. And if you don't make it, you're going to be penalized. And that creates a REC market where the renewable energy certificate can be traded back and forth.

Another option to that is to design fixed rates, like a feed-in tariff, which has certain characteristics. There's long term and they're -- basically they don't change over time. And you can implement hybrids of these with your system. But and this, generally speaking, is our menu for implementing renewables once we've made that decision that, yes, indeed, we actually do want to do renewables for whatever our reasons are.

COMMISSIONER BYRON: Mr. Crider, if I can -- may I interrupt you for one moment, please.

MR. CRIDER: You may indeed.

COMMISSIONER BYRON: May I -- can I take from inference, then, the answer to your question is are we

committed to renewable energy in Gainsville is that you have some sort of goal or standard?

MR. CRIDER: Absolutely, yes. In our particular, and a thing to take away from that is the answer for Gainsville is not necessarily the answer for the State of Florida, not necessarily the answer for the State of California, not necessarily the answer for the United States.

But for us, we have -- first of all, we're a municipal utility, so we have slightly different goals and values for asking an IOU-based infrastructure. We have a Mayor and Commission that is committed to meeting Kyoto protocols which have not been forced upon us from outside, but is something that organically we've adopted.

So there's certain other values and goals within the community that made us say yes, we do want to do renewables. And we've had that commitment for several years.

And, you know, again, California has obviously made that commitment for perhaps similar and perhaps different reasons. And again, I think once you make the decision to get there, the question then is transferred from well, how do we meet these goals, not whether we should anymore. Did that answer your question?

COMMISSIONER BYRON: I was looking if there was a specific value and I think the answer is no.

MR. CRIDER: A specific value. I think it's more

about sort of the plate of policy values that our community has.

COMMISSIONER BYRON: Okay.

MR. CRIDER: So if that was sort of our ala carte menu for ways of implementing renewable energy policies, why choose an FIT over other implementations? One reason would be taking a look at the ratepayer impact. And what we're looking at here is a graph from -- a report that was done by Summit Blue for the New Jersey market when they were considering how to structure their REC market and whether to potentially to do something like a tariff.

And the outcome of the study was that you get the most bang for your buck, you get the most kilowatts -- or kilowatt hours per dollars spent with a standard tariff model, and they use a 15-year model. The other models are different combinations of using RECs and markets whether they're underwritten by someone else or they're actually free-market. And if anybody would like a copy of the report, I'd be happy to point you to that.

Another look at the cost and policy, and this was a study that was done and recently reported on by NREL with, actually, wind, but again, the policy implementation was RPS versus feed-in tariffs. And we find out that the countries in Europe, they use the feed-in tariffs to do wind, produce more renewable energy at a less price than ones using the

RPS. So if one of your issues is wanting to get the best value for your money, the most kilowatts hours per dollar, it makes sense to look at feed-in tariffs for that.

When you start looking at investors and what they want to put their money into when you're developing renewables, regardless of any of the policy implementations, what they're looking for is a return on the investment to protect their capital. And just as a rule of thumb, the more volatile, the more unpredictable that revenue stream is, the higher their internal rate of return, return on the investment is that they're going to demand. And that's just a standard rule of investment.

So let's take a look at the possibility of doing an investment in a market that's based on RECs. What you -- this is -- we're not going to go through all these numbers, but this is just sort of a survey of the REC markets in the United States. And the important thing to take away from this is the volatility of it. As you can see, first of all, from state to state the values are very different. And even within a particular state, you can see the values rise and fall over time.

Another view of that on the next slide, and this is just a different class of renewables. But again, there's a big difference between the value of the RECs from state to state and even within the state over time.

So that sort of volatility demands, from an investor's point of view, that they want to see a higher rate of return on their investment which overall increases the cost of implementing energy using an REC system.

In general, and again, these are just sort of general rules of thumb, but the volatile nature of the REC market means if I'm going to put money into doing renewable energy in the state that's implementing the REC market, I'm probably going to want something like 13 to 19 percent internal rate of return as an investor.

On the other hand, if the feed-in tariff, or any sort of a negotiated long-term purchase power agreement will mean that the investor will be willing to take a lower return because of the low risk. And usually the demands on a feed-in tariff type of returns is about 5 to 8 percent.

And again, from the same study, we looked at for onshore wind for the UK and Italy versus Germany and Spain. Kind of an interesting result of that is that the companies that implement the feed-in tariffs actually produced less of a return absolutely than the RPS and the RECs. And yet, the investors are more willing to invest their money in the countries with the feed-in tariff.

Another thing that the feed-in tariffs have as a characteristic is they create a strong market with a lot of implementation. That in turn has the typical result of

pushing the prices down and making the systems cheaper to install as you go through time. As you can see between 1990 and 2006, there's a 60 percent drop in the cost of photovoltaic systems, primarily due to the implementation of a feed-in tariff.

Because those costs are lower for the newer systems, of course, using the same amount of investment means that you would have more return on your investment. And so the investment incentive actually increases over time as the cost for installed watt goes down. So it's kind of a regenerative cycle.

And we can see in the next slide that, again, this is for wind, but again, wind's implemented with a feed-in tariff, we see that the countries with the feed-in tariff have a much greater marketplace, much more capacity of renewables were built out.

Even though the profit, and this is the important piece that goes with the other slide, even though the profit margin, excuse me, on a per kilowatt basis was smaller, the incentive was there because of the low risk for more investors, in sum, to create more projects and invest more money.

So it's perhaps a counter-intuitive result, but the fact is that the low risk of the investment with a feed-in tariff carries a great deal of weight for the folks who have

the capital to invest.

There's a couple different ways to look at doing renewables as far as the size of the projects go. We certainly can do the utilities scale projects and in fact, I understand that your questions were about larger scale projects and unfortunately, I can't give you any experience with that. We're dealing mostly, in Gainsville, with a fairly small project distributed generation rooftop type systems that are privately owned and then the energy, of course, falls back to the utilities. So there's a second bullet here that Gainsville is gaining some experience.

Some of the general advantages of having distributed generation from a utilities point of view, by having those systems distributed throughout the distribution area, there is an overall reduction of transmission, distribution line losses. We can have the energy sources closer to the load, so your system losses in general can be smaller. It also helps boost the stabilization of the voltage on your system. We have a diversity of fuel. We have -- can have a diversity of loads depending on how the distribution is. And all of these things can work together to overall enhance the system reliability and in the fall powering.

In some places, depending on where you are geographically, your solar power can actually provide use in peaks demand production. We see a little bit about -- a

little of that here where we are in Gainsville, almost falling about 30 percent overlap between the solar peak and then our demand peak.

Some other advantages of specifically having a feed-in tariff for doing your distributed generation, and these are some driving factors for our reasoning behind implementing the feed-in tariff, we're paying only for the energy received. There's no end costs, there's no capital cost, no sun costs and equipment. Really, it's just a pure purchase of energy.

We have also found the second bullet to be important for us. We have a lot of capital investment. We are a generating utility. We have a coal plant and we have several gas plants. And we have taxed our borrowing ability to -- borrowing capital pretty far.

The ability to get distributed renewable resources and, excuse me, purchasing energy on a PPA, it's helpful for us in that there's further intrusion on our ability to borrow. And so, we can maintain our capital infrastructure as it is and still gain other resources that we may need for serving the load. And of course, you have -- there's a reduced risk for cost management because the risk, excuse me, is transferred to the owner of the distributed resource.

The GRU program in particular is modeled after the German program. We purchase 100 percent of the PV energy

from the distributed resources. We offer a standard, non-negotiated, fixed contract price for 20 years. And that's something that's well documented and it's in our ordinances and anybody can look ahead and see what the price is going to be on the contract.

And the fact that it's transparent is very helpful in getting loaning capital. Lenders like to see the contract document. The fact that it's non-negotiated actually comes into play as well since it's a standard offered contract. We've recently just entered -- or just finished negotiations for a biomass plant. Those negotiations for a power purchase agreement took 12 months. So it allows for much easier implementation when you have a standard offered contract instead of having to negotiate the PPA individually.

Our tariff rate decreases in the future. That's something known as digression, in which case, I'll talk about that in just a second. But basically the rate decreases over time with implementation of a new project.

And possibly, the most important thing is that we have complete cost recovery for this program. This isn't a funded, repay program which is dependent on a budgeting cycle which we had in the past. But all the costs of funding the feed-in tariff are spread among all the ratepayers to get complete cost recovery. And we do that through our fuel adjustment charge which has one negative impact in that it

does put a capacity limit on what we're able to do from a financial place. And I'll speak to that on the next slide.

But here's the digression schedule. This is basically the feed-in tariff in a nutshell. As you can see, if you build a system in 2009 or you build a system in 2010, you get a 20-year fixed contract at 32 cents per kilowatt hour produced for building a rooftop system.

And the only exception for that is that is if it's a solar farm. That is a pre-standing, ground mounted system. we are offering less. There's two reasons for that. The first is that we believe there's a lower installed cost so that we don't have to provide quite as much an incentive to get the same rate of return as we would for a building mounted system.

And the second reason, slightly political, is that we sort of want to discourage large utility scale farms. Our purpose with the program was to develop the rooftop systems to utilize space that was underutilized and already existing rather than open up free space for the development of solar.

So going back to the schedule, you can see if you build a system later on in the year -- or excuse me, later on in the program, say in the year 2015, you're no longer getting 32 cents per kilowatt hour for 20 years, you'll be getting 23 cents per kilowatt hour for the 20 years.

And the digression is, again, that was borrowed from

the Germany model. It's an important part of the model because it will help drive the cost down in that cycle of reducing costs and increasing the investment. Apparently, it's worked pretty well with Germany as long as you set the digression schedule with, you know, proper digression steps as you go along annually.

Back to the GRU program in particular. As I've said, we've recovered all of our costs through the fuel adjustments. We are concerned about not wanting to raise the customer monthly bill by more than one percent. And that's sort of an executive policy decision that's been made between GRU executive management and our City Commission.

And that put a four -- that translates into a four megawatt annual capacity limit. And again, that's just primarily due to the fact that we are limited in our own resources and we're limited in our own capacity to grow here.

We also have a further limitation that we'll have one megawatt per year of the ground mounted solar farms. And of course, we're limited to projects that are physically able to hook into our distribution.

And I guess as a practical implication of having the capacity limit, we've developed the first-come-first-serve queue for folks who want to get projects. We found immediately that the limited number of projects that limited capacity caused the solar gold rush, folks wanting to get

projects on line. We opened the gates up -- excuse me, we opened the gates up in March and by the second week of March, we already had two years worth of projects on the books from people wanting to make sure they got their space in line.

So one of the things to look out for if you're considering the feed-in tariff and the policy decisions is that any kind of cap that has to be put on it for practical reasons or for political reasons may see the same kind of rush to get their people signed up to get their spot in line.

What that does, in effect, is make it really difficult to determine who's got a real project and who's just squatting, grabbing their space with basically nothing more than a proposal without as much thought given to the project. And we have run into that quite a bit here. The gaming in the system took place from day one and it resulted in us having to make sure that we were getting policies written to cover a lot of aspects that we may not have thought of up front.

There's a potential start and stop in the workplace. That's mostly from the solar installers' point of view. And projects come on line in the queue and they all get done early on in the year and the next year doesn't start until January 1st, so the solar contractors are concerned that they won't have any work to do in the second half of the year.

One way that we have addressed that is to allow

people who are, say, in 2010 queues go ahead and fit their systems in place early on and receive a reduced payment until January 1st when their FIT payment comes into play. So there's a couple different policy rules that you can do to address some of these issues that come up.

We have implemented several time lines into our queue that have project milestones, and if the project doesn't reach these milestones by that time line, then they're kicked out of the queue.

The first one that comes into play is a once they get -- well, actually there's an application procedure that means they have to get everything signed and all the documentation to us before we consider them, and that includes what we see in bullet two, proof of rights to actually install on the roof of the property that's being proposed. They need to have the licensing and permits and certifications for their solar installers all in place so that we have proof that this is a bona fide project with the space that has been identified and the owner gives, at least, their acquiescence if they're not in as a partner. And that we have a better feeling that this is a project that is going to actually happen.

The reason being, on the first day we had 30 applications come in from someone who -- an installer who claimed that they were going to put these PV systems on

various buildings for chain stores across Gainsville. And we followed up with the people who actually owned the building and that's the first they ever heard of it. So the applications were being made without even the owners having been contacted and gone into an agreement with them.

So, the moral of the story is that we need detailed and very specific administrative guidelines to handle those situations that are going to come up. And again, this all comes from the fact that we were forced to have a capacity limitation which generated a queue.

One of the final things is we're considering doing a non-refundable application fee which we don't have at this point. But I think it's probably a good idea. Again, forcing project owners to put some money down on a project before it -- we allow it to get into the queue and go forward.

So we've developed a contract document which we think is pretty simple and pretty straightforward. There's some important points when financing comes into consideration. For lenders to be willing to put their money into the system, we found out that the contract must be assignable to all successors, freely assignable contract. Excuse me.

One thing that I hadn't counted on is the fact that we have this digression schedule, it actually creates a

vintage market and the secondary market for contract. If somebody has a contract in the queue for a project at 32 cents, they could sell it in the future for someone who's lower in the quota -- or excuse me, lower in the queue who's maybe several years out and they have maybe a 26 cent per kilowatt hour contract. So people who get up early in the queue with the larger amounts actually could use that as a secondary market to sell those contracts.

The 20-year contract, the longer you can make the contract terms from our talk with the local bankers and local lenders, the lower the interest rate, they are willing to offer the money yet. We do 20-year contracts. Some places have considered 15-year contracts. I don't know of anyone who has gone for a longer contracts, but from what I've heard anyway, the longer -- if you could make those contracts 25 or 30 years, as long as it doesn't go beyond the lifetime on the equipment itself, it would mean better interest rates from lenders who are putting their money into the property.

Another thing about financing is, again, these are for our small systems. I know you guys are considering larger than 20 megawatt systems, so it may not apply, but I had an interesting thing with the tax on the property, equities were actually very important factors in determining the financing amount in that financing was not just based on the equipment itself, which actually what I'm finding out is

have the relatively small work in the view of the lenders or the revenue stream which does have a greater worth, but if they could offset that with the property improvement on the building itself and the tax equity, they are higher factors in determining whether that loan will be made and what rate that loan will be given at.

And as we said before, the investors look favorably on these low risk returns even at moderate rates, especially in today's market where getting a guaranteed rate of return is becoming a harder and harder in any vehicle.

And so, just some general conclusions, our experience has been there's a lot of popular support for the feed-in tariffs. There certainly the solar contracting community was very much behind it. The people who are considering purchasing their own PV systems or companies that would like to invest in solar technology have all welcomed seeing the feed-in tariff as a way of being able to get some up-front capital to get into their PV project.

The lenders and the capital investors locally have also looked favorably on the FIT as an investment vehicle, primarily because it's a low risk and with a guaranteed rate of return, as long as the sun shines. And we have found from the utilities perspective that getting into the long-term PPA, which is really what the FIT is, it's our least risk and most cost effective method to secure renewable energy.

Rather than building it out or so, we have found that entering into the PPA is actually better from our perspective, from a risk management perspective and from our capital investors here and from our bond rating.

So even if you don't want to go through a -- specifically a feed-in tariff, long-term PPAs for renewables I think are, from a utilities point of view, a great way to go.

And the final bullet is that -- and this is something I personally deal with everyday as my job, is to make sure the administrative guidelines are pretty bullet proof, pretty strong. They cover all the cases you can possibly think of and there will be some that come up that you didn't, and try to anticipate those potential pitfalls before they come up. So, that has been the trial by fire that continues to go on.

And that concludes my presentation.

COMMISSIONER BYRON: Mr. Crider, thank you.

MR. CRIDER: I will answer questions that I can. You're very welcome.

COMMISSIONER BYRON: Yes. Thank you for joining us. It's just been -- it's great to have this kind of perspective and get a little input from a utility that's doing it. Of course, I'm -- a couple of quick questions. You are, of course, a municipally-owned utility.

MR. CRIDER: Yeah.

COMMISSIONER BYRON: And your conclusion that you have found that a long-term power purchase agreement such as this FIT or feed-in tariff approach is your most cost effective way to do it, is to get renewables.

How do your electric rates compare with some of your investor-owned utilities there in Florida? Are you significantly lower than they are?

MR. CRIDER: We are pretty much in the middle of the pact for the State of Florida. We have, in the past, tended to be lower, but as the cost of -- actually the cost of gas was a big driver for us in the long term and in the past couple of years. But right now, we're pretty much sitting in the middle.

COMMISSIONER BYRON: Okay. And I take it you're the only one that's doing a feed-in tariff there in the State of Florida. Is there an interest or a reluctance on the part of the -- your adjacent utilities?

MR. CRIDER: There is a reluctance on the -- in the IOUs and the IOUs are 75 percent of the power retailers in the State of Florida. They have a different perspective on it because being sort of the caretakers of their shareholder's money, the fact is that if they go to a feed-in tariff to purchase renewable energy, they will certainly be purchasing energy at a higher rate than they could otherwise.

And again, this gets back to the original question of why to do -- not whether to do an FIT, but are you doing renewables? Are you committed to renewables? And I think from the IOUs perspective which is basically looking at the bottom line for the cheapest energy that can be produced is a hard sell to say, let's do renewables. That's why, unless there's a passage in an RPS or some other regulation that sort of forces the IOUs to re-evaluate their purchase of energy, if it's just on the bottom line value, it's going to be hard for IOUs to get on the renewables band wagon in general, rather than just about the feed-in tariff.

