

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**
Council of the County of Maui

MINUTES

Council Chamber

October 21, 2014

CONVENE: 1:32 p.m.

PRESENT: VOTING MEMBERS:

Councilmember Don S. Guzman, Chair
Councilmember Gladys C. Baisa (arrived at 1:33 p.m.)
Councilmember Elle Cochran
Councilmember Stacy Crivello
Councilmember Mike White
Councilmember Michael P. Victorino (arrived at 2:05 p.m.)

EXCUSED: Councilmember Robert Carroll, Vice-Chair

STAFF: Sharon Brooks, Legislative Attorney
Mark Pigao, Legislative Analyst
Pauline Martins, Committee Secretary

Ella Alcon, Council Aide, Molokai Council Office (via voice conference)
Denise Fernandez, Council Aide, Lanai Council Office (via voice conference)
Dawn Lono, Council Aide, Hana Council Office (via voice conference)

ADMIN.: Douglas McLeod, Energy Commissioner, Office of Economic Development,
Office of the Mayor
Kalbert Kobayashi, Energy Coordinator, Department of Management,
Office of the Mayor

OTHERS: Sharon Suzuki, President, Maui Electric Company
Mat McNeff, Manager, Department of Engineering, Maui Electric Company
Kurt Tsukiyama, Manager, Department of Transmission & Distribution, Maui
Electric Company
Todd Kanja, Manager, LNG Enterprise Solutions, Hawaiian Electric
Company
Grant Imamura, Senior Planning Engineer, Hawaiian Electric Company
Mahina Martin, Director, Government and Community Relations, Maui
Electric Company
Plus (8) other people

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

PRESS: *Akaku Maui Community Television, Inc.*

CHAIR GUZMAN: . . . (*gavel*) . . . Good afternoon. Welcome to the meeting of the Economic Development, Energy, Agriculture, and Recreation Committee. I'm Don Guzman, and I'm the Chair of the Committee. Before we begin, may I please ask you to silence your cell phones? I'd like to introduce our Committee members. We have Stacy Crivello.

COUNCILMEMBER CRIVELLO: Good afternoon. Aloha, Chair.

CHAIR GUZMAN: Good afternoon. Elle Cochran.

COUNCILMEMBER COCHRAN: Aloha, Chair.

CHAIR GUZMAN: Mike White.

COUNCILMEMBER WHITE: Aloha, Chair.

CHAIR GUZMAN: And just for the record, we have Mike Victorino that will join us later. And entering the room, we have Chair Gladys Baisa.

COUNCILMEMBER BAISA: Good afternoon, Chair.

CHAIR GUZMAN: Good afternoon. And excused, we have Vice-Chair Robert Carroll. Also, would like to introduce from the Administration's side, Economic Development Energy Commissioner, Doug McLeod. And we also have here today as a presenter, Sharon Suzuki, President of Maui Electric Company and her team that will be introduced before we do the presentation. Also, we have from our Committee Staff, Sharon Brooks, our Committee Analyst, as well as our Committee Secretary, Pauline Martins. Briefly, if anybody is wishing to testify, please sign up in the lobby; and pursuant to the Council Rules, you'll be limited to the items on today's agenda as well as pursuant to the Rules, you'll have up to three minutes and one minute to conclude. Please state your name and any organization in which you represent. We also would like to check in with our District Offices. In Hana Office, are you there and please identify yourself?

MS. LONO: Good afternoon, Chair. This is Dawn Lono at the Hana Office.

CHAIR GUZMAN: Good afternoon, Ms. Lono. And Lanai Office, can you please identify yourself?

MS. FERNANDEZ: Good afternoon, Chair. This Denise Fernandez on Lanai.

CHAIR GUZMAN: Good afternoon, Ms. Fernandez. And also on Molokai Office, can you please identify yourself?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

MS. ALCON: Good afternoon, Chair. This is Ella Alcon on Molokai.

CHAIR GUZMAN: Good afternoon, Ms. Alcon. Thank you. And for our Chambers, do we have anybody that is going to be testifying today?

MS. BROOKS: There are no testifiers in the Chamber.

CHAIR GUZMAN: Thank you very much. And I'll check back in with our District Office. Ms. Lono, is there anyone wishing to provide testimony?

MS. LONO: There's no one waiting to testify in Hana, Chair.

CHAIR GUZMAN: Thank you. And Ms. Fernandez, is there anyone wishing to testify on Lanai?

MS. FERNANDEZ: There is no one waiting to testify on Lanai.

CHAIR GUZMAN: Very good. And on Molokai, is there anyone wishing to provide testimony?

MS. ALCON: There's no one here on Molokai waiting to testify.

CHAIR GUZMAN: Thank you very much, Ms. Alcon. And thank you ladies very much and have a great weekend, I mean, sorry, have a great afternoon. I wish it was. Okay, without any objections, Members, I'd like to close public testimony?

COUNCIL MEMBERS VOICED NO OBJECTIONS.

CHAIR GUZMAN: Thank You. And today, Members, the first item on today's agenda is EAR-6, ALTERNATIVE ENERGY PRODUCTION. The Committee is in receipt of a Miscellaneous Communication, dated February 19, 2013, from the County Clerk, referring the matter relating to alternative energy production, pursuant to a recommendation in Budget and Finance Committee Report 13-8, which recommendation was adopted by the Council on February 15, 2013. Members, the referral from the Budget and Finance Committee included a reference to alternative energy generation technologies in Maui County in the future. Today, we will hear from Maui Electric Company, Limited (MECO) regarding their future energy plans for our County spurred on by an order dated April 28, 2014, from the Hawaii Public Utilities Commission, for the Hawaiian Electric Companies to file Power Supply Improvements Plans known as PSIPs. The PUC directed each of the electric companies to reexamine existing generation unit commitments and economic dispatch practices and to implement plans that will reduce energy costs and be more proactive in emerging nontraditional integration challenges. They were also ordered to improve the process to interconnect photovoltaic systems, embrace customer demand response programs. On August 26, 2014, MECO filed a PSIP in response to

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

the order. I am handing out for your review, Members, the Executive Summary of the PSIP. The PSIP itself is 715 pages long. The link to the full version is on the Office of Council Services website as shown on the monitor in the Chamber. The link is: mauicounty.us/meeting/MECO-PSIP. MECO representatives are here today to give us an overview of their plan and provide an opportunity for us to learn more about how MECO intends to assist in providing Maui County with alternative energy production. So I will like to introduce the President of Maui Electric Company, Sharon Suzuki, and may you...can I ask you to please introduce your team?