COMMISSIONER BYRON: Commissioners. I think -- in the interest of time, I'm going to forgo asking any additional questions. I don't see any others from the dais and I have two general -- I have two comment cards here, but I think they're general comments. I don't think they apply specifically to this presentation. So those on the phone, are they free to interject and correct me if, indeed, they have specific questions for this presenter?

MS. GREEN: Yeah, we have one that wants to have --

COMMISSIONER BYRON: Go ahead.

MS. GREEN: This one's from Michael MacDonald. With the GRU's electric rate from 3 cents to 10 cents per kilowatt hour, what type of adoption do they have of solar prior to this program? And with this feed-in tariff, how

much does solar represent of their current requirements?

MR. CRIDER: We had a fairly insignificant amount of solar prior to 2006 or 2007. In 2006, we did an integrated resource plan where we were considering capitalizing a new coal plant for our future load needs. It was actually a very contentious process and in the end, what's happened is the City Commission, who is our Board of Directors, decided they wanted to do a path, a dual path of maximizing our energy efficiency and DSM program and pursuing renewable energy rather than feeding our load with any kind of new fossil fuels thing.

Solar became part of the mix, then, as a load reduction PSM program. It's very typical in most places. We offered a rebate and that metering later and folks would put PV on their own homes, put it behind the meter. We had a totally different perspective on solar when it comes to the feed-in tariff. It becomes a renewable energy producer, renewable energy generator, not a load reduction program anymore.

So we're seeing an increased rate of -- an increase interest in putting this solar, deploying the solar because of the feed-in tariff than we ever did under the rebate. It's, like I said, it's still an insignificant part of our load, probably one percent, probably less than one percent of our total net load from the customer installed PV up till

this year.

What we're expecting with the full role out of the program is four megawatts a year. Our maximum peak load is about 640 megawatts. So, again, you can see it's a small percentage of the net load mix. I think that answered your question.

COMMISSIONER BYRON: Mr. Crider, thank you very much. My hat's off to you and the City of Gainsville for being pathfinders on this issue and we really appreciate your joining us this afternoon in order to share with us your program. We like to be first in California, but we also will be happy to learn from others.

MR. CRIDER: Well, best of luck to all of you and I appreciate being asked to come and present and if anybody who have seen the presentation has any questions about anything I've talked about or would like some references to the reports and data, feel free to give my email address out and I'd be happy to entertain any questions.

COMMISSIONER BYRON: Okay. Thank you very much.

MR. CRIDER: All right.

MS. GREEN: Our next presenter is Brendan Keeler from the Renewable Energy Office.

MR. KEELER: Good afternoon. Can you guys hear me okay? Okay. My name is Brendan Keeler with the Renewable Energy Officer here at the Energy Commission. This afternoon

I'll present an update on the CPUC progress on feed-in tariffs for small scale projects.

Right now, they're considering this in Rulemaking 0808009. And CPUC staff was invited to speak here about their proceeding. However, they were unable to attend. They did, however, get a chance to review this presentation and I thank them for that.

On the other side, since I'm not personally involved in this proceeding, I will do my best to answer any questions that may arise. If I cannot answer them, there's a slide in the back for Jaclyn Marks' contact. She's the contact at the CPUC that can answer any questions. Or if Commissioner Bohn or Advisor St. Marie would wish to comment, please feel free to do so.

COMMISSIONER BYRON: You bet they'll comment. You're walking a fine line here, Mr. Keeler.

MR. KEELER: I will try to stay on that line.

COMMISSIONER BOYD: Doing a good job.

MR. KEELER: Just a little bit of background. In the year 2007 Integrated Energy Policy Report, the CEC recommended that the CPUC should immediately implement a feed-in tariff set initially at the market price referent for all RPS eligible renewables up to 20 megawatts in size. Additionally they recommended that a collaborative process between the CEC and the CPUC look into developing feed-in

tariffs for larger projects. And that this should include features of the most successful European feed-in tariffs.

Continuing in the 2008 IEPR update, the CEC recommended that the CPUC should implement the feed-in tariff for all RPS eligible generating facilities up to 20 megawatts in size, specifically including must-take provisions as well as cost-based technology specific prices that generally decline over time and are not linked to the CPUC's market price referent.

Additionally, they recommend that the CEC and the CPUC to continue looking at feed-in tariffs for renewable projects larger than 20 megawatts using the information based upon the Energy Commission's report on feed-in tariffs that was released earlier this month in May of 2009.

Just some more background on feed-in tariffs that are currently available in California. As a result of AB 1969, the CPUC implemented Section 399.20 which was a feed-in tariff program for water and waste water customers. These tariffs and standard contracts were for projects up to 1.5 megawatts in size and the total program was capped at 250 megawatts.

COMMISSIONER BYRON: When was this implemented, this decision?

MR. KEELER: Section 399.20 was June of 2007.

COMMISSIONER BYRON: Okay, thank you. Any takers

for this, do we know? Are you going to get to that?

MR. KEELER: Yes.

COMMISSIONER BYRON: Okay.

MR. KEELER: Yep. Further, throughout the CPUC decision of 0707027, CPUC expanded upon AB 1969 to include SCE and PG&E customers other than water and waste water companies, or facilities. They set this limit at 228.4 megawatts. And this was on February 14th, 2008. Again, later in 2008, on September 18th, the PUC expanded this program to non-water and waste water customers to customers of SDG&E.

Finally, Senate Bill 380 came along in 2008 and this made one feed-in tariff overall for all customers, water and waste water included, to all utilities regulated by the PUC. And this program was capped at 500 megawatts.

Additionally, besides what's available through the investor-owned utilities, two -- or the main two publicly-owned utilities are currently proposing feed-in tariffs for their customers. The first one from SMUD's General Manager's Report and Recommendation on rates and services was from March of this year. Just a couple quotes from there. "Effective January 1st, 2010, feed-in tariff, this section proposes establishment of a feed-in tariff to compensate customers for energy fed into the electric grid by customers sited distribution generation within the SMUD service

territory."

What's recommended for SMUD's feed-in tariff is that they have a project size limit of 5 megawatts and then a program cap of 100 megawatts throughout the utility's district.

Again, LADWP is also proposing a feed-in tariff. This is part of the Mayor's solar L.A. program. This is from a proposal in November of 2008. And it reads, "A significant challenge to developing solar projects in Los Angeles has been a long-standing prohibition against non-LADWP entities from selling electricity to other customers on the local grid. A feed-in tariff program would help to bridge the problem by allowing a solar developer in the City to sell wholesale power directly to LADWP through a long-term contract between the private seller and LADWP."

Skipping down a little bit to the last sentence, "The feed-in tariff goal is to install 150 megawatts of solar systems by 2016." And I believe Randy Howard will have an update on their program cap and project size limit later this afternoon.

Going back to the feed-in tariff administered by the investor-owned utilities, there are some takers. The first row of what we have here is Southern California Edison. This was part of a program that proceeded the feed-in tariff decision and this is similar to a feed-in tariff, but it's

not a must-take. This is their renewable standard contracts offer. And for projects with the size of 1.5 megawatts to 20 megawatts, they have five contracts of landfill gas for 14 megawatts. These projects are not currently on line.

The rest of the rows here, rows two through five, these are part of the actual feed-in tariff program. Southern California Edison terms it their crest feed-in tariff for less than 1.5 megawatts. They have one contract for landfill gas of 1.1 megawatts. This project is also currently not delivering.

PG&E, as a result of their feed-in tariff program, they have four contracts for 1.57 megawatts in hydro; seven contracts for 6.47 megawatts of landfill gas; and one contract for 1.5 megawatts of wind. PG&E is separated out here, in the fourth row, where it says PWF feed-in tariff, that's public water facilities. So a public water facility has one contract for .05 megawatts of hydro. And lastly, SD&G currently has no feed-in tariff contracts.

COMMISSIONER BYRON: So my -- if I've sum this correctly, about 24 megawatts of signed contracts and delivering about 50 kilowatts.

MR. KEELER: Yes. I will add to that, that only 10.7 of those megawatts are a direct result of the feed-in tariff of 1.5 megawatts or less. The additional, the top line where we have 14 megawatts is SCE's standard contract

offer for renewables. It's not necessarily a must-take.

COMMISSIONER BYRON: I also note by your footnote, if this is correct, that that program ended at the end of last year.

MR. KEELER: Yes. That was the program for biomass standard contracts. What they did is starting at the beginning of this year, they wove it into a renewable standard contracts offer which includes biomass and other RPS eligible.

What I would like to do now is take a look at comparing the current feed-in tariff offered by the investor-owned utilities with a proposal for extending that tariff that the CPUC is doing under Rulemaking 0808009. And you'll see the existing feed-in tariff program is in the center column and the staff proposal is on the right side.

In terms of size, as we said before, the current size is zero to 1.5 megawatts. The PUC is expanding or is considering expanding that from above 1.5 megawatts to 10 megawatts.

As far as utility applicability, it would only apply to PG&E, SCE and San Diego Gas and Electric. It would provide an additional 1,000 megawatts for this category, in addition to the 500 megawatts already allotted to the zero to 1.5 megawatt feed-in tariff.

Currently, the existing feed-in tariff program has a

contract price nearing the market price referent. In their stock proposal, they have not considered a change in contract price. They will be in a future phase of this implementation.

Currently, the feed-in tariff program has location restrictions of it has to be an IOU retail customer. The new feed-in tariff would have to be within the ISO controlled grid.

As far as feed-in tariff contract terms, currently each IOU develop their own language based on Decision 0707027. The new feed-in tariff, all three IOUs would have to have the same contract language.

The length in term to achieve commercial operation is currently at 18 months. For the new feed-in tariff, it would also be at 18 months with an opportunity to expand further by six months for regulatory delays.

As far as excess sales or full export for the feed-in tariff, there is currently an option to choose by the customer whether they want to sell just their excess production or have a full expert. The new feed-in tariff would have full expert only as an option.

As far as development security, the existing feed-in tariff program does not have any. The PUC staff proposal for the new feed-in tariff would have development security at $20 per kilowatt.

There's no current performance assurance for the feed-in tariff up to 1.5 megawatts. The one up to 10 megawatts expects that 5 percent of expected total project revenue for projects. This only applies to greater than 5 megawatts, up to the 10 megawatt limit.

Performance obligation, the existing feed-in tariff program, the utility can terminate contract if deliveries are not made according to good utility practice or prudent electrical practices. The new proposal adds a minimum requirement for 140 percent of expected annual net energy production which is based on two years of rolling production.

COMMISSIONER BYRON: So, forgive me, given the lack of success, I guess we have to impose additional constraints on the -- I'm at a loss to understand the reason for some of these things, including the full export only. Do you have answers to all that?

MR. KEELER: I can refer you to Jacklyn Marks. Continuing, damage calculation for the existing feed-in tariff program, damages are -- actual direct damages, they are neither calculated by a formula nor are they capped. The new proposal would cap damages equal to contract energy price minus average market price for the term year. This would not be greater than five cents nor less than two cents per kilowatt hour.

Insurance requirement remains the same for SCE and

SDG&E. It would be $2 million for a project greater than 100 kilowatts. PG&E is $1 million for a project greater than 100 kilowatts.

FERC certification is currently required for the feed-in tariff program up to 1.5 megawatts. It would not be required in the feed-in tariff program up to 10 megawatts.

These are a few of the comments by stakeholders on the staff paper relative to price. Parties have different perspectives. The Sierra Club of California recommended that MPR, as currently constructed, is the largest barrier to renewables in California. Solutions for Utilities went on to say that the MPR does not work. SoCal Edison states that the CPUC may not -- separates for wholesale power sales other than setting a rate for FERC registered, qualifying facilities at the avoided cost. And PG&E supports addressing price in a future phase and raise concern that absent a clear understanding of the price or product, customers may be harmed to the detriment of the RPS program.

Comments relative to project size, parties had varied positions on project size as well. LACCD, which is the Los Angele Community College District, does not support a program or project cap. IAP, GPI, CERT, Sierra Club, Community Environmental Council, Redwood Renewables support feed-in tariffs up to 20 megawatts. And GPI also supports feed-in tariffs beyond 20 megawatts. Fuel Cell Energy

supports up to 10 megawatts and over 10 megawatts on a case-by-case basis. DRA, CALSEIA support FIT to 10 megawatts and standard contracts for 10 megawatts to 20 megawatts.

The utilities do not support feed-in tariffs up to 20 megawatts. SCE urges voluntary standard contracts instead of a mandated FIT program. PG&E supports FIT up to 10 megawatts if appropriate terms and conditions are adopted. And San Diego Gas and Electric support feed-in tariff programs up to 5 megawatts. Also, TURN opposes raising a feed-in tariff to 10 megawatts.

Lastly, some stakeholder comments on the program cap. This is a range of views on proposed 1,000 megawatt cap proposed by the CPUC in their staff paper. Southern California Edison's no total program cap can set -- can be set in a context that does not discuss price. PG&E supports 1,000 megawatt cap provided that terms and conditions helps to ensure deliveries of renewable power and fairly allocate risks. DRA also supports.

CALSEIA and Joint Solar support 1,000 megawatt cap provided that IOUs can procure beyond that cap at their discretion. First Solar supports a 3,000 megawatt cap, which is 2500 beyond the current 500 megawatt cap. Redwood Renewables suggest a cap of two percent of annual increase of total power use. Fuel Cell Energy suggests that there's no cap needed. IAP, setting a cap on the FIT will necessitate a

viability screening. And finally, the Sierra Club, if the State gets close to a 1,000 megawatt cap, then increasing the cap in a timely way will be important for reducing the risk for developers, that they may be pushed aside into an indefinite wait list.

Some time line and next steps for the CPUC process, comments were filed April 10th of this year, reply comments were filed April 17th. The PUC is considering next steps which may be to consider price before moving forward with a proposed decision.

Additionally, the PUC is supporting SB 32 and -- or I'm sorry, supporting SB 32 if it's amended, and also AB 1106. These are two feed-in tariff bills currently proposed in the Legislature.

And lastly, as promised, here is Jacklyn Marks's contact information. She is the CPUC contact for this Rulemaking.

COMMISSIONER BYRON: Is that Ms. Marks on the phone?

MS. GREEN: No, she went earlier.

COMMISSIONER BYRON: Got off just in time. I -- without continuing my line of questioning, I think my fellow Commissioner can tell where I am on this. Is there any questions from the dais?

COMMISSIONER BOYD: I wanted to ask Keeler if he

can elaborate on what the two Legislate proposals call for.

MR. KEELER: Sure. AB 1106 is a new feed-in tariff for up to 20 megawatts, priced at the MPR. And this allows customers to switch from net metering to the feed-in tariff program. That's if they're already on the net metering program. And there's no program cap. It also calls for no third-party ownership.

And SB 32 calls for changing the existing feed-in tariff from 1.5 megawatt project cap to 3 megawatts. The -- it gives the authority to the Commission to adjust price for other renewable attributes. And customers can, again, switch between net metering to the feed-in tariff program, but they may not have both. And SB 32 allows third-party ownership.

COMMISSIONER BOYD: Thank you.

COMMISSIONER BYRON: Please, Commissioner.

COMMISSIONER BOHN: Thank you, Commissioner Byron. I'm not going to take the bait. Partly out of ignorance and partly out of deference to the civility of the discussions so far going on.

You know, I have a question and it really is a genuine question. About 70 percent of the discussion today is really a discussion about financing in one form or another. A feed-in tariff is nothing more than a guaranteed put, for somebody around which to make an investment decision. Fair enough.

And the discussion about what it takes to finance this and finance that, could every event of this be applied to a fossil fuel plant or anything else. Just basic financing, which -- where do the risks come from. Where are the risks are ameliorated. Non-volatility is better than volatility which will produce a lower rate. And that implies independent of this -- of the whole feed-in tariff renewable discussion.

What I'm looking for is some help in dealing with the economic cost and the burden-shifting that is required to make this, to me, financing policy decision. For example, a comparison that says the price in Gainsville to the consumer is lower doesn't tell me that the economic cost to deliver that is lower. Indeed, I think he said it was actually higher.

But I don't see the analysis that talks about the total economic cost of a feed-in tariff system. Now, I happen to be one of those people that comes out of the financial world. And so financing for me is an important issue. But it's always an important issue.

So I need some help on the intrinsic feed-in tariff cost, if you want, to society. Or if the ratepayers are paying an additional dollar, whatever the number is, that means that society is bearing that dollar cost in some fashion to reduce the purchase price to another part of

society.

All of this is projectable, I know, I just haven't seen it. And I guess my question to you is, is that around anywhere? Has anybody done that?

MR. COUTURE: Just to address that, there is -- naturally giving that there are more --

COMMISSIONER LEVIN: Could you identify yourself again for the people on the phones.

MR. COUTURE: I'm sorry, this is Toby Couture. I presented earlier in the feed-in tariff policy design.

There is a -- the only report that I can think of that addresses the full comprehensiveness that I think you're looking for is one that's been done by the German government on their own internal macroeconomic, microeconomic, kind of whole societal impact of the feed-in tariff. And they've come to the conclusion at the end of their report, I actually have it in my laptop over there, so I can probably leave it on a USB key somewhere for some of the staff or the Commissioners if you're interested.

And they came to the conclusion that the actual net benefits are positive despite -- so they did is they took into consideration the electricity costs impacts and the impacts on industry, on economic development, activity, new start-ups, things like that, they took into consideration the impacts on households of higher electricity rates. And then

they took into account the job creation, economic development, opportunities that emerged from that manufacturing, and then the increase in German GDP, increase in German tax revenues, a really comprehensive look at all the differences.

So I think that this is the only thing that comes to mind that addresses what I seem to be hearing, this desire to really have that holistic, if you will, analysis of the feed-in tariff policy impact.

Germany has found that it has actually been positive. When all the different impacts have bundled in with all the ones that I've mentioned plus the environmental benefits relating to clean air, et cetera, greenhouse gas benefits.

Now, that report is available. It can be found anywhere on the website. And they do a detailed analysis of all the different components that were factored in that get to that question. So I think the only one that I can think of has come to the conclusion that it was positive. I forget the actual dollar amount, but it was in the few billion net when all the assets and liabilities, so to speak, were taken into consideration. So all the different costs versus all the benefits.

COMMISSIONER BOHN: That would be very helpful. I thank you for that reference because when one talked about,

for example, of value of feed-in tariff as a 10 percent reduction in cost because of the reduction in volatility, that doesn't help a whole lot because the reduction in volatility, from whatever source, would produce some reduction in cost of financed out.

But I think we, as policymakers, are condemned, if you like, to try to look at it in the overall cost reallocation to society as measured against our goals basis. And I think it may be that even if it doesn't come up to be positive, it is, I think, helpful for us, at least for me, to look at the value given to the elements in that analysis and the value given to those elements both on a gross basis and vis-a-vis each other. We may be willing as policymakers to say well, even if it doesn't come positive, we're willing to accept the net negative for policy reasons.

But without getting all of the pieces together, I have the feeling that we're kind of the blindfolded looking at the elephant. Thank you very much.

COMMISSIONER BYRON: Thank you, Commissioner Bohn. You know, I can't help but think, looking at this comparison, a lack of takers, if you will, on the efforts for the PUC to sign, to resign the tariff that works for landfill gas and public water use, that these modifications are going to improve the situation in any substantial way for feed-in tariffs. And I, you know, you and I have had discussions

before about that maybe the larger issue in that is how do we provide the right incentives for distributed generation. In fact, you broached that subject, you and Commissioner Boyd, at the beginning of this.

And I think the question is how do we make it revenue neutral for the investor on utilities such that they don't care. And I'm just concerned that this -- these modifications that are being made to the existing approach aren't going to have any effect until we drill down on that issue more and maybe even -- maybe even there are other policies at play here, part of the investor-owned utilities that aren't apparent to us that are having an effect on the feed-in tariff approach as well.

COMMISSIONER BOHN: That's a fair observation.

COMMISSIONER BYRON: And so I hope -- I mean, I look forward to Mr. Howard's presentation on how LADWP is fairing. I don't think we have SMUD on the list, but we're, of course, interested in hearing from them as well.

But I hope some more investor-owned utilities who will be on the next panel will help address this to some extent because that's really what we're after here. We're not after ending the control of the service territory. We're really -- I hearken back to Mr. Crider's approach to this. The real question is do we -- are we committed to renewable energy. And so I think that's the question that I want to

keep bringing to the forefront as well as we look at this.

I think there might be a couple of questions for this -- no. Okay. I'd like to keep pressing on, then. If there's no other questions, we'll keep pressing forward to try and maintain some sort of schedule. Oh, go right ahead, Commissioner.

COMMISSIONER LEVIN: I just wanted to thank Brendan especially for filling in for PUC staff. We wouldn't have know if you hadn't told us. So thank you.

COMMISSIONER BYRON: Okay. I think if I could, I'd ask the panelists to come forward. I think that's next, correct, Ms. Green? So if you would very quickly come up and have a seat. There's some name tags up here and we'll go ahead and jump right into a panel discussion on the financial sector and utility perspectives. And I see we have a moderator and that's great because moderators have to also moderate the dais here as well.

COMMISSIONER LEVIN: So, I would just briefly, so people would see --

COMMISSIONER BYRON: Go right ahead.

COMMISSIONER LEVIN: I would just like to apologize to the panel and possibly the next panel as well. I have to head over to a meeting in the Capital in a few minutes, but I will get back before the end of the workshop.

COMMISSIONER BYRON: Fully understand.

COMMISSIONER LEVIN: And get briefed from others. So I apologize.

COMMISSIONER BYRON: And I understand we may be losing you as well. No, okay, good.

COMMISSIONER BOYD: Not again.

COMMISSIONER BYRON: All right. So, there's no handouts for this discussion, correct? So, Ms. Corfee, go ahead as to how you -- I believe you've moderated a panel before with us on this topic and you did a great job. Please go ahead and let us know how you plan to take advantage of the next hour.

MS. CORFEE: Sure. And is it correct that we have an hour given that we're running behind schedule?

COMMISSIONER BYRON: Well, we would love it if you could recover some time, but I hate to short change panelists who have made all this effort to be here and have remarks that we're interested in hearing. So I'll leave that up to you. If the content's good, we're interested.

MS. CORFEE: All right. Good afternoon and welcome to all the panelists. I -- my name is Karen Corfee. I'm with KEMA and I will be moderating the panel today. I will ask each of you to please introduce yourself briefly in a few minutes. And then what I'd really like to do is go through the discussion questions that were sent out in this part of the Workshop notice. And if -- and maybe we can walk through

them question by question and just if people have something to contribute regarding this discussion, just raise your hand and we'll try to get to you and try to get through as many of the questions as possible. And if there's anything that you want to cover that isn't listed in the questions, I would ask you to include that in your opening remarks.

So with that --

COMMISSIONER BYRON: Ms. Corfee, before you go -- before you begin, how many questions are there?

MS. CORFEE: There's quite a few. There's seven.

COMMISSIONER BYRON: Okay. Well, then, let's go ahead and try and see if we can address each one within about an eight or ten minute time frame and I think that will help keep us on schedule.

MS. CORFEE: Absolutely. So with that, if we could start at the very end here.

MS. BERGORF: Hi, good afternoon. My name is Marci Bergorf. I'm with Southern California Edison. I've been a part of these panel discussions for the last year now. So I've been involved in with all the progress of the feed-in tariffs, both at the CEC and at the PUC.

Edison has had quite significant experience, both with standard and customized contracts. We are getting ready to launch our seventh solicitation this year, most likely in the June/July time frame. We're also going to be launching a

solicitation for solar PV for the end of the year as well depending on the Commission decision out of that application.

As mentioned in the presentation, we do offer our standard contracts. We've signed up to 14 megawatts so far and we're working with probably almost another 100 megawatts in terms of applications and progressing to an executed contract.

So there actually has been quite a bit of activity. We talked a little bit about CREZ. There's been quite a bit of inquiry about it as well. It's getting to the final contract stage that -- and execution that's taken a little bit of time.

MR. HOWARD: Good afternoon, Commissioners. Randy Howard, LADWP and I'm the director over the resource development activities for LADWP. I'm also the director for the project development activities for renewables for Southern California Public Power Authority. So that's 11 municipal utilities in southern California. So we have a joint committee. We try to do a lot of projects jointly because many of those smaller utilities are unable to do those projects on their own.

Just a few things on LADWP. As many people -- sorry, as many people know, we put forth a 1280 megawatt solar L.A. plan and we are proceeding with the implementation of that plan. There are many of the elements that are still

being worked out, stakeholder meetings and I'll touch a little bit on that. But that's a goal of meeting ten percent of our energy requirements using solar by 2020. And so we have developed a fairly aggressive plan and again, I'll touch on some of that as we get through some of the questions. I think all of us out there have been waiting till we get to the questions.

MS. WINN: Hi. Valerie Winn. I'm PG&E's manager for Renewable Energy Policy and Planning. And I've participated in many of these workshop discussions as well on feed-in tariffs.

Part of our challenge with feed-in tariffs is I hear that term and we always think that a feed-in tariff is something where the counter-party has a put right and there aren't any contractual terms and conditions. And that has been, I think, from the past one I've been here, part of our real concern with feed-in tariffs. What are the terms and conditions. And if you have the right terms and conditions that parties are abiding by, then you can have a successful, whether you want to call it a standard offer contract program or a feed-in tariff program. But any sort of arrangement without contractual provisions that govern the transaction simply, you know, won't help us achieve the goal.

So if we're talking about feed-in tariffs with good performance requirements, then we are supportive of feed-in

tariffs with those requirements. But it's all about the terms and conditions.

One of the challenges I think that some parties are facing and participating in our small one and a half megawatt renewable generator program is that right now the rules are that you can't have received the California solar initiative or gotten any other sort of a direct rebate and participate in the feed-in tariff program. And I think that's kept some people from participating in those contracts. Or at least, that's what we hear from our customers.

So that could be something that we want to look at to perhaps incent and make that program a little bit more successful. But from our perspective, since the program has happened, we've signed -- we have 13 contracts under that program and one of them is actually achieved commercial operation. So that's a success given the limited time the program has been in place.

MR. BERTOLINO: Good afternoon, I'm John Bertolino, the superintendent of renewable generation with the Sacramento Municipal Utility District. And we've been pretty successful with our renewable solicitations to date. In fact, in the over 20 megawatt class, we don't really see finances being a big constraint at the moment, given that the capital markets are eventually going to recover.

We also think there's great benefits to being able

to negotiate those size project contracts on a case-by-case basis. It's better for the utilities, it's better for the developer.

Where we focused our efforts with feed-in tariffs is on much smaller systems on the distributed generation side of the world. Our view is a lot like what you heard from Gainsville Electric. We're trying to promote local distributed generation to utilize the resources we have within our community.

We are looking at a pricing structure that we think is fair, both to developers and to our customer ratepayers, our customer owners. And we've got a proposal in front of our Board as Mr. Keeler suggested, that should be heard formally in June and we're looking forward to moving forward with that and learning how feed-in tariffs can work before expanding to the larger sort of I'll call RPS community.

MS. CORFEE: All right. And to my right I have our speakers from earlier today. Matt, you want to --

MR. KARCHER: Sure. My name is Matt Karcher. I'm with Deacon Harbor Financial. I'm here as part of the KEMA team, but I'm an independent consultant providing financial advisory, analytical services to both developers and investors in the renewable energy market.

MR. COUTURE: I'm Toby Couture. I spoke earlier on feed-in tariff design issues and some of the economic and

financial aspects. I was previously with the National Renewable Energy Lab, that's a federal lab with the Department of Energy in Colorado. And I'm currently a FIT policy analyst and working in -- from Canada, but primarily with the United States.

MS. CORFEE: All right, so what I'd really like to do is now move on to the questions. But I did want to say that I had a message come from over my Blackberry today and Vermont signed co-legislation as of yesterday implementing feed-in tariffs. And so, the race is on.

The last time I was here, I think we talked about Hawaii being a little ahead of California, but now it looks like Vermont has actually signed it into law. And they are looking at smaller projects as well.

So with that, I'd like to move on to the discussion question number one. It is projected up on the screen and that is asking, really, you know, are renewable energy projects over 20 megawatts having difficulty receiving financing? We did see some presentations on that today. And then, related to that, are renewable energy projects having problems associated with transmission access and permitting approval? And how does that impact the financing? How do financing, transmission planning and permitting risks interact? And do delays in project development affect the financial liability of the projects?

So I'd like to turn that out to the panelists and get your feed-back on that question.

MS. BERGORF: Start with me?

MS. CORFEE: Sure.

MS. BERGORF: Marci Bergorf with Southern California Edison. You know, there's no doubt that financing is more challenging today than it has been. There's a lot of volatility as we talked about in the market. The interest rates are higher. You know, what we're hearing from counter-parties is that money is available. It is a tighter market, though. It's smaller, but it's still alive. They're seeing the debt to equity ratio has changed, so lenders are financing less debt, requiring more capital up front.

So we're seeing these types of changes in the market, they're taking less risks, but the market is still there, it's still out there. We haven't heard that our projects are having difficulty talking with lenders or having ongoing discussions with lenders.

In terms of financing and how it relates to transmission and permitting. You know, we're still seeing that transmission and permitting are the primary barriers to bringing projects on line. And it's hard to say, and I guess, isolate financing alone by itself because it is impacted by so many other elements, not just transmission or permitting.

You know, when you know your transmission requirements and you know the costs and the upgrades, when you understand your permitting responsibilities and the process you have to go through, and it plays into the interconnection process, you know, when you know all those things, you're creating more certainty for the project. And so you're creating more certainty for your investors.

So, you know, we are seeing that they all are interrelated with each other in regard to distinguishing -- distinguish financing out by itself.

MS. CORFEE: That's good.

MS. BERGORF: Okay.

MS. CORFEE: Thank you, Marci.

MR. HOWARD: My answer is really yes to all three. We're seeing quite a lot of problems with financing. More recently, it's getting a little better. We've had to be quite creative to move some of our projects forward.

We had a 200 megawatt feed-in project that we had gone through the full approval process. Turbines were starting to arrive on site, the transformers arriving, construction starting and the construction financing lender backed out of the project. It wasn't able to continue on.

LADWP's banking team in the project was Lehman Brothers at the time. Obviously, everyone knows what happened there. So we had to rehuddle on the project. It

was a project that we wanted to proceed. It was an important project to us.

So LADWP began paid scalping (phonetic) numbers in the project, amended the agreement, negotiated an amendment and we agreed to back stock the project. So we agreed that we would be there for the take-out financing. If no other lenders came forward, we would just buy the project. And that, we thought, was sufficient to allow the counter-party to go out and to find construction financing.

Sure enough, with that agreement in place, they were able to do that, but it was a very different market. They ended up having nine different banks come together in a consortium to do the financing that one bank had previously agreed to do. And we're seeing that over and over, that the counter-parties have to be -- they're much more creative now. They're having to go to multiple banks for the same quantity of money that previously a single bank would have loaned. And the rates are substantially higher.

So on the deals that we've negotiated the pricing, we've seen them come back with some adjustments that in most cases appear just pliable.

The other approach that we've taken to ensure that projects do continue to move forward is we've offered in many cases to do prepay. We will prepay on a project, so again, we're guaranteeing some level of take-out upon the COD dates.

Or in several projects recently, we've agreed to do construction progress payments of three COD and guaranteed those as well.

So we've seen a very different shift. In order to keep these projects on track, we've stepped up, put our balance sheet forward to try to make them continue to move.

MS. CORFEE: Randy, a quick question. Are you experiencing similar problems with conventional generation?

MR. HOWARD: We're not doing any conventional generation. We're fully resourced.

COMMISSIONER BYRON: Good answer. Please make sure that your mike is on and close enough so everyone on the WebEx can hear you, Ms. Corfee. Thank you.

MS. CORFEE: Valerie.

COMMISSIONER BOYD: I was going to say, Mr. Howard, this is not your father's LADWP. Congratulations.

COMMISSIONER BYRON: They're fully resourced.

MS. WINN: Our renewable project's over 20 megawatts is having difficulty receiving financing. I would say the tight credit markets are facing renewable generators of all sizes and there are, you know, some challenges that our counter-parties are facing there.

It's not clear yet how a lot of the programs authorized in the economic stimulus package will help them. Certainly, DOE loan guarantees, we have a few counter-parties

who are looking at those as opportunities to get some necessary funding.

PG&E is also looking at a variety of ways it can work with counter-parties, whether there are joint development opportunities or also, you know, we recently put forth our utility ownership proposal for a utility scale PV program.

So I think everyone is looking for creative ways to get the projects on line. Certainly, again, the tight credit markets are really impairing peoples abilities to get their projects up and going.

MR. BERTOLINO: I agree with the previous comments and I'll just add that, you know, tight financing is applying to all kinds of projects and not just renewable energy projects.

And then the financial markets are pretty savvy and they look at these other risks like transmission risk, permitting risk and they're starting to recognize those as being real and significant. And that's made them a little hesitant to invest in some projects. However, if you still have what would be considered a good project that has some of these issues resolved, I think the money is there.

MS. CORFEE: All right.

MR. KARCHER: I think one difference to keep in mind in renewable energy financing relative to conventional

generation is the renewable energy market's dependence on tax equity and realization of those tax benefits which isn't necessarily there for conventional generation. And that market has been, as we've seen, for lack of a better term, decimated at this point and has not rebounded in any significant way.

I think the hope with the stimulus language and the move to an ITC cash grant instead of a production tax credit or an investment tax credit is that you might move away or relieve some of that dependence on tax equity which wouldn't fully go away because you still have the accelerating depreciation benefits.

But as, I think as Valerie pointed out, the rules that govern those programs and in the stimulus language have yet to be written. And so, I think a lot of the finance communities is waiting a bit until those rules are better defined.

MS. WINN: Yeah. And I think one of the challenges, too, to get those grants, people need to turn the shovel on projects by, I believe it's the end of 2010.

MR. KARCHER: Yeah.

MS. WINN: And so, one of the challenges that we're looking in California is how can we get these projects in the transmission queue, you know, through that, how can we get projects, you know, their permits so that they could turn the

shovel and actually, you know, start construction on these projects to get the grants.

MR. KARCHER: Yeah, that's a great point.