... BEGIN PRESENTATION ...

MS. SUZUKI: Is this on? Okay, good afternoon.

CHAIR GUZMAN: I think the mic is...

MS. SUZUKI: Good afternoon, Chair Guzman and Council members.

COUNCILMEMBER BAISA: Sharon, you gotta get closer.

CHAIR GUZMAN: Can you check her mic?

COUNCILMEMBER BAISA: Or if they gotta ...*(inaudible)*... gotta increase it.

MS. SUZUKI: Testing.

COUNCILMEMBER BAISA: No.

MS. SUZUKI: No?

COUNCILMEMBER BAISA: It's not there, Sharon. Sharon and Sharon.

COUNCILMEMBER WHITE: It sounds like it's on.

COUNCILMEMBER BAISA: It sounds like it, but when you speak...unless it's very close to your mouth maybe.

MS. SUZUKI: Okay, we'll just pass it.

COUNCILMEMBER BAISA: Yeah, I think easier.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

MS. SUZUKI: Okay, thank you very much. Good afternoon, Chair Guzman and Council members. I'm Sharon Suzuki, President of Maui Electric Company. Thank you very much for the opportunity to share with you our future plans for Maui County. I would like to take a few minutes to introduce the members who have joined me today in making the presentation. So to my right, Mat McNeff, Manager of Engineering at Maui Electric. Next to him is Grant Imamura, supporting us from Hawaiian Electric, our Senior Generation Planner. To my left is Kurt Tsukiyama, our Manager of the Transmission and Distribution Department here at Maui Electric. And supporting us from Hawaiian Electric is Todd Kanja, to his left, Manager of Liquefied Natural Gas Enterprise Solutions supporting all three companies in the Hawaiian Electric family of companies. Maui Electric has been serving Maui County for over 90 years, and we are committed to ensuring a sustainable, clean energy future for the communities that we serve, so on Maui, Lanai, and Molokai. Today, we would like to share our proposed plan for a clean energy future with you. Our customers work and live in the same communities that you represent, and we recognize that you are very aware of the needs of your constituents. Following our presentation, we would like to hear your feedback and answer any questions that you may have. Our plan defines Maui Electric's vision for transforming the electric system to meet our customer needs, implement our State of Hawaii's policy goals, and as I mentioned, to secure a clean energy sustainable future for our County. We have been hearing from our customers and stakeholders that they want lower bills, more choices to manage their electrical usage, they want more clean energy, and expect reliable service. So our plan that we filed called the Maui Electric Power Supply Improvement Plan--or as Chair Guzman mentioned, PSIP--addresses what we believe is a path forward for us to meet these four objectives. It is a road map and it's not cast in stone; so, as I mentioned, we welcome any feedback and questions at the end of our presentation. Today we'd like to share with you how we developed the plan, the content of the plan, and what it means for our customers. So at this point, I'll turn it over to Mat McNeff.

MR. McNEFF: Thank you, Sharon. Good afternoon. So, in developing the plan, we took into consideration four different key inputs, and those are--you know, the plan covers through the year 2030 so we need a forecast of how much energy is gonna be needed in Maui County through that year--what options currently exist to meet those energy needs, what are some of the critical considerations we need to take into account in our decision making, and you know, to get out into the future we first have to understand how we operate today and where we're starting from. So how much energy will be needed through 2030? We had to develop a forecast out through that year, and of course we took into account things like the increase in the population for Maui County, different businesses that may be coming up over those years, and things like energy efficiency that customers are likely to implement throughout the planned years. So here's our forecast in graph...in graphical format. Okay, here's our forecast in graphical format. The black line differentiating between the historical and the future forecast; and so out to the year 2030, we ended up at an approximate usage for 1,600 gigawatt hours per year. And then from that total we took into account energy efficiency. We know customers are likely to implement things like compact fluorescents or LEDs and we subtracted that out from the energy that we'll need to provide. And then similarly, we took out...we know customers are interested

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

in rooftop solar and we subtracted out the energy that they're likely to provide for themselves using that generation technology. And then after both energy efficiency and solar was accounted for, we came up with an approximate forecast of about 1,000 gigawatt hours annually in 2030. And then what makes up that forecast? Well, for Maui County about a third of it is residential usage and another third is small businesses and the remaining third is large businesses. Although each one of those sectors makes up approximately a third of the energy usage, the number of customers in each sector varies greatly. For example, in residential, there's about 59,000 homes; and small businesses about 10,000 customers; and in the large business category, only about 125 customers make up for a third of that energy use for Maui County. So the second key consideration: what options exist? So we looked at all the different technologies out there that could help up meet this energy forecast that we came up for the future. We took into account things like biomass, energy storage, liquefied natural gas that you'll be hearing more about in the presentation later on, and of course, solar and wind resources. And then, what are some of the critical considerations? You know, we understand that cost is very important to all of our customers, and then you know, resource availability. We took out any resources that aren't available on Maui. And for some resources that may be available on Maui but aren't quite proven yet we've included them further out in the forecast years such as geothermal. So should the resource not materialize, we have time to change our plan. And additionally, we did a technology readiness assessment on all these different technologies and we didn't include things that were deemed not commercially ready yet such as wave energy. And then finally, like I said, to get to the future, we have to have understanding of where we're starting from today. So in Maui County we currently have about 65,000 customers on Maui, approximately 1,700 on Lanai, and 3,200 on Molokai. And those customers make up a peak demand for 2013, and the peak demand is the highest the electrical use ever got in that year. So for 2013 on Maui is about 195 megawatts, and Lanai and Molokai both had about a five or so megawatt peak. Now where do we get our current energy from? So at the end of 2013, approximately 30 percent of our resources came from renewable technologies and the remaining 70 or so percent was from fossil fuel. Of the renewable technologies, about 20 percent came from wind. You know we have a lot of wind on Maui, about 72 megawatts of capacity. And the second highest was solar which is about 5 percent of the annual energy coming from solar. And you know, even today the Hawaiian Electric Companies are leading the nation as far as solar penetration. So we needed to take that into account in the plan and determine how we were going to push that even further into the future years. And now I'll hand it over to Grant to talk about how we came up with the different resources included in the plan.