MR. COUTURE: I'll try to keep the comments quick, but I think that, in general, I'd agree they're working -- that we've seen anyway in the research, there has been a problem attracting capital, particularly for riskier projects. So there has been a flight to quality, mentioned by Matt earlier. And a lot of the borderline projects that may have been financed, say, a year ago are having a harder time attracting that capital and getting what they need to actually make projects happen.

So it's really driven a lot of the marginal projects to the side in favor of some of the more viable or ones that have, you know, already contracts for turbines and have all that worked out.

It will be interesting to see the role that the new stimulus package has to play in all of this, partly due to the reduced dependence in this in the near term on tax equities. So that really could start, by the end of 2009, to change, change the picture on that front, when it comes to that.

COMMISSIONER BYRON: If I may just briefly ask the two investor-owned utilities represented here. Given the amount of cash that, I believe both your companies have and

the appetite for the investment tax credits and the ability to take advantage of them now, wouldn't putting renewables -- I don't want to call it a feed-in tariff, but wouldn't putting in small sized renewables on the customer side at your cost and expense and ownership be an attractive option to your companies now?

In other words, wouldn't you -- both of you have made proposals, I believe, to do exactly that, right?

MS. WINN: PG&E's PV program? Yes.

COMMISSIONER BYRON: Are you having any difficulty -- are you having any of these difficulties that we're discussing with your projects?

MS. WINN: Well, of course, our project hasn't been approved yet. It's pending CPUC decision. But, you know, once we do start to implement that, yes, we have some tax appetite. So we could take advantage of the, you know, of the tax equity position in another developer. But it's not unlimited.

And we also have -- we need to go to the financial markets raise funds for these capital investments and our access to the market is not unlimited. And our costs for borrowing, over the past year, have also increased. So it's -- we're looking at finding the right opportunities and as we identify those and bring them to the Commission, we get, you know, more public input on those things. But we don't have

an unlimited balance sheet either.

MS. BERGORF: Marci Bergorf, Southern California Edison. We also have our solar PV application that's waiting approval. We were -- there's two different decisions out right now on what that would actually end up being in size. So, you know, we're looking forward to implementing that. Part of that will go out to the market for solicitation as well.

To put in an application for utility-owned generation is quite a process. It's going -- the application that we've been working on has been going on for over a year now. So, you know, there's a balance in terms of timing as well as, you know, we are as unlimited in terms of capital.

COMMISSIONER BYRON: Right. Surely premature to ask. I'll deter back to our moderator.

MS. CORFEE: Before we go on to the next question, do we have any other questions from Commissioners?

The next couple of questions I'd like to deal with them perhaps in a group. Number two, the second question really is would feed-in tariffs help this situation? And then number three is if yes, do you have recommendations with respect to feed-in tariff design that could result in minimizing costs to repairs and achieving optimal pricing? And if so, we welcome your thoughts on that.

MS. BERGORF: Marci Bergorf with Southern

California Edison. You know, the feed-in tariffs, will they create certainty? Certainly, yes, they create a price and a fixed term over time. We think the PPA does the same thing.

A feed-in tariff will not address the issue alone of financing. Again, it's -- you know, it's sort of this whole package. And what we're hearing from counter-parties is that financiers are looking at the whole deal, they're looking at the entire business model.

So, in terms of how feed-in tariffs would help, they can definitely provide a lot of certainty and they definitely provide transparency and they allow projects to come forward at anytime. So there's definitely benefits on that side. They don't address transmission and unfortunately, they don't address permitting and site control and other issues that our projects face as well.

In terms of how could feed-in tariffs be designed, you know, we'd certainly, you know, remember that this is a statewide policy for all of Californians. So we'd certainly like to see any kind of policy enacted in terms of feed-in tariff or anything toward having the State reach its renewable goals. It's that the entire State participates. And to the extent that all customers are benefiting from what's happening and the results of a feed-in tariff and from renewable development, that there is a cost allocation and there's a responsibility that's shared by everyone that's

taking the benefits.

So it's a societal benefit and it's what we've seen in the feed-in tariff in Germany. They spread it across the whole country to everyone that's benefiting. And we think that's something that California should be moving towards.

MR. HOWARD: Randy Howard, LADWP. We are proposing to go forward with the feed-in tariff. We are going out to the community in the next ten weeks, meeting with all the other stakeholders, developers, the building owners, the business owners, to get their input into exactly what they'd like to see in a program.

One of the reasons we want to proceed with this is L.A. is a center for governmental facilities. So we have four community colleges, too. CSU is one, UC and we have many other governmental facilities. None of these customers are able to access any of the tax credits directly and all of them are struggling with their state related financially. So they have lots of rooftops and no directability. And within our service territory, a third party can't come in and just build a solar system indirectly. So -- to our customer.

So we're looking to provide this as an opportunity for those types of customers, to get solar on their roof. And hopefully, contractually, structure it so that they eventually could own these systems on their own roof.

Our immediate program is to utility-designed build

within the City, about 400 megawatts of solar. We've decided to go forward with implementation plan, kick start it, get the solar industry really moving forward in the City and similar to the utilities beside me.

We're one of the largest landowners in the State of California. We have 460 plus square miles in Owens Valley. We have many, many square miles of transmission right-of-ways and facilities within the City of L.A. So we think we're well positioned to move forward with solar installations with property we own, property that we can easily proceed with the CEQA and the environmental activity and get that solar moving forward.

The feed-in tariff to us is just another tool. It's not the only one that we need in going forward to achieve our 20 percent by 2010 and our 35 percent by 2020 goal.

MS. WINN: Will feed-in tariffs help renewables get financing or lower cost financing? That's going to be largely dependent on what the price is that's set for the feed-in tariff. If it's too low, people won't participate and they won't be able to get funding because the banks won't see a revenue stream that's going to make the project whole. So price will be really important in helping people get financing.

But as far as what other options might help renewable energy get low cost financing, I mean certainly a

streamlined contracting process as PG&E had proposed in its RPS plan earlier this year, we would have had a pre-approved, proforma contract that would have been priced at the market price referent, available year round for counter-parties to sign. That could certainly be an easy way for someone to say got a contract, I don't have to wait for the competitive solicitation and they could go, then, to the bank and perhaps that would help them get financing.

But other ways to really reduce people's financing costs are going to be to reduce some of the risks that are in this process. And that means, you know, streamlining the permitting process and streamlining the transmission process so that the banks have more certainty of when that project is going to come on line and when the project is going to start generating revenue. That certainty would really, I think, help people get the financing they need.

MR. BERTOLINO: Hi, John Bertolino at SMUD again. I agree with Marci that the feed-in tariff and a PPA aren't really that much of a differentiator for large scale projects. It's really do you want to add some kicker to account for additional risks or provide a higher rate of return because these are perceived as risky projects.

The real value for us, at least from our perspective is for smaller scale projects. Valerie mentioned the streamline contracting, standard offer contracts, I think,

are good for making some level of certainty for the project owners, the energy providers.

How do you achieve optimal pricing? Well, that's really the fundamental question there. We looked at the two fundamental approaches; cost-based versus value-based; both have merit. You do certainly want to address the underlying costs of the technology as a way to ensure that all technologies can compete fairly. But that's difficult to do. It's difficult to maintain transparency.

We looked at it from the other perspective which is to take a value-based approach, which is let's look at what the energy is really worth to us, all things considered. So, you know, if you start with that, I'll call it marginal costs, but that marginal cost should include everything; the market energy value, any ancillary services, generation capacity benefits, transmission capacity benefits, any adders for renewable energy value, greenhouse gas reduction values and any estimates for risk avoidance of future natural gas price volatility.

In our case, we're also looking at a time of deliver factor so that energy that gets delivered in the summertime during our super-peak period gets valued by as much as 30 cents a kilowatt hour. Whereas off-peak, it's worth less to us. What we're trying to do is have a methodology that anybody can look at and they can calculate and come up with

essentially this same number so that we can, you know, continue to have a transparent price.

And that marginal cost establishes a floor, essentially, in that we can make the policy to add plus-ups or additional incentives if we want to encourage development of renewable resources, for example, that are in our area. And each utility is going to have its own mix of renewable resources that it might want look at, tailoring it's tariff as a way to encourage development of local resources.

And so that's kind of been our perspective on what we would consider optimal pricing.

COMMISSIONER BOHN: And how far down the line have you gotten to doing what you just outlined?

MR. BERTOLINO: We have crafted the structure of the tariff. We have established the proforma. We're in the process of public workshops. And as I mentioned earlier, this will be part of an overall package going to our Board of Directors currently scheduled for June.

COMMISSIONER BOHN: Would you be comfortable in just sending that to me because I'm struck with the inherent rationality of the process in terms of stacking various considerations. And one of the issues in this stuff is getting a common set of value elements to look at from a policy point of view. And it sounds like you've got a pretty orderly, priority process and if your folks don't mind just

sticking it in a letter or plain, brown paper bag or something. And I would like to see.

MR. BERTOLINO: Certainly.

MS. CORFEE: Do we have any comments over here?

MR. KARCHER: Just a quick few. This is Matt Karcher from KEMA. Will tariffs, will FITs help? As discussed, I think they can if designed correctly. I think as pointed out earlier, they -- the risks associated with a PPA and a FIT tend to converge once the PPA is actually awarded. And I think where you get the big benefit from a FIT as far as from the development standpoint is early on in the process. It reduces development time by not having to go through a bidding process and a contract negotiation process and it reduces development costs as well.

When we talk about achieving optimal pricing, I think from a financing perspective, as long as there's not a whole lot of volatility in that price, if you guarantee the, or if you project it on, you're going to get a reasonable rate of return and I think that's the $64,000 question is what is reasonable. Then I'm largely indifferent. So, if the price is sufficient for the risks that I'm going to undertake, then I'm okay with it.

MR. COUTURE: Toby Couture here. Just a few quick points. I think the first question asked was the optimality of the pricing structure, pricing methodology comes down to

optimal to who are we looking to, I don't want to say please, but you can consider a value-based approach to be a more utility-centric pricing approach because they look at what their internal costs structures are and what their avoiding cost of generation is. So the value-based approach would tend -- could be considered I guess a utility-centric pricing approach.

The alternative approach is the cost-based approach that we've been talking about. Just a more developer-centric pricing methodology. So you look -- you say, what are the costs to generate solar power from avoidable case on a rooftop. What does it cost to generate wind power on the west coast of California? Or the east coast for that matter.

So I think there is -- that's really a crease down the middle and that's the point I'm distinguishing. And ultimately it's the fine line decision that needs to be made, just who is the pricing for. If it's for projects to get financed, the cost-based methodology is clearly superior because it's the only one that will provide financial backing. In other words, the investors will be prepared to invest in, because it's the only one that's going to guarantee in the near-term, medium-term and long-term that actual revenues, the revenue stream to generate will be adequate to cover the capital expenses.

So I think that's the question, optimal to do what's

really important there. And I think if success is desirable, and I don't mean to be facetious, but if success is the desirable outcome, then the cost-base approach is unquestionably, at least from the data we've seen, superior than the value-base approach in terms of actually getting projects financed.

The other point that was raised that I thought was interesting, the -- some of the time of day differentiators that you were mentioning in terms of your peak load pricing might be 30 cents per kilowatt hour, whereas your off-peak could be below 10, below 5 in some instances depending on that.

Some of the feed-in tariffs in Europe increasingly are starting to design them to address those factors. So they're offering stepped pricing structures, depending on season and time of day. So between, you know, 11 and 2 and 4 and 7, say, in the day, you get a stepped up pricing for dispatchable resources.

So you get the same feed-in tariff base-load price, but with an incentive for dispatchable resources so that they can supply based on market pricing rules. And we're seeing more of that, so there will be different examples, but to differentiate both on season, so winter/summer versus -- as well as time of day.

So both of those are starting to be incorporated.

And that might be a way to address some of the concerns of the utility in terms of demand sensitivity while it's still providing the financial and price required for developers to get projects moving.

MS. CORFEE: Thank you. Before we move on, are there any questions? No?

COMMISSIONER BYRON: I think we're not going to move quicker.

MS. CORFEE: Okay. The next question is really -- the gist of the question is how do you get the pricing right. You know, in Spain, the prices were set too high and they were over-subscribed. And you had a reverse case in other places. And so, let's try to move through this question fairly quickly, but if you have any nuggets of wisdom on this topic, please share.

MS. BERGORF: Marci Bergorf with Southern California Edison. I'll just sort of take off on what Toby and Matt have both said, is that really depends on what we're trying to achieve and how we actually design the tariff. So, you know, in Germany they were trying to build in low-end areas. So they had different sets of pricing.

So, I think it depends on what we're trying to do. Are we trying to get as many renewables as possible? Are we trying to build in certain areas? Are we trying to focus on certain technologies? I think when we get down to

identifying the parameters of the program and really understanding, okay, this is our end result, this is the end goal, we can start to address those questions.

MS. CORFEE: And Marci, what are your thoughts about adjusting the tariff?

MS. BERGORF: A digression over time? I think that makes sense, a phased-in type of approach, focusing on a smaller size tariff, smaller meaning under 20 megawatts. And a digression over time so that you're encouraging projects to come on line quicker and encouraging a development process.

MS. CORFEE: Thank you.

MR. HOWARD: Randy Howard, LADWP. We've tried several different approaches. We're still getting input related to our feed-in tariff which someone described is really meant for our in-City, primarily solar, smaller projects. Our PPAs are doing well, but in some cases of the PPAs, we have brought forth our land. We've gone out, we've done all the environmental work, we've applied for the permits, we've done the interconnection work and then we bring forth the counter-parties. So we propose the project to counter-parties and we have a project ready to go. They do what they do best and that's bring in materials and build the project and then hopefully operate it successfully.

So that's one approach to reduce some elements of risk and really bring a price threshold that is more

reasonable and we found that successful in some of our solar activity.

As to our feed-in tariff within the City, some of the issues that we struggle with are do we go out and we bring forward the counter -- the rooftops, the host facilities. Do we meet with the L.A. Community College District, the L.A. USD and other of these large rooftop owners and we bring them forth and jointly we go out and seek proposals or, you know, counter-parties that will build these projects through a feed-in tariff. Or do we let those hosts meet directly with the counter-parties, just put those two together in a room, let them come forth to the utility.

These are the models we're juggling right now as to pricing, very similar to SMUD. We're looking more at a cost-base scenario and what -- would it cost less to do it ourselves, making sure that we take into full account the time of use activity and the seasonal as well as all the other benefits that come to a distribution system related to solar systems within the City.

MS. CORFEE: Thanks.

MS. WINN: I don't -- there are so many different ways we can price feed-in tariffs. Every time I pick up a different report, someone is producing a new what's the supply curve look like, what's the cost curve look like for renewables.

I know that it will be a long and onerous process and we'll be looking forward to doing that at the CPUC, probably through workshops on the up to 10 megawatt feed-in tariff.

MR. BERTOLINO: This is John from SMUD again. How do you set the right price so you don't over or under-subscribe? Well, I left my magic 8-ball in my office and that's what I use it for.

But in all seriousness, I think there's a couple things. First, the price has to be fixed for the term of the contract because that provides a certainty that's needed for the financial markets.

And then the second thing, you just need to direct -- to design in flexibility because you know -- you got to know you're not going to get it right the first time and you have to be able to make adjustments in a clear way well in advance so that you don't disrupt the market too much. But that flexibility is very important to success.

MR. COUTURE: I appreciate that 8-ball remark. I was -- this is Toby Couture. We do this in a number of other areas. I mean, more than financial analyst space or financial markets. We're looking at investments and analyze cost analysis. People at the Lab are doing LCOE and it's called levelized Cost of Energy analysis. We've been doing this for decades.

So this isn't -- I think it would be unfair to characterize it as some sort of sorcery that, you know, comes up with a number at the end of the process.

There are pretty standard ways of assessing the various costs of various technologies based on insightive inputs. So I don't think -- I think it's -- I don't think it would be fair to characterize it as somehow different than what we do for natural gas or for nuclear price determinations or LCOE analyses.

One of the benefits for the renewables is you don't have as much of a volatility, fuel price volatility. So it actually makes them easier to price than other energy or electricity resources, for that matter. So I think that point's a bit of a red herring.

But setting the prices right is challenging from the start, to a degree, but not so much as to keep them finally tuned over time. So I think, yes, it's an administrative requirement and every country, every jurisdiction that implements a feed-in tariff successfully has to go through that. And there isn't an up-front requirement. That does require analysis and that's a given.

The real challenge is keeping them finely tuned over time so that you're not getting this problem of either over-investment or under-investment. And there are various ways of doing that. Germany has just infused innovation this year

in their new, starting January of 2009, that allows you to -- that builds in a digression rate based on market response.

So for solar power in particular, if you develop -- if they develop over 1500 megawatts of solar in 2009, that resets automatically the price for solar at a higher digression rate. So instead of going 10 percent digression, it drops. Area decreases, rather, the digression is faster. So you get faster price decline based on market uptake. So if the market's been, say, over-heating, then it can actually step down in response to that.

So there's an interesting design features that do address that issue. But ultimately, it does remain a challenge and it does require vigilance on the part of the respective body.

COMMISSIONER BYRON: Commissioner.

COMMISSIONER BOHN: But in none of these cases, does one reset or tweak the contract once it's done, is that correct? In other words, new contracts will be subject totally to the accelerated digression, but that doesn't -- you don't reset a given contract every three years or whatever?

MR. COUTURE: No, no. That would violate the contract law built into the terms.