MR. IMAMURA: Thank you, Matt. Good afternoon, Council members. So I'm gonna step through right now is how we developed the preferred plan in this Power Supply Improvement Plan for Maui. In trying to develop what we're looking at going into the future to achieve the goals that we're looking are to achieve the criteria, we understand that there's an endpoint, but to get there we're looking at where we are right now today so we start with what we call, our baseline. Within this, we look at the existing resources on the system. It includes the wind farms, includes photovoltaics. Also includes the resources that Maui Electric, their generating units, have on the

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

system right now. We also look at things that give customer choices such as demand response, and we also hear things...we also hear items and issues from the community such as a non-transmission alternative for the South Maui area. So we look at these areas and we also look at future types of technology such as energy storage, all within the realm of system and security also to protect and make sure the reliability and the safety of the system is intact. So we look at the system as it is today, what systems are in the near future or what resources in the near future to help us gain to what we're trying to get to. So the criteria we have is to one, lower...our criteria objectives we have is to one, lower customer bills, two is to increase renewable resources, and three is to ensure reliable service. So understanding this, we understand that there's a combination of resources that are existing on the system, and there's more resources that can be added onto the system which it develops into different combinations of how we can operate the system going forward. So in the development of this preferred plan, we looked at several different types of resources such as wind and photovoltaics; adding those to...adding more to the system as well as a future that did not have liquefied natural gas in examining how beneficial liquefied natural gas is to the system: pump storage hydro, waste to energy, geothermal, and of course, our existing resources that we have on the system today. To look at the combination of what these resources when put together can lead toward our criteria objectives going forward. And this is how we divvy out our preferred plan. We looked at our base plan, how can we develop this plan going forward to provide the criteria that is listed here? We used the resource cost that we put into the models and these were assumptions based on a national report, and our preferred plan came out to a combination of both the base plan and adding geothermal to the system, adding more wind to the system, adding more photovoltaics to the system, changing the operation of the existing units on the system to accommodate more renewables that leads us to this preferred plan. Understanding of the preferred plan is...was developed based on a set of assumptions, but going forward and developing what these resources are going to be, the company will pursue requests for proposals to see what other developers would like to put on a system that we think that we could incorporate, could be different types of renewables. But as a starting point, we've kind of laid out this plan to say, you know, these are the resources that we considered. But really the request for proposals will lead us to know which resources are actually gonna be on the system and ensure that we're gonna lower customer bills, ensure that we're gonna provide greater system security and reliability so everybody has power when they need it, give customers choices that they need as well as increase renewables on the system. So at this time I'd like to hand it back to Mat, he'll go into more detail of what these plans look like going forward.

COUNCILMEMBER WHITE: Excuse me, before you do that, could you explain what single train combined cycle is?

MR. IMAMURA: Yes, that is one of the...oh, the single train combined cycle is one of the units that are on our systems right now. It's a combined cycle unit, that's what it's known in the utility industry. It's a generating unit.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER WHITE: Okay, so it's a generator...one of your generators.

MR. IMAMURA: It's a generating unit that we currently have. So what we're looking at is to incorporate more renewables then we gotta change the operation of the units that we have on our existing system. So that maybe the role or the contribution to the system in the future is not where it is today. I think you seen the graphic on the previous slide where we had about 70 percent fossil fuel--

COUNCILMEMBER WHITE: Right.

MR. IMAMURA: --30 percent, renewable. So understanding that if the amount of generation on the system as shown by Mat is...though the need on the generation on the system is gonna be reduced, then that means that that portion of the pie, the resources provided by our generating units, our thermal generating units is gonna shrink while the amount of renewables increase. So it's gonna be a change in development of what resources provide the electricity on the system to satisfy the load going forward.

COUNCILMEMBER WHITE: Okay, thank you.

MR. McNEFF: Thanks, Grant. So what are the results of this preferred plan that Grant just described? And I'm gonna go into each one of these a little more detail in my following slides, and I'll just keep reiterating the results are reduces customers' bills, increases clean energy, creates more options for customers and ensures reliable service. So this in graphical format is the preferred plan for Maui. And I'd just like to point out on the top three bars there in yellow, blue, and green, the top one is Demand Response Programs and these top three bars continue throughout all years of the plan from 2015 all the way to 2030. Demand response programs or incentivizing customers to change their usage based on signals from the utility. So maybe turning off a hot water heater when there's a lot of demand, things like that. Capacity value for wind; that just represents that on Maui we have a lot of wind and, statistically speaking, a portion of that is available all the time. So we factored that into our analysis, and that was that much less generation we needed to install. And then distributed generation PV, you know, as I mentioned, photovoltaic is a big part of our generation mix today and it continues to be so in the future. So going into more detail on each year. You know, starting with 2016, we begin the implementation of our Smart Grid Program with the installation of smart meters. In 2017, we'll be converting many of our units over to liquefied natural gas. You'll hear a little bit more about that in the presentation, but that's very key to one of the results we're trying to achieve of lowering customers' bills. And then in 2018, you know, we have a energy purchase contract with HC&S--they sell us the electricity that they generate primarily from bagasse or biomass--and one of the inputs or one of the assumptions into the plan was that contract, the purchase power contract goes away in 2018. In 2019, that's a big year for us. I'll start off with we plan on retiring the Kahului Power Plant in that year, and a couple things need to happen for that to occur. Kahului Power Plant is about 40 megawatts worth of generation. So we need to replace that

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

40 megawatts that will be retiring, and that's made up of the 16 megawatts of LNG and the 24 megawatts of Ultra Low Sulfur Diesel, the second and third bullet on the ad card. And so 16 megawatts in the plan, it's assumed that that's gonna be placed at Waena or our future generating location across from the Central Maui Landfill. And the remainder or the 24 megawatts, it's assumed that we're gonna place that in South Maui. And why would we do that? Because by placing generation there, it allows us to alleviate the need for one of the transmission lines that we had in our plans previously but we had heard that many of the community members don't want. So again, placing 24 megawatts of that generation in South Maui allows us to forego the need for that line. We also have 40 megawatts of battery energy storage being added to the system. And then one...the other components of retiring Kahului Power Plant is performing some transmission upgrades in the Central Maui area that will allow us to maintain reliable power once that plant is retired. Moving onto 2022, we have an additional eight megawatts of generation being added, assumed to be added at Waena and again that will be fueled by liquefied natural gas. We're going to decommission M7 or one of the units at Maalaea Power Plant. And we're gonna make a switch to Ultra Low Sulfur Diesel at Maalaea Power Plant; that's primarily a switch for environmental reasons, changing our fuel that the facility uses. In 2024 is another big year for us. We have, in the plan, 25 megawatts of geothermal that's gonna be added to South Maui. And by adding geothermal to South Maui, it allows us to relocate 16 megawatts of that 24 megawatts of generation that was previously located in South Maui to alleviate the need of the transmission line. So the geothermal in South Maui serves much of the need and allows us to move units over to Waena and, with that, allows us to utilize the cheaper fuel, liquefied natural gas for those units. And then we decommission M4 thru 9 or four additional units at the Maalaea Power Plant. In 2026 and 2030, each have additional decommissioning of units at Maalaea Power Plant. Similarly for Lanai, this is our preferred plan. In 2016, same as on Maui, we have the rollout of smart, the Smart Grid with the installation of smart meters. In 2017, we plan to convert units to LNG or liquefied natural gas. The 50 percent is because that's what the units can handle on Lanai. And 2018, we plan to add 10 megawatts of battery storage and 6 megawatts of solar. And finally in 2022, we have a conversion of the diesel consumption on Lanai over to biofuel. And then the Molokai Resource Plan looks pretty similar to Lanai. Again, 2016, rollout of smart meters to begin our Smart Grid conversion. 2017, we convert over to liquefied natural gas for the units we have on the island. 2018, the addition of 10 megawatts of battery storage and 8 megawatts of solar. And 2023, switch from diesel over to biofuels. Okay, so what are the results of all these changes that I've just laid out to...before you? So remember number one on the list I started out with was lower customer bills? And this graph represents what it's gonna look like or what we anticipate the average monthly full-service residential customer bill to look like over the years of the plan in today's dollars. So average full-service residential customer--that's basically a customer that just purchases electricity, they don't participate in some of our other programs that we have planned like demand response or they don't have photovoltaic on top of their roof--and you can see the result is, by 2030, we anticipate a near 30 percent reduction in customers' bills. And it's not, it's not a consistent reduction over all the years of the plan, it goes...there's you know, it decreases in various degrees, the largest being in 2017 when we convert over to liquefied natural gas. And

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

that reduction allows us to install additional infrastructure such as battery energy storage and transmission upgrades so that we can still reduce customers' bills while you know modernizing the grid and increasing infrastructure. So second on the board of results I mentioned when I first started was increase renewable energy or increase clean energy. This is what the percentage of renewable energy looks like over the planned years. A couple items of note are there's a increase between 2018 and 2019, and that's due to the addition of wind on Maui and solar on Molokai and Lanai, and then additionally in 2024, there's a large increase due to the addition of geothermal on Maui. In this graph, the yellow represents photovoltaic and the green represents other renewable energies. So what makes up that 72 percent? It's about 41 percent wind, 35 percent photovoltaic, 22 percent geothermal, and then smaller percentages of hydro and biofuels. And as you can see from this graph, there's a nice mix, you know, we're not putting all our eggs in one basket, it's a diversified portfolio of different renewable technologies. Here's another cut, and it shows how we use fuel over the planned years. You know, things to note are 2017, the reduction of oil, as we convert over to liquefied natural gas. And then in the later years, even liquefied natural gas gets replaced with renewable technologies such as geothermal and the increasing wind and photovoltaic. So when I started out, I said where are we today and we're about 30 percent renewable today; by the time we finish in 2030, we anticipate we'll be about 70 percent renewable and about 30 percent fossil fuel, primarily LNG. And then the third bullet on our results that I started with is more customer options. You know, so we anticipate in the future customers will have the option of not only how much interaction they wanna have with us, but specifying what exactly that interaction is whether they just wanna purchase electricity and that's it, or they wanna have a special rate for their electric vehicles, or maybe they wanna be very involved, they wanna have a photovoltaic on their roof, they wanna participate in our demand response programs and electric vehicle. So customers will have a lot more choices going forward with this plan. And then I'll turn it over to Kurt Tsukiyama to talk about the Smart Grid and modernization.

MR. TSUKIYAMA: Thanks. Thanks, Mat. Good afternoon. So as Mat mentioned, modernizing the grid, if you refer back to several slides ago, he talked, you know, one of the initiatives that's would be coming near term is in 2016 doing the implementation or start of the Smart Grid Network. What is a Smart Grid Network? Well, it's basically a facilitation of bidirectional energy, you know, going from our traditional single direction where we're producing electrons to the customer. Now we have diversity of generation sources including with the customers and more interface with the customers. It starts with a Smart Grid with a communications network. It would involve a information, information technology infrastructure as well as investment on the transmission and distribution facilities with new electrical equipment. And all of this is to enable us as a company to be able to operate and maintain the system in a reliable manner; but also it will, as Mat mentioned, give the customer choices, yeah, it would give them choice'ing as far as understanding how they use energy, to be able to make energy choices, being able to make decisions as far as how they use their energy, as far as it also allows for renewable integration, higher renewable integration into our system. And lastly all that, you know, balancing all that in

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

terms of again being able to consistently provide our customers at the end of the day with renewable energy. And so with that, turn it back over to Mat.

MR. McNEFF: Thanks, Kurt. So, higher solar integration, that was on Kurt's last slide. And you can see from this graph that the plan does continue the increase of solar for Maui County. And it's anticipated that the contribution of photovoltaic resources will triple by 2030 as compared to what was installed by 2013. And how are we gonna do that? Well, we're gonna change some of the programs that we currently have. The Net Energy Metering Program in particular was designed to encourage photovoltaics at a time where maybe they weren't economically viable by their own. And since then we've, you know, we've really transitioned into a time where we wanna start paying people, you know, for electricity based on more what it's worth than incentivizing different renewable energies now that they can stand on their own. So, you know, we're gonna still support the growing photovoltaic, but we're gonna make...we're gonna focus a lot more on equitable bills for all customers. And speaking of bills for all customers, you know, I mentioned several times in my presentation about LNG and how that's gonna help lower customer bills, I'm gonna turn it over to Todd now to speak more on that.