MR. KARCHER: Just one quick point. This Matt from KEMA. I think digression is the goal, obviously, but it

needs to, as we talked about in the presentation this morning, any changes need to take into account current marketing conditions. And I point to two examples, one being the recent cost of capital which is increasing significantly. Any digression would take that into account.

And 2008 saw a big run-up in winter devises because of demand. It had nothing to do with, necessarily, the efficiency over time or the -- any kind of cost production realizations through that new manufacturing. It had everything to do with demand, not only for the turbines, but for the underlying components of steel is more expensive.

So any adjustments made, I would argue, need to be made in a broad context of current market conditions at the time.

MS. CORFEE: Any other questions? No? I'm going to do a quick time check. I think we have about 15 more minutes and I'm going to propose that we skip a couple questions and move to question number four.

And question number four is what programs and opportunities are available that could provide financing to a project receiving a feed-in tariff? And the objective of this question is we want to learn from you what your personal experience is in terms of programs out there.

MS. WINN: Well, I think from my perspective, one of the challenges here is that the existing feed-in tariff

you're precluded from getting other direct subsidies and participating in the feed-in tariff program. So, you know, if you've received a California solar initiative, you can't participate in the one and a half megawatt or smaller program.

There have been questions at different times about what sort of PIER funding is available and is PIER funding considered a direct subsidy or -- which would preclude them from getting a contract, or is it something that's really not a direct subsidy and they could still participate.

So, I'm not aware of specific programs where people can go to get funding other than some of our existing PIER programs or DOE loans or grants.

MS. BERGORF: I just want to comment, too, on the CREZ program that we implement the 1.5 megawatt tariff. You know, that's the biggest reason that we don't have -- or the feedback that we're getting, that -- why people aren't signing up because they are receiving or they will receive incentives through CSI and a majority of the inquiries we get are for solar PV. So, I think that that's hindered participation in that program.

In terms of the larger projects through the RPS, we had quite a bit of projects that hindered on the expansion of the production tax credit and the investment tax credit when they were looking to expire. And many of our contracts had

no-fault termination clauses built into them. And that definitely affected an impact of their financing because there was uncertainty around what was going to happen.

So, now that they've been extended, that definitely is something to take off the list. Of course, now we have this other flip side of the coin where you actually have to have the tax appetite and not be able to use it. But that was definitely a driver in the industry for a lot of the projects.

COMMISSIONER BYRON: Commissioner.

COMMISSIONER BOHN: Could I ask very briefly for -- from each of you, what are the principal objections to the specific standard contracts that you all now use that you're hearing? Where does the shoe rub in the existing contracts?

I mean, one can argue a contract can do anything, including things that are impossible. But I guess my question is as you go through this and we start taking about standard contract and all this, what are you hearing people say, you know, I love your contract; I'd like to be able to do it, but this particular clause inhibits financing, makes it harder to permit or whatever? And maybe each of you could comment.

MR. HOWARD: Randy Howard, LADWP. What we do offer when we issue our RFPs, we do put forth our standard contract, our purchase agreement and we tell the counter-

parties, you sign that, smooth sailing, we walk right through the process. We haven't had a taker yet where we can do that yet. So everyone wants to negotiate. I think everyone wants to throw up a negotiation unfortunately.

But in most cases, there are a couple things that affect us. As a municipal utility, in most cases we have to walk through the environmental prior to signing a PPA. Any sequel has to be completed as the governmental body.

So my Board of Directors or Commissioners in the City Council make sure that they've reviewed all of the environmental mitigation taking place as a result of them approving this contract. That usually takes some time. That's an unusual step, that's a lot of financial commitment on these projects up front. So in some cases, I've been willing to pay that. If we don't proceed with going forward on the project that we would actually cover those costs going forward.

The other thing that's unusual in our standard power purchase agreement is we want the option to buy the projects upon full recapture of the tax benefits. Most of the projects we're involved in are projects that we would like to eventually own.

So that usually becomes somewhat contentious, somewhat unusual for a number of our counter-parties and we spend a lot of time walking through those phases as well as

the other is just how we share in the risks and the benefits.

When it comes to liquidating damages, the force to mature activity, what's the definition of a force to mature. Everybody has a little different take and some of it's based on technology, some of it's based on location and where the project's being built. Some of it's based on the ability or condition precedent of the transmission interconnection, because, you know, they need the interconnection to hit this date. If it doesn't hit that date, they certainly can't achieve the COD dates that everything else rides on.

And so these are all things that they want to individually negotiate. They can't accept just the standard, you know, here's the contract and here's the time line.

We do put forth liquidated damages. If that project doesn't deliver, they're going to compensate us because we're going to have to hit the market, we're going to have to find other energy or capacity from the market at that time and be exposed for our repairs. So those are just some of the issues and why they would choose to negotiate separately.

Another point I just wanted to raise is it seems that it's helped us, LADWP and the scalping participants is we issued an RFP for investment banking teams. We have six now as part of our negotiating team. So every time we short list a project, we assign a banking team. They sit alongside us through a lot of the negotiations. They assist in doing

the proformas. They do a lot of the work. They give a better understanding of the counter-party and it seems to assist in getting these projects completed.

MS. BERGORF: I would say from a contracting standpoint from any of the projects, the need for negotiations center around time lines in terms of the project, meeting certain milestones. We have projects with cities or counties where the project has to go for approval before they're aboard or they're -- or their authority. And so there's provisions that are put into the contract for dates.

So there's usually a lot of negotiating around dates and time lines. Energy damage calculations is another one, how that gets sorted out if they don't deliver, they're at the capacity under the contract. So things like that.

A lot of times they take them back to the financial investor and they look at what's in there with regard to the -- I guess what the financier would consider their return on an investment and they want some certainties within the contract. So, but that's typically, I guess, what we see.

MS. WINN: I can't say that I have anything else to offer.

MR. BERTOLINO: I only have one other thing and I think Randy said it real well, this transferred sharing of risk is really the key element here. And along with meeting

your commercial on line dates and, you know, accepting the interconnection risks, there's also the resource risk as well. And I think that's another one that a lot of developers are interested in transferring, or at least somehow managing so that the liquidated damages aren't as much of an impact.

COMMISSIONER BOHN: Thank you.

MS. CORFEE: Before we move on to the next question, do we have any other questions? From Commissioners or advisors? Nope? Okay.

I'd like to propose that we move on to question six. And looking at how feed-in tariffs can be designed to provide the best opportunities for the project to obtain financing (coughing) propose kind of a workshop that is focusing on financing. But also, you know, how do we structure them to reduce your regulatory risk and insure that the facility can receive payment regardless of the buyer's credit status.

So looking through these questions, just curious whether you have any comments, feedbacks regarding these.

MS. BERGORF: I don't think I have anything else to add than what I've already kind of said in other questions.

MS. CORFEE: Yeah, it's somewhat --

MS. BERGORF: It's, you know, again, dependent on the structure of it. I would guess that performance, you know, having performance obligations and things built in the

contract, you know, always provide an additional assurance. And, you know, starting small, sort of a phased in approach so that we can see how things move I think creates some certainty in the market as well.

MR. HOWARD: The only thing that I would like to add is we are looking at potentially setting up some type of an investment fund that could be accessible to developers for the projects that are based in the City of L.A. We're just in the preliminary stages as to consumptionally how that could work. But, again, it might be something that we might have to utilize some of our balance sheet to secure and we don't know that we are prepared yet to do that, but it is something we're working through with some of the investment bankers today to determine with that assistance in getting the best pricing for our ratepayers as well as insuring that these projects are successful.

MS. WINN: And I would say one of the best ways to ensure that the projects are successful is to be consistent in implementing the programs, so that everyone understands the rules up front and what the requirements are going to be and that we live by those rules.

I mean, granted, there are some changes that may be made prospectively, but one of the issues here is well, could the price change after the contract was awarded. You don't want those sorts of things to be going on in the marketplace

because that really undermines the credibility of the program. The regulatory stability will be really important to the success of the program.

MS. CORFEE: Thank you. Anything else?

MR. COUTURE: This is Toby Couture. One of the points I would add from a regulatory standpoint that's certainly in the interest, I think, of the utilities and it would help a lot in producing this counter-party risk that's mentioned in point B there.

His utilities should probably, and it's not my rule necessarily to, you know, say one thing or the other in terms of what the best practice is, but what we do see, it's best when utilities are given the right of rate recovery or cost recovery so if they have to, you know, incur any costs, that the ratepayer ultimately -- that they're given the right to pass on any costs, legitimate costs, that are to be passed on. And that actually gets around the counter-party, the credit worthiness of counter-party because your counter-party ultimately is the ratepayers of Los Angeles or various other counties here or of the State of California.

So that's a major regulatory commitment, but provided, if there aren't any costs, I think another element, that generally, as an entrepreneur, should be built in is that if there's some reproduction or costs reduction benefits. So for example, if their renewables are showing to

actually produce electricity costs, those benefits should also be passed on in the same way.

So if utilities are given the right of rate recovery or cost recovery, they should be able to pass that on in the same way to show the benefits as well as the -- any added financial costs. And from a regulatory standpoint, building that in reduces a lot of that uncertainty on both ends.

MS. CORFEE: All right. Last question and from a -- question number seven, should a utility feed-in tariffs be set at a different level for utility-owned projects versus developer-owned projects.

COMMISSIONER BYRON: Which I will note is a yes or no question. Which tends to be short answers.

MR. KARCHER: Well, I'll start first. I guess from as much as perspective, I would say no unless there's some compelling reason why one or the other offers better value.

MS. WINN: And I would note in PG&E's PV proposal where there is a utility-ownership element as well as a PPA element, we have proposed that the utility price apply in both.

MR. HOWARD: And L.A. is similar.

MS. BERGORF: And I would just say that utility-owned generation is much different than feed-in tariffs. So there's no easy way to answer that question yes or no. There's too many factors that go into putting together a

utility-owned project and I don't know the situation where a utility-owned project wouldn't take advantage of it's own tariff. So, the answer to that is I don't have an answer for you.

MS. CORFEE: So with that, I'm going to ask one final time whether there's any questions from the bench? And if not?

COMMISSIONER BYRON: Well, I'll comment and I want to thank you all very much. I've heard some innovative things, particularly from our publicly-owned utilities. And I thank you all for being here today.

I hope you will stay a little bit longer because I'm going to reorganize the schedule a bit so we get our next panel going quickly. But there will be some questions that I've been accumulating here and I hope you will still be here to answer them if they apply to you.

MS. CORFEE: Okay.

COMMISSIONER BYRON: Ms. Corfee, I'll go ahead and ask that we excuse this panel and ask for the next panel to come up which I see you are moderating as well. I'm, also in interest of time, going to suggest we forgo a formal break here. That doesn't preclude anyone from taking an informal break if necessary. And again, thank you to our panelists. And if the others would quickly take a seat, we'll go ahead and start our second panel.

MS. CORFEE: This is the panel, our panel on industry and stakeholder perspectives.

And I'm going to propose that we not walk through each question, question by question, but rather give each individual, let's say five minutes to just chat about the questions at hand and your perspective on feed-in tariffs for California. And then we'll open it for question and answers after that. Is that acceptable?

COMMISSIONER BYRON: Absolutely. And please begin by introducing yourself.

MS. SHEFFRIN: Do you want us all to introduce ourselves, or just go five minutes?

MS. CORFEE: I think just go five minutes at a time.

MS. SHEFFRIN: Okay.

MS. CORFEE: But start by introducing yourself and your organization.

MS. SHEFFRIN: Sure. Good afternoon, my name is Anjali Sheffrin. I'm the chief economist for the California ISO and I thank you for the invitation to join this panel.

The ISO takes great pride in being an important partner in meeting the States RPS goals. We have devoted a tremendous amount of effort in our core areas which is, of course, operating the system reliably, doing effective grid planning, resource adequate requirements as well as running

efficient wholesale markets.

In each of those areas, we have changed the way we do business recently quite a bit to make sure that we can accommodate the amount of renewables that are necessary to meet our RPS goals.

I'd like to point out five areas that the ISO has done considerable work, which I think will help in the discussion of feed-in tariffs.

First, for the 20 percent goal, the ISO has identified the key transmission elements that are needed and gotten those approved, of course, and costs rate pays into transmission rates. So as soon as those are built, they will be both the -- all the 11 elements of the Tehachapi Line as well as the Sunrise Green Power Link. Those will be the major areas in which the ISO will help us all take the connection of renewables and delivery of renewable power to customers.

Second, not only have we identified the key elements for the transmission grid necessary for the 20 percent, we have begun a lot of effort in studying what the requirements will be for the 33 percent renewable goal.

The ISO Board has approved construction of $1.8 billion for the Tehachapi line. That will interconnect 4,315 megawatts of renewable energy. And then, of course, the second major line has been the Sunrise Power Link.

The third area that we have worked very hard is overhauling our generation interconnection queue to process the backlog, interconnect these projects and get them on line.

Just to give you a few statistics, we have changed from a serial process to look at interconnection to now doing it in clusters. And the first cluster that we're going to have studied and the generation requirements back to the developers involves 31,480 megawatts of renewables. We expect to get that studied by July and at that point, then, those renewable developers will know what their requirements are. They can then, you know, go out, get the financing, make the commitments, financial commitments so then we can go ahead and get those upgrades done and get them interconnected.

So really, we will let them know their costs by July, then they have 60 days to come back to us and say, yeah, we've got things in place, proceed. And that will be by November of this year. So that's for 31,480 megawatts of renewables. Of that, just to -- I know there was some interest in inventory, of that, about 30,000 megawatts of it is solar and about 12,800 megawatts of it is of wind resources.

The other area that we've worked very hard in, which we felt was barrier to renewables is we have gained approval

for and implement of a new financing method for multi-user trunk lines to access renewables. Those users don't have to pay for that up-front. The ISOs and the utilities will essentially finance that and then as renewables are developed, they will pay their prorata share of that so the onus doesn't fall on one major developer.

So, again, this was brand new for the entire nation. We feel that this financing method will also help remove a barrier for removals as we've heard, both transmission requirements, interconnection, permitting, they were all areas that were holding us back from reaching our renewable targets.

The other area, it's good to get these renewables built, but we want them operated and delivering power. The other area that the ISO has concentrated its efforts on is identifying the operational requirements to integrate these renewables and operate them. And I'm not sure how much was said in the reports about the operation requirements in Germany and Spain, but they have been -- it's been a mixed bag.

And it requires doing things in very different ways and if we don't plan for how we're going to operate these renewables and have the necessary reserves on hand, then, in fact, we'll have this renewable and they'll be curtailed. They can't deliver their production.

So one of the key things that I wanted to note in this feed-in tariff is we need to add to it a process on the implications on the grid and operations and make sure that we have those necessary facilities ready for the success of feed-in tariffs.

Finally, I'd just like to say, in terms of feed-in tariffs, the ISO very much believes that they're much better for below 20 megawatts than above 20 megawatts. The 20 megawatt threshold kicks it into a whole new area when it comes to interconnection that the ISO -- a lot more requirements. We're concerned about telemetry, metering, control, how much reserves do we need if it's all concentrated in one area and there's a cloud cover that comes, where we going to make up that shortfall in that location, make that deliverable, the amount of reserves we're going to have to hold.

So for all those reasons, we are very concerned about feed-in tariffs for over 20. We would rather recommend keeping them under 20. But that doesn't mean that even under 20, we shouldn't have a good process in place for understanding the operation requirements for these facilities, any line loadings and upgrades and all of those things, they need to be thought about beforehand.

And lastly, in terms of the actual design of the feed-in tariff, we are very heartened to hear from the

previous speakers that there's a lot more innovation. Feed-in tariffs can be a very blunt instrument, but if you refine them with the innovations that have been talked about; the right location, more value for a congested area, the right location, more value for if you're delivering. If you're delivering five hours of renewable energy and that five hours happens to be between, you know, 3 p.m. and 7 p.m., like when solar is operating, that is a very different value for the system than if you're delivering at night.

So, you know, refine the feed-in tariff to have the design so it is paying for value in the right location and for production at the right time. And we're heartened to hear about those examples and we really think California should learn from that and put in those and the best practices in the design of feed-in tariffs. So I thank you.

COMMISSIONER BYRON: Thank you.

MR. KELLY: Thank you for inviting me here. My name is Steven Kelly. I'm the policy director for the Independent Energy Producers Association.

And I wanted to put this discussion of the feed-in tariff a little bit into context. I want to talk about kind of the curve status of stuff and then talk about the consideration of kind of a new paradigm about how we should be thinking of the feed-in tariff and then maybe some design elements and then finish up with just some key points that

I'd like to make.

First, it's important to recognize that we're in an environment where public policy is trying to double, if not almost triple, the amount of renewables that are energized and delivered to the grid. And we're now in, almost, year eight of that program, that original RPS Bill that was going to double it. We've only energized 500 megawatts under the current PPA/RFO based approached. We seem to be energizing, I just saw recently, 100 megawatts this year with a net qualifying capacity of about 25 megawatts.

So while I understand the concerns about integration and the concerns about that we're going to be flooded with feed-in tariffs, there's absolutely no evidence in a system of 60,000 megawatt capacity that this amount of smaller renewables is going to have much negative effect. So I just want to put that in context for you all.

We heard earlier today about the progress of the feed-in tariffs today. And if I heard it right, these programs have been operating for a year or two now. We've gotten all of 25 megawatts, mostly small one megawatt, one and a half megawatt stuff. I'm all for it, but you're not going to achieve your RPS goals building that kind of system. You're going to have to go bigger.