MR. KANJA: Okay, thank you, Mat; and good afternoon, Council members. Oh, I hit the wrong button. My apologies, I hit the wrong button. That button, okay, got it. Okay, let me start off by explaining what...a little bit about liquefied natural gas or LNG for short. LNG is natural gas which is mostly methane or the chemical composition is CH₄, carbon and four hydrogen atoms, that has been cooled to minus 260 degrees Fahrenheit; so it's a really cold liquid. And the reason why we change natural gas into LNG is that LNG takes up 1/600 of the volume of natural gas; therefore, making it much more cost effective to transport over long distances where otherwise, you would otherwise do it via pipeline. But in the case, being in Hawaii and 2,500 miles away from the nearest main...or the Mainland, we have to transport it by ship; so LNG is really the most cost effective way to transport natural gas over long distances. I think contrary to what, you know, a lot of people talk about LNG, LNG is also a very safe fuel. LNG has a very high ignition temperature, almost twice that of gasoline, something that we handle, at least in my case, I fill up my car once a week. It is also noncorrosive. It's also nontoxic. If it's ever spilled and we don't ever wanna spill LNG, LNG will completely vaporize and actually go into the atmosphere and again, we don't wanna do this, but it will leave no residual on the ground or in the water; so it will completely evaporate. You know, I think you've heard a lot, Mat talk about it, the reasons for liquefied natural gas, but in short really what it is is a major initiative to reduce our customer's electric bills. And, simultaneous with that, we get a double benefit in that it's a cleaner burning fuel. LNG is roughly about 25 percent cheaper than the low-sulfur fuel oil that's currently used on Oahu and more than 30...30 percent cheaper than the diesel used on Maui. LNG is also less expensive, is also a less expensive alternative than upgrading our oil-fired power plants to meet tighter Federal environmental regulations. Now the cost savings that LNG brings us creates an opportunity and it is a catalyst for really adding more renewable energy to our system. We're already approaching 20 percent as a company, but those cost savings can be used to make the necessary investments for system improvements that have been described to

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

you that enables the addition of more renewables. So really what it is, is LNG creates this cost savings and we can use some of that cost savings to improve the system so that we can add more and more renewables and basically achieve our plans. LNG also offers the opportunity as a cleaner and more affordable fuel for ground transportation and even for possibly marine transportation as well. If we do a comparison in terms of fuel cost, the green line on the bottom represents the cost of LNG in our forecast that we included in our Power Supply Improvement Plan that we filed with the PUC. The middle line is a blue line--I think is, I can't see that far--is the cost or the projected cost of a diesel and low-sulfur fuel oil blend that we have to burn on Oahu starting in 2016. The red line up on top is Ultra Low Sulfur Diesel. I have the acronym there, my apologies there. But it is Ultra Low Sulfur Diesel and that's very comparable to the diesel fuel price that's burned here on Maui. Over on the right-hand side of the screen you'll see a little breakdown in that blue box, and there I have the projected price of LNG in 2017 it's to be about \$15.71. Of that portion, \$3.49 goes directly for the gas commodity itself, and the \$12.22 is basically made up of the cost to actually transport the gas via pipeline to the liquefaction facility, the cost of the liquefaction services and then transporting the LNG from the facilities, from the LNG facility to Hawaii. Now I broke it up that way because the \$12.22 is much of it is gonna be under fixed contract for the term of the contract. The actual portion that is exposed to market conditions is really the gas commodity, the \$3.49. So really if gas commodity were to increase let's say by 100 percent, the price of LNG would then go up by \$3.49 taking the cost of the delivered cost LNG just over \$19.00. Now if you contrast that with the price of oil, if price of oil were to go up by a 100 percent, the price would essentially on the red and the blue lines would essentially double. So basically when we hear about the challenges of not having stable prices due to the fluctuations in oil, we believe that LNG offers an opportunity to really stabilize the price of our fuel because the gas commodity is such a small portion of the overall cost of delivered LNG. We've been working hard on LNG at Hawaiian Electric for the last two to three years, actually going on about three years now. We haven't really said a lot about our efforts because we've been busy working hard and doing a lot of homework and trying to find the right solution for Hawaii. The first concept that we've come up with in how we can bring LNG to Hawaii actually as early as 2017 is using ISO containers and we call this containerized LNG. Basically it's very simple, we take ISO containers, we fill it up with LNG, we put it on standard container ships, and then truck it to our generating stations. Now this supply chain uses existing infrastructure that already exists today and that there's not a need to build any new infrastructure using a containerized LNG supply chain. What's important to note is that there's no special permits that are required by the Federal Energy Regulatory Commission. So this can be implemented as soon as we are done with our modifications at our plant to be able to use LNG as well as as soon as the supply of LNG becomes available. We believe that this can be done as early as 2017. Just an update on our effort on our containerized LNG. We recently executed an agreement with a company called FortisBC out of Vancouver, Canada. FortisBC is the gas and electric utility--just like we are the electric utility in Hawaii--they're a gas and electric utility in Vancouver, British Columbia. FortisBC actually has two LNG plants today and they're expanding one of these two facilities. Limited LNG capacity is available at the plant that's being expanded under a regulated tariff, and this volume is actually sufficient to meet Hawaii's needs.

ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE, AND RECREATION COMMITTEE

Council of the County of Maui

October 21, 2014

It's low cost, but it's only available on a first-come, first-served basis because it's on a tariff. First one to ask for it, first one will get it. We moved very quickly and actually executed an agreement back in August to secure the capacity for Hawaii. What we're focused on now is really the logistics in getting the LNG to Hawaii. The second, and probably the more traditional way of moving LNG from one destination to another is using what they call bulk LNG transport, and receiving it through a bulk LNG terminal. In this particular case, the picture on the left shows an example of a floating LNG terminal. We often refer to it as a floating storage regasification unit. It's a lot of words, so I just call it a floating terminal. In this case the red ship is the floating terminal and the blue ship is the LNG carrier making the delivery of LNG to the terminal. The red ship really is two pieces. The LNG is stored in the hull of the ship and on the top deck of the ship is the regasification components that will take the liquid and turn it back into a gas vapor. From the terminal, the vapor is then transported onshore via pipeline and distributed by pipeline to the generating facilities; and in the case on Oahu, we would distribute it also to Hawaii Gas. In the case of the neighbor islands for example, Maui, Molokai, Lanai as well as the Big Island, infrastructure is very limited and space is very limited in our harbors, and really the most cost-effective way to distribute LNG to the neighbor islands is using the ISO containers. So regardless of whether LNG is brought to Hawaii in a bulk terminal or using a containerized LNG model, distribution of LNG to the neighbor islands will be most cost-effective using the ISO containers. And from there what we would do is basically truck it to its final destination. A point to note, on Maui today for example, Maalaea Power Plant is the largest power plant that serves Maui, that fuel is currently trucked today. So basically we would use the exact same means of transport the LNG as we do today to transport the diesel to Maalaea Power Plant. The other opportunity that LNG offers, as I mentioned earlier, is perhaps moving into the transportation sector whether it be for ground transportation or perhaps marine transportation. I'm gonna turn it back over to Sharon with some concluding remarks.

MS. SUZUKI: Okay, thank you, Todd. So that is the plan that we put forth before the Public Utilities Commission and what we call the Power Supply Improvement Plan. And what we're doing now is communicating our plan with stakeholders like yourselves, the community, and our customers to get input, because it's really not approved yet, it's really the start of a discussion that we want to have with people like you. Of course, we'll be working concurrently with the Public Utilities Commission through our formal regulatory process to gain their support, modify if necessary. Once we do get the plan approved, we'd implement and achieve the goals that were put forth in the plan to lower bills, provide more choices, integrate more clean energy into our three island grids and of course, continue to maintain reliable service. So, with that, I'd like to open it up to questions or comments that you may like to share with us.

... END OF PRESENTATION ...

CHAIR GUZMAN: Members, do you have any questions for MECO at this time?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER CRIVELLO: I do, Chair.

CHAIR GUZMAN: Yes, Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you, Chair. Thank you very much for a very informative presentation. So I have a question in regards to...I notice here on Page 5, you have the customer count plus the megawatts of demands. So with the renewal energy push that we have on Maui whether it's solar, wind or whatever sort of a...what we have available now, are we able to provide the kind of I guess generation for your distribution coming from solar or from wind or whatever renewable source? So if we...depending on solar, say instead of LNG and we want to have the solar, the PVs be the venue for generation of energy, how much megawatts that what we have now is able to provide and are you able to store, can you put that into storage? You know, how do you utilize...I guess what I'm trying to say, how do we utilize what we have today into your grid if I'm using the right terminology for distribution?

MR. McNEFF: Okay, I'll give it a shot and let me if I, if you want more. But currently we utilize, for example, all the solar as it's produced so we don't store it. We, you know, and that's actually the most efficient way to use it, by putting it through storage you actually lose some of it. So currently we use all the photovoltaic that we have on any of the three islands as it's being produced.

COUNCILMEMBER CRIVELLO: So if I'm hearing your plans to go to LNG, are we saying then it's not enough for us to have solar or wind? So it's not...there's not enough to generate enough energy?

MR. McNEFF: It's not...we plan to increase the renewables as I kinda laid out in my slides to 72 percent by 2030, but many of those renewables are variable and so they depend on different resources that may or may not be there when the time comes for the need. So we typically back that generation up with some firm generation, our own units; and so we would maintain those units or retire older units in exchange for more efficient ones, but we would always have some firm generation as a backup. So...

COUNCILMEMBER CRIVELLO: And this is where the LNG consideration comes in?

MR. McNEFF: Correct.

COUNCILMEMBER CRIVELLO: Okay, thank you.

CHAIR GUZMAN: One moment, I'd like to recognize the presence of Member Victorino. Thank you.

COUNCILMEMBER VICTORINO: Thank you, Chair.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

CHAIR GUZMAN: Mr. White?

COUNCILMEMBER WHITE: Thank you, Chair. While we're on this slide, I noticed that the growth in rooftop solar is significant from 2008 or current up to about looks at about 2018, but then it looks relatively static from 2018 through 2030 on the graph, but in another part of the presentation you were mentioning it was tripling, but what is your expectation as far as the growth of solar?

MR. McNEFF: We anticipate it to...maybe the other graph is actually better to look at that. Yeah, this represents...the cut that we were just on represents how much energy we need to serve. So that portion that you...that is removed, is the part that the customer is serving themselves through photovoltaic. Of course part of that energy is in excess of what they serve themselves and we utilize that. So maybe the...a better graph that I can speak to is--Grant's getting to it right here--so you can see it's still steadily increasing. There is maybe a inflection point around 2016, 2017 and that has to do with when we assume the tax credits to expire. As well, as I mentioned earlier, you know, we do have some changes planned for the programs that we use to purchase solar and some of those would more equitably justify or compensate people for the energy that they're producing and selling to us. So both of those factors combined influence how we see that graph increasing.

COUNCILMEMBER WHITE: I like the focus on reducing customers' bills because one of the, one of the concerns that I had was that as people are adding solar and we're getting more power from wind with the decoupling that you all are able to take advantage of, I think there's been a concern that the people who don't have solar, don't have access to solar or the money to get involved in it are gonna see significant increases. So I think the change to LNG is a really hopeful sign that that may take it in the other direction if you can elaborate on that?

MR. McNEFF: Yes, sir. Thanks for the question. In particular as it results to solar, you know, we plan on phasing out the net energy metering program, and currently that's the program that, you know, has us selling and purchasing electricity at the same price, and that's one of the reasons why there's some cost shifting between customers that have or don't have solar. So as phasing out that program will reduce that cost shifting that you mentioned.

COUNCILMEMBER WHITE: So how will that on any particular customer's bill that has a solar system what is the phase out of the net energy or net metering...what's that gonna change their bill to look like?

MR. McNEFF: Well, I guess in regards to the program, the net energy metering program, for those customers that have signed up under the program or are current net energy metering customers, you know, we'll honor the agreement we have with them, but outside of that agreement is sort of our rates and tariffs and that's where some of these changes are coming. So although the net energy metering agreement will likely stay intact for all those customers that are current net

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

energy metering programs, maybe the per kilowatt hour charge might change. And you know, that's not something that hasn't happened before. Depending on when people got photovoltaic, periodically the utility or Maui Electric goes in for rate cases in which we look at our rates and those rates change. And those rates impact, you know, net energy metering customers. So it's more a natural process for the utility to periodically look at the cost of serving people. But in particular we anticipate in the future moving some of the fixed costs that are currently embedded in the per kilowatt hour charge, more into the customer charge so that again, that will help so that net energy metering customers aren't offsetting all the, all the costs when really there's some costs still there to serve electricity say during night or you know...

COUNCILMEMBER WHITE: Right, 'cause you still got the firm power --

MR. McNEFF: Right, yeah.

COUNCILMEMBER WHITE: --the firm back up.

MR. McNEFF: Right, firm power.

COUNCILMEMBER WHITE: Yeah, it's always seemed a little bit unfair to me that those without solar seemed to be picking up more of the tab.

MR. McNEFF: Right.

COUNCILMEMBER WHITE: And I have a solar system so I'm well aware of how low my bill is.

MR. McNEFF: Sure. So definitely part of the plan is to address that.

COUNCILMEMBER WHITE: So you're gonna address it by increasing the base charge?