One of the reasons probably why people are not building under the existing feed-in tariff is, as I

understand it, the pricing is tied to the market price referent. And it's just not sufficient to sustain this kind of development for renewables which is not the same cost of a fossil fire plant and I think everybody recognizes that.

I also want to emphasize from a historical perspective that the way we're talking about the feed-in tariff today, and most people are talking about it not as a pure feed-in tariff where if you can get on the system, you get a price for a duration of term. Most people are talking about it in the context of you need a contract. And I recognize that.

You know, you have to remember that in California we actually did have a feed-in tariff back in the 80s. It was called a PURPA contract. And it was actually very successful in bringing stuff on line. There was about 6,000 megawatts of new renewables that came on line during that period. Now, the big issue was, what did it cost and did it come on too fast. And I'll deal with those in a second because I think I have a program that might address that for you.

But this is not new. We've been -- you know, a feed-in tariff in that PPA-based construct has been used a lot of different contexts. So it's not new, it's just a matter of tweaking a few things from the old program.

The second thing I want to emphasize in terms of thinking about this from a new way is that what we're really

talking about is if the RFO/PPA-based approach, which is pretty much utility-centric because they run all that stuff, is not proving successful in bringing on new renewables. It doesn't make a lot of sense to simply replicate that through a slightly different form. I think you need to think about it in a different context. And I think the feed-in tariff provides a vehicle to do that, to get away from something else.

I don't look at a feed-in tariff as replacing the RPS/RFO construct. But I do look at it as a potential supplement to that vehicle because the reality is no two energy companies are the same. No two business models are the same and there may be people who can take care -- take advantage of the feed-in tariff, but are not able to get selected in an RFO/PPA context and vise versa. So it doesn't harm the State, in my view, to put on a different program to see if it works as well or if not better than what is existing today. So I think you can think of it in a different construct in that way.

Regarding design, we've -- I've thought about this, my members have thought about a feed-in tariff and how you might make this. We recognize that even stemming from the old PURPA contracts, there was a huge concern about the cost and there was concern, but the biggest problem was there was a gold rush and a lot of contracts were executed before the

program was shut off. And so you had a lot of megawatts at a relatively high cost, or so people think.

There are ways to design a feed-in tariff to mitigate that risk to everybody. You know roughly how much megawatts, or you can know as a State, as a matter of policy, how many megawatts that you want to give to a feed-in tariff. This is a mechanism that's outside of the RPS/RFO construct, but you can have a contract. There's a Bill that will take a certain amount of megawatts at a price for a duration, usually 20 years.

As was talked about earlier, though, that price does not have to be fixed for all people on the successive years. Once you've set the price and you know what the megawatts that you want in a lump, say, for a two-year period, if people do not sign up for the price that you've got, it's probably an indication that the price is too low. And you can decide whether you want to ramp it up a bit. If you get a gold rush, like occurred in the 80s, then you might have set the price too high and you should ramp it down.

The important thing would be to set a cap so you don't have a gold rush of thousands of megawatts. Maybe you set it at 500, 750. But that gives you a toggle switch on utilizing the feed-in tariff to establish a price that moves up and down over time, over the ten years between now and 2020, for example, to allow you to bring on the megawatts at

the price the consumers want at the lowest cost, and helping to ensure that you actually get the megawatts from the renewables which is the goal.

Now, I'll make another observation about the feed-in tariff to help make this work. Currently, the feed-in tariff, I think, in California use today is about 100 pages. In Germany, it's about 5 pages. There is a huge difference in complexity between those two deals and one of the reasons why people might not be signing up on the existing deal is that complexity. It deals with risk allocation, it deals with a lot of complexity and a lot of small players won't deal with it and don't come to the plate.

I would encourage you to look at a simplified contract structure, things that have been used successfully in their context, that provides the business terms that people need to build and you set the price of what you're willing to pay for renewables as they come on in tranches over the over the next ten years.

Certainly for a feed-in tariff, it doesn't make a lot of sense to me that when you're paying for performance, i.e. you start paying when the energy is actually delivered to the grid, why you would impose all sorts of security requirements if the generator doesn't develop. The consumer is not a dime until they're built and energize. So why would you impose large security requirements on developers who are

taking this path at the get-go.

It's particularly not important if you're dealing with small increments of new renewables. You know, if you've got an 800 megawatt facility, okay, I get it. If that facility doesn't come on as planned, there's a potential issue there what are we going to do next. But if you're talking about 20, 30, 40 megawatt facilities, up to 500 megawatt cap, as I'd indicated earlier, that gets washed in the 60,000 megawatt system and it's not hard to handle by anybody, in my view.

So, in light of that kind of overview, I'll make three summary points that I think are important to consider. One -- and these are keys to making a feed-in tariff work, I think. You have to have a stable regulatory environment. And as we all know, California has never had a stable regulatory environment, but we need to strive for that. To send the proper signals to the business community, we have the program that's going to be in place, this is how we're going to operate it for the next ten years. And as indicated before, once somebody signs a deal, the deal is struck for the terms of the deal, but that doesn't mean that you don't change prices or the volumes for successive deals as you use it as a toggle switch to make this more efficient.

Secondly, there needs to be a financable contract or tariff structure. It's got to be something somebody can take

to the bank and it -- my impression is, today, that the contracts that are out there make it -- or do create an impediment for people to finance some of these projects, certainly the smaller people.

Most of my members have never raised any issues about financing in this market, even though it's strained and tough for everybody. And if you're well-constituted as a company and well-positioned with a project that's viable, people seem to be able to work in that environment. And certainly, as we come out of the recession and the credit problems of the last 18 months, I think -- I don't think that's as big a problem today as it might have been a while back.

And then third, there needs to be a credit-worthy counter-party, either the utility, the State or somebody who's going to back the commitment for the duration of the term. Those three things need to be there in whatever structure you use. Thank you for your time.

MS. CORFEE: Thank you, Steven.

COMMISSIONER BYRON: Sure.

COMMISSIONER BOHN: May I ask you, Steven, would you guys be okay to fix the feed-in tariff price at a reverse option system?

MR. KELLY: Yeah, I'm fine with fixing the feed-in tariff price with any mechanism possible and let's see what

happens for the first two years. And if it doesn't work, you're going to know if the price is too low or two high. I mean, whether you fix it through a reverse option -- the big issue that I think I omitted mentioning is that if there's going to be a cap on the amount of megawatts that are going to come through this tool, either on a two-year basis or on a ten-year basis, we would recommend application of the project viability calculator.

The Public Utilities Commission is considering that now. We were supportive of that. We're instrumental in getting that in place because one of the worse things seems to be occurring today in the RPS/RFO context is projects might have been selected in the past that did not have, you know, transmission, did not have site control and all of those kinds of things that are critical. And I think a project viability calculator is important in the context of a cap program so that the more viable projects move through and you have a greater certainty that they're actually going to energize.

MS. CORFEE: Thank you. Greg.

MR. MORRIS: Okay. Well, Commissioners, my name is Greg Morris. I'm with the Green Power Institute and it is a pleasure to be here this afternoon.

We've heard a lot about the feed-in tariffs today. I think it's very important to keep a few basic principals in

mind. Number one, these are contracts, PPAs, they're one kind of PPA. There's several others available.

What we -- and we're not starting a new renewables program from scratch. We've had a program in place now since 2003. And I think that we can all look at it and say it's really not working very well. Our percentage of renewables has actually decreased over time since the inception of the program. We've had feed-in tariff offerings on a voluntary basis from a couple of utilities and the responses, we all have recognized, has been under-whelming.

So when the -- and as several of the commenters have said, it's really all about what are the terms and conditions in these contracts. And I would go one step further and say what's the price? It's really all about price. We as economists know that without being able to necessarily identify exactly where the supply curve is, there is a supply curve. That part of basic microeconomics really works. The more you pay, the more you get; the less you pay, the less you get. But it's just a fact.

We already know that basing feed-in tariffs, or any other kind of tariff for that matter, at the MPR is not working. It's not leading to the building of new capacity in California on the kind of scale that we all, I think, want to see happen. So, if we are, indeed, committed to renewable development, if that is the goal, then we're going to have to

pay for it. It's not free, it's not the lowest cost, necessarily, source of energy on the grid. If it were, we wouldn't really need a renewable program to begin with.

But when we think about costs, we have to think about a lot of things, not just the actual pennies per kilowatt hour that we pay, but what's the cost of not implementing these programs. What are the health and environmental costs of the kinds of generation that we're trying to replace on the grid, for example. That has to be factored in, too. What is the cost of not meeting our greenhouse gas goals for the State. That has to be figured in, too, because we're not really making progress in any of these fronts on the kind of scale that we'd like to see it happen and the kind of scale that would be required in order to meet our statutory obligations.

We all know we're not going to have 20 percent renewables in 2010 which is next year. In fact, if you look at where we're going right now, I think it's almost -- most unlikely, I'll say, that we'll meet 20 percent by 2013 which is a three-year later flexible compliance window.

So we can put in any number of kinds of programs. The question is what will work and what is not necessarily low cost, but cost efficient to meet the goals that we have set, which are the increase levels for renewables in a substantial way.

So, when we're talking about setting a feed-in tariff price too high or too low, we're not starting from scratch. We already know that we started at the MPR and it's too low. So we know that there has to be an increment above the MPR in order for these things to work. And in particular for the really small projects, the increments probably got to be bigger than it is for the bigger projects as already been discussed quite a bit today.

I think that the -- we also, I think, had this sort of ideology and this is where economics doesn't always work, that says we want a competitive system and so, particularly for the bigger contracts, we want it to be based on competitive procurement, not on a fixed price. But the problem is that we don't have competitive markets. And, in fact, there's really no reason why we should think we're going to have competitive markets in renewables anytime soon.

There is a great imbalance between supply and demand right now in California in terms of where we're suppose to be. The demand is much greater than the supply. It's getting -- the imbalance is growing, not shrinking because as our incremental, or pardon me, our annual procurement target goes up every year, the procurement is not even keeping up with the increase.

So, and add to that the fact that all of our neighbors are either implementing or considering implementing

RPSs, our country as a whole is considering implementing an RPS. The worldwide demand, and these are worldwide markets that we're buying from, you know, wind turbines are being offered at the world global level and other equipment and so forth, there is every reason to believe that there will be an imbalance between supply and demand for the foreseeable future. And if that is the case, you're not going to have a so-called competitive market from the economic efficiency or ideal point of view.

So I think it's really time, if we want these policies to work, that we recognize that we want much more renewables than are available today. We're competing with a whole lot of different jurisdictions who also want more renewables than they have today. And so, let's deal with the fact that we're not in competitive equilibrium and we won't be, and let's design policies that work given the environment of business that we find ourselves in.

And so, again, let's set these tariffs at a rate that is reasonable, just and reasonable, as we've used as a standard for setting electric rates since we started the whole regulatory business, as far as I know. And if we can find a level that is high enough to elicit the kind of market response that we're looking for, but low enough to protect the ratepayers, then let's go with that and see if we can't see real renewable development occur in this State.

It's even worth mentioning that, on the one hand, while many of the utilities, for example, are proponents of the competitive process, excuse me, they themselves complained that because of the MPR, people are bidding to the MPR. So that's already interfering with the competitive process of an open bid for electric contracts.

And furthermore, there's gaining going on wherein bidders are perhaps underbidding what they themselves know they need with the expectation that they'll go back to the utility and the utility, then, with them go back to the PC and ask for contract amendments.

With a feed-in tariff program, you don't have that. There is a tariff that's available, and if you take it, you go with it, but you don't amend it and increase the price of it. In some ways, you actually have much greater cost certainty with that kind of program than they do with what's going on today.

I'd like to finally come to a conclusion by saying I'm a great proponent of seeing these things go beyond 20 megawatts. And I've heard what the lady from the ISO said about the fact that there are differences in projects between under 20 and over 20. That's true. That's true whether we have feed-in tariffs or that we have the kind of PPAs we're writing today or any other kind of PPA's.

Yes, bigger projects present different issues and we

deal with those issues contractually through those contracts. I think that can be done with a feed-in tariff or any other kind of PPA, but I think it's unfortunate if we limit these things to 20 megawatts because there's a lot of good projects that are larger than 20 megawatts that are not being built today and that might be built today if proper feed-in tariffs were available. But really, it's all about costs. Thank you.

MS. CORFEE: Thank you, Greg.

COMMISSIONER BOHN: May I ask a question? Could you give me two examples of what might be considered in the calculation of reasonable? I mean, I'm -- you want to just start off the MPR and there's a lot of support on that side. I haven't heard yet any other objective benchmarks other than renewables at any price. And I guess my question is, help me out, give me a couple of examples of elements of reasonableness that people who have to actually make these decisions might consider.

MR. MORRIS: Well, I believe in the cost-based approach which is what the Europeans have used in their feed-in tariffs, which is to look at each of the renewable options and determine what their cost of, reasonable cost of production is on a generic basis, which is what we do for gas for the MPR, by the way.

Reasonable is a judgment. There is judgment that's

required here. It's not an objective, totally objective thing. Reasonable has to do with what's the impact on consumer -- or on retail rates and that has to be looked at. It's part of the rate-setting process. So I'm not sure I know how to answer in terms of giving you a number, but the process of determining what's reasonable is an established process, as far as I know.

COMMISSIONER BOHN: Established --

MR. MORRIS: And I'm not an expert in rate-making by the way.

MR. KELLY: Could I take a stab at that?

COMMISSIONER BOHN: Sure.

MR. KELLY: Two comments. One, my understanding is the RFOs, particularly the RPS/RFOs are very well subscribed. There are a lot of bidders. I guess I take a little issue with what Greg was talking about, that there's no competition. I think there's -- what I'm hearing is there's tons of competition and the utilities are rejecting a lot of bids and the marketplace knows that. So people are bidding with that understanding.

Those bids should give an indication of an average price, you know. And if the goal is to bring on new renewables, it would be reasonable, it seems to me, to take an average price or one standard deviation of the average price or two standard deviations, depending on how -- what

you goal is.

So that's one observation, that there is information to provide a just and reasonable conclusion under that standard.

The second thing would -- my observation is, the Commission today, the Public Utilities Commission is making lots of decisions related to contracts that come bilateral to them. And they are approving those contracts under a just and reasonable standard based on the merits of the contracts submitted outside of the RFO context. So I think it's happening today, those kinds of judgments, properly being made by the Commission. And so I don't know that it necessarily has to become a big issue going forward. You're doing it today.

COMMISSIONER BOHN: And as I recall, at least on one occasion, you and your members have objected to that process as being too judgmental and really not either transparent or fair, so --

MR. KELLY: Well, we have --

COMMISSIONER BOHN: -- I realize we're making the judgment calls and I'm okay with judgment calls. However, some of us are a little less comfortable with reasonableness than others. And I think one of your suggestions about whether or not you can take a combined average bid process or something, something other than what we whimsically think on

a given day about a given contract, I guess is what I'm looking for.

MR. KELLY: Yeah, and I understand that and I can appreciate that. You know, the other observation that I had is the calculation of the MPR, for example, which was approved by the Commission, you know, where in the hell does that come from.

So those judgments are made constantly by the Commission and, you know, you make them on the best information you have in front of you and you use a standard today. You've been using it for many, many, many years. I don't know, even if we complain or criticize sometimes those decisions, they still get made.

MS. CORFEE: And, so Toby mentioned earlier, in Europe they use a levelized cost of energy and methodology which is very well researched and then put before a stakeholder process. And we did a workshop in Hawaii recently where one of my Dutch colleagues presented on market research that they did with developers on what's a reasonable rate of return by technology. And it varies by technology because your risk profile is different by technology.

So they build in a different rate of return based on what technology they're setting the tariff for. So it's levelized costs of energy or generation plus a reasonable rate of return by technology.

MR. MORRIS: It's also worth pointing out that while we're signing a lot of contracts right now, we also have a somewhat abysmal rate of contract fulfillment. So we have to go beyond the metric of simply signing contracts to the metric of signing contacts that will actually lead to project development. So it's important to keep that in mind, too.

MS. CORFEE: Any other questions before we move on?

MR. METROPULOS: Good afternoon, Commissioners. My name is Jim Metropulos. I'm the senior advocate with Sierra Club California. Sierra Club California is the advocacy arm of the Sierra Club in California. I represent about 200,000 members within the State that are also ratepayers sand my members.

And our two biggest priorities with energy issues are reforming and setting a new goal for California's renewables portfolio standard law and also getting a feed-in tariff program adopted and implemented in law in California.

So to that end, I'm very involved in the legislature, working on the bills, moving forward on both the RPS and feed-in tariffs. We also are formal intervenors at the PUC in the renewables proceeding and have commented on the Administrative Law Judge's strongman proposal for feed-in tariff program 20 megawatts and under.

We have also commented through the IEPR process here

at the CEC and I heard someone, when I was listening in my office, talk about the various positions that different organizations that have taken before the CEC.

So I actually come from a different perspective. I can't talk to you about PPAs and entering into contracts with IOUs, but I can certainly tell you why my members have a priority in wanting to see feed-in tariffs adopted because they certainly understand what a feed-in tariff is, they certainly understand the concept of providing a generator with costs plus a reasonable profit. And it's a lot easier for them to understand that versus trying to explain what the MPR is.