MR. McNEFF: That's part of the plan, yes, for what we have proposed and for the PUC to consider.

COUNCILMEMBER WHITE: Okay, thank you.

CHAIR GUZMAN: Yes, Chair Baisa?

COUNCILMEMBER BAISA: Thank you very much, Chair. And thank you folks for being here this afternoon. I'm glad you're here because there's so many questions out in the community, in fact in my house. And well, you know, my husband had the glory of negotiating our PV contract and he took it very seriously and he pays very close attention to what's going on with that. And the question of course was he heard about the charge that is being proposed, the additional \$50.00. You know, we're so excited when we get these \$18 electric bills which we think are just marvelous, but I was afraid that at some point something would have to be done about that.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

Because if we all start getting \$18 bills somebody who doesn't have a PV system or whatever system is gonna be paying a lot more money because we understand you have fixed costs that have to be paid. Your firm power commitment didn't go away with that. And so, I'm glad that, you know, you're looking at ways to deal with reducing the cost of the operation of the system. And I'm really interested in two things. One of course was I saw a lot of geothermal being mentioned in the plan. And the last I paid attention to geothermal and I haven't really looked at it ever since I got off the IRP thing, and I do know that there are efforts being made. Can you update us on what's happening with that geothermal exploration that's been going on?

MR. McNEFF: Sure. As far as I know that they're still within the Environmental Impact Statement process so that's as far as I know.

COUNCILMEMBER BAISA: But since it's in the plan is it firm or is it just something we're thinking about?

MR. McNEFF: Well, like...

COUNCILMEMBER BAISA: Kinda bothers me that we're including something in a plan that I understand is not documented yet.

MR. McNEFF: Sure. Thanks for the question. So all the resources in the plan represent, you know, sort of our best guess of...and like Grant mentioned, it's sort of a result of nationally recognized pricing that were inputs into the modeling and that produced what resources we would need. But really the geothermal in the plan represents a firm renewable resource that's needed in that year. And when the time comes, we're gonna go out for a request for proposals; and if geothermal isn't available, you know, it's not gonna win. Whatever is, can meet the need that we have at the time and is most beneficial to customers is the resource that we'll go with.

COUNCILMEMBER BAISA: So if geothermal doesn't pan out that you'll look at something else?

MR. McNEFF: Absolutely. Yeah, in fact, you know, knowing geothermal wasn't totally proven on the island, we kinda pushed in it out in the forecast to later years when, you know, as years progress, we'll definitely update the plan. It's a living document so, you know, we have time to adjust.

COUNCILMEMBER BAISA: No, thank you, because it kind of threw me for a loop. I thought, well, I'm not paying attention. This thing has gone a lot farther than I'm aware of. One more question, and that's in regards to LNG and why we've selected LNG. One of the things we have going on here at the County that is very controversial is the contract that we have with Anaergia. And my understanding is they're supposed to come up with some kind of a energy palette or whatever. That's not in your mix because it's gonna be produced here or is it just too experimental and you don't know yet?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

MS. SUZUKI: Okay, from the Anaergia perspective, my understanding is that they're producing two products. One is the pellets which we cannot use in our existing power plants or in our generators. But the other one is a gas that we're discussing with them, because the gas could be a locally produced gas similar to LNG, and to the extent that we...it can meet the specification that we can use in our existing generators, we're certainly interested in a locally produced gas. The pricing is gonna be key because you heard from Todd what kind of pricing looks very promising from...we went through or Todd has coordinated a solicitation process in terms of bringing LNG to Hawaii, and down to sort of the transportation, the infrastructure, and getting the product here to Hawaii and of course to Maui, Lanai, and Molokai. But the price needs to be competitive with that 'cause that's now kinda the benchmark.

COUNCILMEMBER BAISA: Good. Well, you know, I'm very interested in that because, you know, if we are going to have that project be successful, they're gonna have to find a use for what they're gonna create; otherwise, you know, it all falls apart 'cause if you don't have a market then what's the point of going ahead. And it's looking like a very important project for Maui County in terms of how we deal with our waste-to-energy and our total solid waste planning. So that was another one that I was really concerned about. And the last one is the use of biofuel, biodiesel, is that factored into here in any way?

MR. McNEFF: Yeah.

COUNCILMEMBER BAISA: Locally produced.

MR. McNEFF: The plans for Molokai and Lanai both call for the use of biofuel, and our preference will be on local-produced biofuel provided, again, you know, it's at a price that is good for customers.

COUNCILMEMBER BAISA: So the door is not closed on these other things --

MR. McNEFF: No.

COUNCILMEMBER BAISA: --it's just that this is what you're basing your plan on at the moment?

MR. McNEFF: Yeah, in fact you can kinda consider, you know, this is our plan and it's...we put it out there to start discussions and see what input we get from the community and stakeholders so that we can make sure, you know, it's the best we have going forward.

COUNCILMEMBER BAISA: Well, I definitely understand the word, "plan". You know, I always get worried when people think plans are in cement. Plans are put on paper and in the computer and whatever, and you have to keep constantly, you know, updating and changing as you go. But I just wanna make sure that, you know, any local options are being looked at because we gotta work together and help each other and make all of our businesses succeed. Thank you. Thank you very much.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

MS. SUZUKI: I guess I'd like to...yes, we agree because definitely if we can get locally produced options and we do need to work together which is why we've been making the effort to go out, and we appreciate the time that you folks have made today so we can get your input, because like we always said in terms of our pursuit of clean energy, we can't do it alone. I mean, we need support but that's what we wanna hear, you know, what do you like, what don't you like, what are your concerns, because it's not cast in stone and we did want to start the discussions. So we really appreciate you raising those concerns for us to consider.

COUNCILMEMBER BAISA: Thank you very much. Thank you, Chair.

CHAIR GUZMAN: Mr. Victorino?

COUNCILMEMBER VICTORINO: Thank you. And, you know, Ms. Baisa and Mr. White, along with Ms. Crivello, have asked many of the really highlighted questions, you know, questions that most of the public would like to understand. And I realize that, again, like you mentioned Ms. Suzuki, you're talking a plan, and I think plans can change depending on many factors. Yes, we are isolated 2,500 miles so any means of transporting materials and goods at a economic feasible price would help keep the prices down. I think that's very important. Now my question is to you is, as this moves along, I know photovoltaic has become a big hot topic in the community. Many people are asking why can't I do it now, what's taking so long, why am I not allowed to hook up? And I think in Oahu it's even, even worse than here in Maui. And you know, I don't wanna get into any kind of political ramifications, but what do you see as this plan moves along, how soon can many of these people who have invested in these systems but now either "doing it illegally" or are not able to hook up and just sitting on their roofs? What are your...what do you estimate, and I'm looking at Maui, you know, Oahu that's their own thing, but what about Maui, 'cause I have a number of calls every week from people wanting to hook up, but unable to?