So looking at some of the questions here that were given to the panelists today, you know, Sierra Club is looking to get a feed-in tariff that would reimburse developers' renewable generation that would cover their costs and give them a reasonable profit. And that's independent of the price of natural gas.

And because costs vary for different types of renewables, we believe they need different payment rates or tariffs and that would be set depending on the type and the size of the project. And we believe that this contract rate should be guaranteed for at least 20 years.

We certainly understand that with any new technology over time, the costs of new sources of energy can be expected

to decrease and become more cost effective and the State would reassess these rates for each technology as costs come down. And then the new contracts would come in at a lower rate.

And we certainly think that that is a way to go about it and look at how the technology is progressing, how costs are going down and how profits should be set going forward. And we think having that two-year window of reassessing what price you get for certain technologies in contracts allows us to take a look at what's working and what is not.

Specifically, with regards to the minimizing costs to ratepayers, you know, like I said, a feed-in tariff in the beginning and the total cost of electricity can be higher than the cost of conventional power. But these costs can be minimized and eliminated through several methods.

First, we need to look at the competing conventional power or fossil fuel that is being used today and we need to get the true costs and values of using those fossil fuels. So, as someone mentioned, we need to look at the costs on health and environmental impacts and costs of construction, cost of water, cost of carbon fees for that matter and making sure that we're pricing fossil fuels correctly because right now we're looking and comparing it to the price of natural gas.

With respect to feed-in tariffs themselves, the relative impact of a feed-in tariff on total electricity costs are going to probably be greatly diluted by the relatively small percentage of electricity produced under feed-in tariffs.

So for example, if 10 percent of your electricity portfolio is from new renewables, under a feed-in tariff that cost 20 percent more than the higher -- of the MPR, it only increases the overall cost of energy by two percent.

And I said, one of the main ways to minimize the cost of feed-in tariffs is to apply them over a broad category of renewables. Some renewables like wind is going to be close to the MPR and have no impact on overall costs. Some, such as PV solar, will have a higher cost differential. But you can cap this and be moderated by setting a maximum threshold per different resource by capacity.

So if capacity caps are implemented, they should be fairly large in early years to allow California to increase its RPS and also lower the costs as we move forward with time and get economies to scale in efficiency improvements.

Furthermore, feed-in tariffs by design have to support a reasonable percentage of new technologies that may, in the short term be more costly -- pricey because it is desirable to stimulate the rapid development and cost reduction of leasing technologies. Today's new, immature and

costly renewable technologies could potentially develop in tomorrows low cost foundation for based and peaked low.

We believe that feed-in tariffs can work. We look and see the examples set in Spain and Germany and think that that's one way to look at this. We certainly also believe that feed-in tariffs can supplement the RPS and that you can have both the feed-in tariff and the RPS and they both work well together.

And we also just want to leave you with that we think that the CEC and other public officials, you know, would better serve communities and California citizens by not saying the electricity costs are going to increase unreasonably because of renewables. And the long term actually might go down because that's been the examples of some of the other countries.

So, we're here today because we really believe that feed-in tariffs can compliment the RPS and help grow renewables in California. Thank you.

COMMISSIONER BYRON: Good.

MR. WHITE: Commissioners and staff, my name is John White. I'm executive Judge to the Center for Energy Efficiency and Renewable Technologies.

This is a second occasion I've had the opportunity to address the IEPR Workshop on the feed-in tariff issue and I'll try to explain my base of knowledge so I'm not just

offering an opinion which I've been know to do from time to time.

I have had the good fortune on my own to travel to Spain and see what's been done there. I've also recently come back from a trip to Germany where I participated in a conference of the German/American Chamber of Commerce. I spent some time with the architects of the German feed-in model and the recent revisions. So I think there's some good literature now available.

I would commit to the Commission's attention a recent paper by Hans-Joseph Fell who's a member of the Green Party in Bundestag and his colleague Carsten Pfeiffer who I met with. He's done a very good job, and I'll provide this paper for the record, describing the experience and how it worked and what's been -- there's a lot of misinformation floating around about what this program over there had cost. It comes down to, basically, the price of three to four Euros a month per electricity customer. About the price of a good German beer or a latte if you have an American point of view. In Spain, the experience has been different.

But what's interesting to me is the results. I don't know if this will work here. There's enormous opposition from the utilities, they get hysterical when you mention the word, so we think the Commission is courageous to even have the conversation. But if we look at the results of

the success of the program (coughing) particularly compared to our relative failure.

Ninety percent of the renewables that have come on line in California in the last 25 years have come on the line as a result of standard offered contracts and not the RPS currently. The RPS program has protected the utilities from penalties and has protected the status quo, but it hasn't produced megawatts of steel in the ground.

We have a lot of very intriguing PowerPoints floating around with PPAs, but the bankers haven't said that they're going to support these and the bankers aren't participating in the procurement peirgroup with the PUC.

So I think what the feed-in tariff does is provides a mechanism for creating certainty of investment. It also provides a mechanism of being able to differentiate between and among your renewable technologies.

All renewables are not created equal. They all have strengths, they all have weaknesses. They all have different costs and they have different benefits. So there's not reason that they should be paid the same price. Nor is there any reason to think that there's any relationship whatsoever to the future projected price of natural gas as the basis of comparing the costs of renewables.

One of things I learned over in my trip to Germany is that the European Union RPS requirement, which is sort of

comparable to our renewable requirement, they don't call it that, but they require each country to demonstrate the indicative trajectory of how it's going to meet the goal. And this would be analogous to portfolio plans for each of the major utilities.

And I would point out that although I agree with what Mr. Morris said about the relative failure of our RPS, the municipal utilities had actually done pretty well without this law. In the case of SMUD, they're already, I think, meeting the standard in L.A., says they're going to get there. Our guys aren't close. And so it's something about the law and I don't blame the PC or CC that says let's do the legislator in the influence of the utilities and certain other interest groups.

But if you look at what this -- what the German experience now, how it fits, basically the feed-in tariff is an implementing mechanism for achieving the indicative trajectory that each country is committed to do.

The thing about Germany that I think says it all is that they have the solar radiation of the State of Alaska. Okay, when you look at the worldwide solar map, the German map is gray and blue. Okay, ain't no red or orange in Germany. Okay. And yet they have created a large export market for solar and are producing significant amount of energy and paying for it and it's a very popular and widely

supported program. There are always critics, but the critics aren't really as well informed as the proponents in terms of the details.

In Spain, we have a technology that I am, personally, very fond of, concentrating solar power which represents an opportunity, I think, to create a powerhouse energy supply for the West. It hits the peak energy supply needs that we have very nicely. And it was originally developed in California.

I don't know if any of you have been down to Kramer Junction, but for the Europeans, Kramer Junction is a shrine of California's leadership 40 years ago. That's where we learned how solar works in the real world. These plants have been operating for 20 years now. They've had new tubes installed, they've had new tests done. It's really the R&D engine for the rest of the world.

That same technology that was developed in California has more than a thousand megawatts of CSP under construction in Spain. Now, we have 5,000 megawatts of PPAs, but we don't have any under construction other than maybe the large scale PV.

So there's something wrong with what we're doing and there's something right about what other folks are doing. And I think the other thing that's important here is the potential for transparency and the potential for there to be

adjustments as others have said.

We don't know now what we're buying, what we're getting or how we're going to build it. The current program is as un-transparent as you can possibly imagine it to be, both with respect to pricing and with respect to what's going.

So I think if we set the goal, and I know that Ms. Sheffrin's point about having a plan for the grid and the future that includes all the renewables and includes transmission, we're not as blessed as the Europeans are in terms of the wealth of built transmission, although I would point out that in Europe, a lot of the reason they built transmission is because they decided to bite the bullet and put underground and pay the price.

But the integration issues, I think the Spanish have run into have been manageable. There has been -- they have a good national grid operator and I think some of our ISO folks have been over to Spain to kind of see what's going on.

And what we really have is the bankers and the engineering companies and the companies building the projects are the ones making the decisions. The utilities are not in the loop and that's why they hate it so much, you know. And that may be the key, is that the decision-making is made, you know, ultimately in Parliament or the Legislature.

Now, I don't know that we can replicate that here.

I think the other part that we have to look at from a legal standpoint, the Commission just -- PUC just announced a workshop on the legal issues of whether we can even set a wholesale price under federal law and I think that's something to pay attention to. We spent a fair amount of time developing what we think are the value of renewables, not just the cost-based and a lot of the feed-in tariff proponents talk about costs as the basis and that's attractive and that may be difficult under federal law.

So we actually think you can make an avoided cost kind of construct here with that basis based in part on the value that the renewables provide the system. The State of Vermont just adopted a feed-in tariff this week and is largely based on that principle.

So I think it's worth studying what has worked and maybe there's a way to develop a hybrid. I think Mr. Kelly's point is they adapted their system in Germany and Germany adapted the system from Spain, but ultimately started with standard offers like we did in California. So I think -- I really commend the Commission for the time its taken to look and explore these issues.

Also, CEERT's position is that we should not limit the program to 20 megawatts and below. We're supportive of moving in that direction, but we don't think that the technologies that can supply vast amount of megawatts

potentially at a significantly lower cost, then the under 20 megawatt should be excluded from the program.

On the other hand, we're prepared to help get started now. There's legislation moving to raise the -- for the feed-in tariff with a renewable price on a compared price up to 3 megawatts that Senator Negrete McLeod is pushing. That looks like it has an opportunity to possibly move.

We commend both Commissions for its work and development here, but what we've got to find a way to do is to be more successful building out our abundance of resources. This State is uniquely and bountifully blessed with almost a world best natural portfolio of renewable resources. We have Central Valley biomass and biogas, that we can use our technology to lower significant value, protect the environment, take methane out of the greenhouse. We have really good wind still left in both Solano and Tehachapi. We powered wind in Alamont. We have -- assuming we can overcome the difficulties with siting and transmission in the Mohave, which will be a considerable effort and one we're working on in other venues, we have the opportunity to build a significant amount of CSP that can substantially diminish our dependence on very expensive peak energy. This is a very key issue with CSP. We are paying the most and polluting the most to supply the energy for our air conditioning system.

One of the plants that I visited when I was in Spain

is the Andasol plant near Granada which just start, opened. I was there when it was under construction. It's a 50 megawatt CSP plant with two more planned, has the first commercial application of molten salt technology for storage. So you've got a 50 megawatt CSP plant with eight to ten hours of storage on site. They can provide a virtually dispatchable renewable resource. And then let's not forget geothermal which although expensive, is a base resource that can displace our dependence on coal.

All of these technologies have different costs, have different assets and, guys, and I think maybe if we can find a way to knit together some kind of a hybrid that would maybe use the RPS as the vehicle and portfolio planning and the long-term procurement plans for the utilities and then mechanisms akin to feed-in tariffs that would provide a greater certainty for investment and more transparency for the concerns.

So I commend you for taking a look at all of this and spending the time to listen to everybody and I thank you for your attention to me.

MS. CORFEE: Thank you, John. I'm going to hand it over to Commissioner Byron because I believe you said there were some questions.

COMMISSIONER BYRON: Well, thank you. And in the interest of time, I appreciate it as well. Gentleman and

Doctor, all very good comments, all very good summary of positions and responses to a number of the questions that were listed here.

I turn to my fellow Commissioners. Do you have any specific questions for this panel? I think we're growing a little weary. I would ask you to stay --

COMMISSIONER BOYD: Well, you didn't ask me if I had comments --

COMMISSIONER BYRON: Go ahead.

COMMISSIONER BOYD: -- but I have -- I'll save the comments for later. You asked about questions. I'm saving a lot of comments here.

COMMISSIONER BYRON: Good. I will ask you to stay where you are, if you will, and let's open it up to some public comment and questions. I have a few in my hands here that may or may not apply to you in particular. And some of these may go back into earlier in the afternoon. And so I'll just go ahead and take them in the order that I received them.

Ms. Lanna Kennings on the phone asks what is the range at the average rate (cents per kilowatt hour) for solar power currently? And is there a regulatory activity to raise that rate to 26 cents per kilowatt hour?

I don't know who would be the appropriate person to answer that. Anyone want to take that? The range of the

average rate of solar power currently?

MR. KELLY: I'll take it. I don't think it's a rate of cost that she's probably inquiring about. And that's going to vary by the technology. Rooftop PV, if you take the -- we did -- some of the proposals have been submitted to the Public Utilities Commission deal with rooftop PV at a capacity cost which is about, I think 3.50 a watt.

We've tried to convert that to an energy basis and the conversions, you know, moving in our conversion methodology. That cost comes in in the upper 30's, you know, 35 to 45 cents.

If you have a centralized solar facility that was talked about earlier, I think those are considerably less. The difference is, of course, transmission. One has a transmission element to it, the other one probably doesn't.

That's -- in my understanding of the marketplace, that's kind of the range we're talking about between those two kind of generic types of solar applications.

MR. WHITE: Yeah, I think in Spain the price is significantly lower for CSP than for PV. I think the current market conditions in the world, though, would provide an opportunity to buy a lot of PV right now because the prices are low. So if you could have a mechanism for buying a lot of panels and getting them up, you might get a better price than what you would have got even just a year ago.

So, I think the PV industry is going through a shakeout, so there's some different, you know, costs or sort of a different thing than they were.

I think in the -- in Arizona, there was a CSP plant announced by Arizona Public Service using parabolic trough technology and I think it -- I don't know if it had storage or not. I think it was somewhere in the realm of 16 to 18 cents a kilowatt hour.

So that's probably -- but if you look at what the voiding cost is for on peak peakers in gas, I don't think you're anywhere in the ballpark of, you know, I mean, I think it's in the ballpark is what I meant to say.

COMMISSIONER BYRON: In the ballpark or the last stand. Okay. I've got someone else on the phone that wanted to comment. Mr. Bob McConnell, if you're still with us, please go ahead and introduce yourself.

MR. MCCONNELL: Am I -- okay, thank you.

COMMISSIONER BYRON: Go right ahead.

MR. MCCONNELL: Okay, thank you, sir. First, let me thank you for holding this. I helped convening this session here today. It's been very exciting for me.

Let me tell you a little bit about my background. I worked at Enrell for 29 years. I've been in solar and wind energy for over three decades. I've worked with electric utility before. I joined a company here in south L.A.,

Amonix, in late 2007.

Our company is building concentrator PV for very large megawatt projects. And these are units 53 kilowatts in size. They're 50 feet by 70 foot panels. They don't fit on rooftops. We're targeting distributed generation and distributed manufacturing as well.

Now the reason I wanted to make a comment is that the Spanish feed-in tariff helped us find a partner that licenses Amonix concentrator PV technology. That feed-in tariff facilitated a manufacturing facility in Spain. I visited it two years ago. It was built in six months to produce 10 megawatts a year.

The company sold 10 megawatts over the next -- and installed them in 2007 and 2008. Then Spain made some adjustments to the feed-in tariff, especially the cap, in a non-crisp and in a non-clear fashion. And our partner abandoned further development there in Spain.

I'm here at Amonix. We're building a manufacturing facility in Seal Beach. It's a Department of Energy contract, it's over $34 million. The lack of a feed-in tariff has emphatically and categorically hampered Amonix from replicating that Spanish success.

And so, I have two pleas, basically. Number one, let's just do it. I mean, I left Colorado to come to California because I saw it as a tremendous market

opportunity in solar. A feed-in tariff is absolutely necessary and needed.

My second plea is do it in as crisp and as clear a fashion as possible. We've been talking with investor after investor after investor and with the economy situation the way it is, we just can't develop any traction without some clear standard offer contracts. I can remember when they were penciled see one, two and three and four. And the speakers are right. That helped wind get a step up. It helped concentrating solar power to get a step up into the marketplace and that's absolutely what we need right now. So thank you.

COMMISSIONER BYRON: Thank you for your comments. I have a card here from Ms. Mary Kimberlin. I don't know if she's here or on the phone, either way. I'd like to ask if she'd go ahead and ask her question if she's still with us. Ms. Kimberlin, are you on the phone?

MS. KIMBERLIN: Yes, I'm also on the phone.

COMMISSIONER BYRON: Please identify -- please go ahead and identify the organization you're with.

MS. KIMBERLIN: Well, I'm just a stakeholder in a homeowners community here in Riverside County. And I've been following up on most of your meetings on WEBEX. I just can't understand why we can't keep up with the expenses. I mean, things like the energy situation keeps falling more and more

behind.

So, I mean, seems like we need to bite the bullet to catch up and cough it up if necessary. And I can't understand why new construction in Riverside County didn't include solar panels in homes builders' plans and construction.

Basically, we just got a bit loop that somehow needs to be tightened up and have public participation.

COMMISSIONER BYRON: Ms. Kimberlin, did you have a question for us here today, this afternoon?

MS. KIMBERLIN: Well, I'm just wondering why it's so expensive because I think that somehow the -- it is the -- utility companies are falling behind. That's why I want to know how we can catch up.

COMMISSIONER BYRON: Okay. So, do we still have any of our investor-owned utility representatives here?

The other thing you mentioned was the expense, you think it's getting expensive.

MR. WHITE: I have a suggestion on that.

COMMISSIONER BYRON: Please, go ahead, Mr. White.

MR. WHITE: In the 80s, one of the tools in the toolbox that the Public Utilities Commission used to great effect was to provide a rate of return penalty for failure to execute the standard off the contracts. And I think we're to the point now where it's time to consider, not so much a

kilowatt penalty, but sort of a shareholder incentive mechanism like we have in energy efficiency where there is a reward for performance. And, you know, and not an arbitrary amount, but, you know, sort of megawatts on line delivered would be my idea of a criteria.

And I think you could structure it like the energy efficiency incentive in such a way that if the utilities underperformed, they would get a penalty; and if they over-performed, they would get an incentive because right now, if you look the, some of the contracts that have been signed, I can't believe that they're serious in what they're pursuing.

MS. KIMBERLIN: Well, that's how we built airplanes. I'm retired from Boeing and that's exactly what we did with our contracts.

COMMISSIONER BYRON: All right. Thank you, John, for that answer. Thank you, Ms. Kimberlin.

MS. KIMBERLIN: Thank you.

COMMISSIONER BYRON: I have Mr. Lewis again from RightCycle.

MR. LEWIS: Craig Lewis with RightCycle. And as I mentioned in my comments earlier, I used to be the vice-president of government relations for Greenvolts, the first company to navigate a solar project through the RPS solicitation process.

I think it's very important to have the developers

perspective presented here. I appreciate that the gentleman from Amonix dialed in. He had a very real world example for us as to why the feed-in tariff can really come into California and be a game changer.

I just want to make a couple comments based on the prior panel, that was mostly utilities, and then this panel as well. The first comment is that there's a huge difference between a standard contract and a standard must-take contract. It's very important to keep those differences in mind.

First of all, a standard contract can be rejected. Secondly, it can include preposterous terms. And thirdly, it can be 100 pages long, as Steven Kelly mentioned. And usually, 100 pages long means that it includes some preposterous terms. And also the fact that it can be rejected. That's really the most important piece here. And somebody had commented earlier that locational benefits and siting things intelligently is really important. I think Toby had mentioned it.

But the question is how do you get the utilities to identify where the really high value regions are in their networks. They're the only ones that have the look inside their black boxes which is their distribution grid. And so somebody has to force them to open that up in order for everybody else to understand where to go to develop projects.

So if you want to deal with locational benefits or a location-specific type of approach, you need to find a way to force the utilities to identify where the high value locations are. It's pretty simple to understand, but it's not as easy to implement a policy around that.

The other comment I have here is that I used to be a banker. And it was really -- a term that we had in the banking business was we're ready to let anybody set the interest that they want as long as we can write the terms. So whoever writes the contract really has the advantage. And that's just something that's very important to keep in mind because these standard contracts, it's obvious who's writing them. So, it's not really made to benefit the developers, it's not going to be given a big job of attracting the developers.

The -- also, somebody had mentioned the cost of doing these projects to the RPS program. And a lot of these costs are parasitic costs. Proposing, negotiating, contracting, those are parasitic costs. It can range easily a million dollars plus, even on small projects, even on a megawatt sized project, it could be a million dollars plus.

There's also parasitic transaction time. Greenvolts has the record for the shortest project to go from proposal to CPUC approval, a year and a half.

COMMISSIONER BYRON: For a megawatt.

MR. LEWIS: Two megawatts.

COMMISSIONER BYRON: Two megawatts.

MR. LEWIS: A year and a half. I call that parasitic transaction time. So there's parasitic transaction costs and there's parasitic transaction time and that's dead time. You're basically just burning money. You can't go to the bank, you can't get financing because nobody is going to finance a project that has not yet been approved by the CPUC.

The feed-in tariff solves all that by having a pre-negotiated, pre-approved contract that's essentially -- a feed-in tariff is a pre-approved, pre-negotiated PPA. That's all it is, very simply.

And my final comment is that a feed-in tariff, the program size, should be set on percentage of delivered energy. I like the -- there were several comments, including the woman who just called in, that we are way behind schedule on meeting our RPS commitments. That's a percentage of delivered energy.

The feed-in tariff should be a percentage of delivered energy based annually and based on a per-utility basis. That way, STG&E can't come up here an complain about their little IOU and they, you know, they can't bring on a 20 megawatt project, they're so tiny. Well, if it's one percent or two percent of their delivered energy annually, that's pretty small amount because they're tiny, right. And Edison

can obviously absorb much more and PG&E even more than that.

So it's percentage of delivered energy annually by a utility. It makes it real simple and it also makes sure that we can deliver on what John was just talking about which is let's make sure that we've got a trajectory to actually get to the finish line here. We got to get to 33 percent by 2020. That's essentially adding 20 percent more over 10 years. It's not difficult math, that's 2 percent per year. A feed-in tariff at two percent per year will get us to the promised land of the 33 percent RPS.

In my comments earlier, I said the feed-in tariff is all about making the RPS real and I'm going to share the sophisticated analysis that I've done around the AB 1106 legislation and it basically shows that by having a feed-in tariff that delivers 2 percent per year of additional incremental renewable energy, worse case, it all comes in as PV, priced at 22 cents a kilowatt hour which is a 50 percent premium over its avoided cost which is 15 cents per kilowatt hour, that the worse case ratepayer impact after a 10 year period, and this is cumulative, is a 10 percent ratepayer impact. And that's basically 50 percent premium times 2 percent per year is a 1 percent ratepayer impact per year. Add that up, you multiply that by 10 years and you get a 10 percent ratepayer impact, worse case. It's a lot better than that, I'm sure it will be a lot better than that.

I look forward to more leadership in the CEC on this. And I hope that CPUC steps up and start showing some leadership on this front as well. Thank you.

COMMISSIONER BYRON: Thank you, Mr. Lewis. Are there any other members of the public on the phone or here with us in the audience that wish to ask a question or make a comment? Please, Doctor.

MS. SHEFFRIN: I just wanted to respond to Mr. Lewis. The California ISO does have some important and very transparent information on which locations are most valuable. And I would urge you to look on our website. We published prices for 3,000 nodes and then we also do an annual constrained lode pocket study which we lay out the 12 key lode pockets in the State where it's most valuable to add generation. So any feed-in tariff that included those characteristics would be very, very valuable.

MR. LEWIS: I've spent a lot of time with the Cal ISO and I know Jim Detmers quite well, we spend a lot of time together. Dave Hawkins as well.

My understanding of MRTU is that it's specific to the transmission grid, not to the distribution grid. So that visibility goes away when you start talking about the distribution grid.

MS. SHEFFRIN: I agree, but in many places it goes down to the 67 KV, so it can be some indication. But I

agree, it's not the full information.

MR. KELLY: If I could ask a question. Anjali, do you know if that information is translated into the bid evaluation criteria applied by the utilities?

MS. SHEFFRIN: I don't.

COMMISSIONER BYRON: Mr. Morris.

MR. MORRIS: Could I make just one quick comment on what Mr. Lewis said. He just showed us that there's only at most a 10 percent impact on cost, but we should keep in mind that he's only talking about energy cost and the cost to a consumer, the energy cost is only one of several components. It has -- there's also transmission and distribution and utility profits. So, actually, the 10 percent energy costs would translate to maybe a 3 or 4 percent at most ratepayer impact.

COMMISSIONER BYRON: Thank you. Commissioner Boyd, you indicated you had some comments you wanted to make.

COMMISSIONER BOYD: Yeah, it's a shame that it's so late in the day and we've lost so much of the audience, particularly some who should listen.

I leaned over to Commissioner Byron early in the day and said, you know, nobody has said the word, as far as I know, biomass or geothermal. I only heard PV and wind all day long and of course, I know biomass and geothermal tend to be a little bit bigger. And I really expected Greg Morris to

talk about biomass because we've know each other for years and I just knew he would say that word. But John White gets the kudos for mentioning both. So the very last panelist of the day. But John bats cleanup in lots of forums in my life and covers lots of things.

I must say, I've been here far too long and since the inception of, at least in the energy area, of a lot of this. And I share the disappointment that we're doing so poorly in meeting the RPS. And I supervised practically by myself, I think, the first IEPR this agency ever did and did three more and thought I was done forever, but I'm back with Commissioner Byron in the lead doing the IEPR this year. And this subject in our scoping order and we're going to discuss it.

The trouble is, you know, we won't see an IEPR until the end of the calendar year, virtually. And the other problem is not enough people pay much attention to the Integrated Energy Policy Report. Our friends at the PUC, I know, have more and more over time. The Legislature strikes that pretty badly in my opinion. But in paying attention to that and I'll stop there unless my boss hear me talking about this, the guy appointed me to this office. He's suppose to comment in 90 days.

In any event, this last panel strikes a lot of cords with me. And I really feel strongly we have got to get off

the dime and do something. And there's been discussions of costs throughout the day and I kept making notes to myself that, you know, in so many areas I've worked and so many years we've never fully priced out the cost of things and it's certainly true here. And I started thinking about the worries about costs. And I respect Commissioner Bohn a lot because he comes here a lot and he really cares enough to come here and sit in on many of our workshops and I know that's a concern of his.

But I start thinking about when we really do price carbon and we really do start costing things out, spending a little bit more money now, if it even takes a little bit more money on a lot of these renewables, it's probably a pretty good investment versus the cost that ultimately is going to show up in the whole equation of the cost of energy in the future when carbon gets priced.

So, yes, we're blessed with a lot natural gas here, but it is a fossil fuel and it does have a cost and ultimately AB 32 is going to catch up with even natural gas fire power plants and cost will have to be expended to mitigate the greenhouse gas emissions and what have you.

So we have got, really got to do something and the feed-in tariff really seems to be something that has the possibility of moving us off dead center and it's, as many have said, it's such a small fraction of the whole that we're

so afraid of taking risks. And I don't know if there's really that much risk. And if there is risk, Steve Kelly talked about, you know, try it, if it doesn't work, fix it, change it again. We seem reluctant to do that, so.

I just am unmoved by the arguments that I've heard in some areas throughout the day about, you know, why it's difficult and why it's hard and so on and so forth. And I don't mean to pick on the investor-owned utilities, but I will. I just don't see them really putting their shoulder to the rock.

The publicly-owned utilities, some of them very aggressive, some of them slow to come to the table, but the slowest of all in the last year or so, as Mr. White indicated, has made a commitment, at least, to move steadily. And they're responding to their ratepayers, the people of the State who are the same people that said they want to address climate change. So I just can't see why we can't move the investor-owned utilities more strongly towards this goal. Not sure -- well, John brings up penalties, I'm not ready to endorse that, but --

MR. WHITE: No, incentives.

COMMISSIONER BYRON: Incentives.

COMMISSIONER BOYD: Oh, excuse me. Well, I thought the tariff was the incentive of the day and you were administering the large club at the end of the process, but

in any event.

Nonetheless, I mean, I will conclude in just saying I've listened to a lot of the issues. I know these are rough financial times, but so what. We're all going to have to work our way out of them. I think -- I was pleased to hear Mr. Kelly indicate that, you know, it's not that hard to work your way out of some of these issues. And if the little guys can work their out, big guys who, Commissioner Byron already noted, are sitting on a lot of cash now after a few years, ought to be able to handle some of this.

So, I don't exactly know where we're going, Commissioner Byron, and I know the PUC is probably a bigger player than we are, but when we get around to doing our IEPR in the not too distant future, I'm certainly going to want to push this subject very, very hard --

COMMISSIONER BYRON: Good.

COMMISSIONER BOYD: -- in an effort to move this off dead center. Thank you.

COMMISSIONER BYRON: Thank you. Commissioner Bohn, would you like to make any comments?

COMMISSIONER BOHN: Yes, thank you very much. I want to thank you, Commissioner Byron and Commissioner Boyd for continuing to invite me up even if I don't necessarily agree with you. And I'll be honest as to why that is.

This is a very, very healthy discussion. And I

started out a year or so ago with the idea that based on the analysis that I had seen, and I've actually spent a little time with this, that the whole "feed-in tariff problem", such as it is, was really 80 percent a question of financing certainty. And I would argue it is maybe 60 percent financing certainty.

And what I would like to see happen is the discussion of the techniques of feed-in tariffs separated from issues like volatility and things like that. And the reason for that is they're not necessarily connected. You can have standard offered contracts with terms that were published in the Daily Register. You can solve these problems separate from feed-in tariffs.

But there are some benefits to the feed-in tariff mechanics that I think have sort of swung me around to thinking favorably about the whole mechanical process of the feed-in tariffs. That is not -- you know, it's a lot less than we have to meet our goals and all of those kinds of things and I'm prepared to deal with all that.

But there are some real, just market issues that if we can get our hands around not being afraid to recognize it's going to cost more and the people who are paying are the same people who are benefiting. It isn't the utilities. The utilities, I would argue, are structurally indifferent. It's not their money anyway, so what do they care. We're taking

money from one pocket and putting it in somebody else's pocket. So structurally, at least, the utilities are or should be essentially neutral. One can argue forever about whether or not they are, but that's not the point.

The point is that there are some tactical and strategic uses of the feed-in tariff system which, if we can get it right, I think will go a long way toward meeting our renewable energy goals. And a couple of quick examples.

If you have one element of a financing equation that is fixed, it almost doesn't make any difference what that is. You can decide whether you have a stepped up or a stepped down charge, it doesn't matter, because somebody will step up and say, all right, based on what I'm going to get, this is what I need to charge.

So there is an element in the feed-in tariff mechanism which provides an advertised rate that is not present in the single negotiated discussions. And one can say, well, you don't get the flexibility and all there is to it. You know, to be determined.

Secondly, I think it's important that it provides, the feed-in tariff systems reduces the impact of -- I forgot, John, it may have been you -- the parasitic costs. Somebody, that was a great price, the parasitic costs of making this happen.

Now, I'm a small business guy and I sort of try to

represent that constituency to PUC. And I can tell you from personal experience that those development costs inhibit a lot of creative thought.

So there are some intangibles in the mechanism and in the structure of feed-in tariffs that I would argue make a lot of sense. So I would rather have the discussion not about, as I said this morning, not about job creation and all of that kind of stuff, but whether or not the technique of a well-crafted feed-in tariff will engage more creativity, more energy at a faster rate.

And I'm really interested and I'm really will be looking for the information from that German system, Toby, which I would appreciate. That's an important piece so that we can actually look at the elements. And if we come down to the fact that even if it costs a little more, we want to make a public policy decision. And I think most of us are okay with that. But it's the ambiguity of the discussion that I think inhibits largely going forward.

So, again, thank you all for letting me participate.

COMMISSIONER BYRON: Absolutely. It's great to have you here, Commission Bohn.

COMMISSIONER BOYD: Commissioner Bohn, I've got no argument with what you just said. I think you put it very eloquently and we'll be glad to participate in the fabrication along with Commissioner Bryon of the hybrid

system for California that will work, call it what we want it.

COMMISSIONER BYRON: Thank you, gentlemen. It clear to me that we still don't have quite the revenue-neutral situation that would make feed-in tariffs, that the IOUs wouldn't care whether or not feed-in tariff was properly implemented. But it also seems clear to me that the IOUs really only want to see generation procured through their RFO process except under certain circumstances where they want to own it.

So the feed-in tariff is outside --

MR. WHITE: It's called a monopoly feed-in tariff.

COMMISSIONER BYRON: Yeah. The feed-in tariff is outside that model and I really find the use of the argument that customers may be at a risk of higher costs is not substantiated elsewhere as indicated by a number of the panelists, particularly what's going on in Europe.

And of course, this last panel was very good, but the previous one with the participation of the publicly-owned utilities indicating that they're doing renewables and the way they're going about them, with feed-in tariff. Of course, everybody is subject to the Public Utility Commission or their Board approval, but we're seeing some movement and that's encouraging.

But again, both tend to want to seem to own the

resulting generation in the long run and maybe that's part of the problem. I like the suggestion about the incentives or perhaps penalties that are going to be necessary to really turn that attitude around on the part of these companies.

I'm certainly a lot smarter as a result of today, but I'm not encouraged necessarily based on the trajectory that we're on. I still go back to Mr. Crider's comment, the real question is are we really committed to renewables and the renewable portfolio standard.

The numbers are not encouraging as indicated by Mr. Kelly, about the amount of renewables that have been put on line through the IOU procurement process. The limit of 500 megawatts, I believe he indicated. The 25 megawatts or so that have been signed under the current feed-in tariff approach and relatively minuscule amount of 50 kilowatts, I think that are on line.

So you can be sure that in the IEPR we're going to undoubtedly be making some recommendations with regard to feed-in tariffs for both less than 20 megawatts in size and greater than 20 megawatts in size. The distinction really is not that significant except as it comes to, perhaps, interconnection issues. But they're going to be a lot simpler approach than we're currently seeing based on the trajectory of the current PUC rulemaking that's underway.

So, I'll end with this. I suspect both my

Commissioners realize, my fellow Commissioners realize that today's a very historic day. Fifty years ago today, the United States launched and provided the safe return of two monkeys into space, Abel and Baker. And so my conclusion is this. If we can put the monkeys in space, I think we ought to be able to figure out how to do a feed-in tariff.

And I'd like to thank very much the staff for organizing a very rich workshop here today, the panelists and the speakers who were just excellent. We could spend more than a day on this. Certainly there's enough content here and we're not giving up on the feed-in tariff approach. We're going to try and crack this nut. I really appreciate your comments, Commissioner Bohn and for being here. I look forward to working with you and seeing if we can help craft an approach that will solve this.

Thank you all for being here and we'll be adjourned.

* * * * *

REPORTER'S CERTIFICATE

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF,

I have hereunto set my hand this 10th day of June, 2009.

Peter Petty
Certified Electronic Reporter