MR. McNEFF: Sure. Thanks again for the question. You know going forward we are working with entities such as the National Energy Renewable Labs and inverters to sort of tackle and come up with solutions for some of the current issues we see today. You know, the slide show that we're kinda like, you know, first in the nation for photovoltaic penetration, and you know a result of that is we're tackling many of these issues that other utilities haven't seen yet. So we're working hard on addressing that. Fortunately as you mentioned, you know, there are some differences between Oahu and Maui. On Maui, customers can't install or even get an electrical permit for the installation prior to getting an approval from us. So hopefully nobody has invested in a system prior to getting...making sure that the circuit level and everything is okay. We tried to get that in place to help protect customers on the financial aspect. So we're working hard on that. When do we see those, everyone being able to move forward? You know, currently on Maui there's or on Maui County there's around 300 customers that are sort of waiting on us to come up with some technical solutions with the inverter manufacturers and other renewable labs. I'm not sure exactly when we'll be able to come up with those solutions, but you know, we have

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

testing in place, we're currently doing testing, and we have communicated with inverter manufacturers on what kind of...what the system needs and whether they can meet those needs. And if everything goes according to plan, and you know, things work out for us, we anticipate maybe early 2015 that the majority of those customers would be able to move forward.

COUNCILMEMBER VICTORINO: You know, and again, it's not in stone, like Ms. Baisa mentioned. And I hope the public understand, you know, a lot of things have to fall into place before that comes to fruition, but at least a timetable for which people can now kinda gauge their future. The other question I had, this increase in the rate for, you know, it's been eighteen dollars and something cents all these years and now they're looking at \$55, something like that. Do you feel that that would at least make the playing field a little more level for those, and like Mr. White said, who cannot afford, who will not put in a photovoltaic system? I mean really I mean they cannot afford, you know, even a small system of maybe ten, fifteen thousand, these people cannot afford that, you know. Do you believe that will help you guys to continue to at least keep that field level for those customers who are changing over and those at this point who cannot along with what else...all the other movements that you're making at this point in time?

MR. McNEFF: Yes, yes, we do feel that that will help, you know, help eliminate some of the cross subsidies that currently exist between PV and non-PV owners.

COUNCILMEMBER VICTORINO: Okay. No, I think that's important 'cause I also have people especially our elderly, you know, fixed income, they really don't want to or they're afraid to or can't afford to make that change, Mr. Chair. And so it's real difficult, you sit there, you know, and then you get a whole bunch of people like myself who are right between 115 and 160 a month in our utility bill, you know, I just like I'm stuck in the middle, because I really don't wanna go that way 'cause I don't wanna pay for even a small system 'cause it doesn't make sense when you look at the payout. And yet, if it continues on this way, I'll be stuck maybe paying two, three hundred dollars in five or ten years because I didn't do it. You know, so it's like a lot of us are really what I call stuck in the middle and we need to, you know, have more clarification. I think this helps a lot, thank you very much. And hopefully with this rate at 55, I think then it will make it much more palatable for all of us to exist, you know. And because again, when there is no sun, when there is no rain, all of a sudden you don't have power, you still flip on that switch, it's like water. It's the exact same thing like water. When you turn that faucet, you want water come out. When you flip that switch, you want that light to go on, you want that refrigerator to be cold or you want that stove to heat up, isn't that correct? But yet, a lot of people don't wanna pay anything extra because I don't use it until I need it. You know, the old saying is, if you need it, you're gonna have to pay for it sooner or later. So thank you, Mr. Chair, and thank you, Maui Electric, for being here and really giving us a real heads up in what's your plan for the future of Maui County and its utility is. Thank you.

CHAIR GUZMAN: Thank you. Mr. White?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER WHITE: Thank you, Chair. On the slide regarding leading the nation in solar integration, it outlines the percentages of solar as to the total power. What is the, what would that slide look like if you were to give us the numbers on wind generation?

MR. McNEFF: Okay, here. So this slide, the numbers represent...yeah, the number of customers that have, you know, photovoltaic systems. And so it's really, it's really focused on a distributed generation that customers can install on their roof. Not so much the power output of those systems, but like what percent of customers have PV on their houses...

COUNCILMEMBER WHITE: That's not the actual generation?

MR. McNEFF: No, no.

COUNCILMEMBER WHITE: Okay, what would the actual generation of the wind, the wind power on each island be?

MR. McNEFF: Sure.

COUNCILMEMBER WHITE: Do you have a sense of what that is?

MR. McNEFF: Yeah. For Maui County, currently it's about, you know, on an annual basis, about 20 percent of the electrical generation comes from wind. So it's a much bigger percentage than even the photovoltaic.

COUNCILMEMBER WHITE: What I was interested in seeing is what is it on the other, in the other three counties?

MR. McNEFF: As far as wind?

COUNCILMEMBER WHITE: Yeah.

MR. McNEFF: I'm sorry. I don't have that with me today.

COUNCILMEMBER WHITE: Because one of the things, one of the points that's been made is that-- and I'm not sure what the comparison between our charge per kilowatt hour is versus the Big Island--but I've been, it's been inferred to me and I haven't followed up and asked the question that Maui's rate is lower because we have a higher percentage of wind generation. Does that make any sense or...

MR. McNEFF: I think it's probably like a lot of reasons for difference of rates between the islands. And, you know, the Big Island does have some wind, but the rates that they pay for wind are

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

different across different islands. So it's, you know, it's probably more than just a simple answer like that.

COUNCILMEMBER WHITE: What is the charge per kilowatt hour on the Big Island compared to Maui?

MR. McNEFF: For wind?

COUNCILMEMBER WHITE: No, for customers.

MR. McNEFF: Yeah, I think it's just a...

COUNCILMEMBER WHITE: We don't have anyone here from HELCO?

MR. McNEFF: No, sorry.

MS. SUZUKI: I think...I don't have the exact rate, but I think generally it's been a little higher than Maui and, of course, we're both higher than Oahu; and it's tied to the resource mix meaning the generation mix. And we can get you more specific information as a follow-up to this meeting.

COUNCILMEMBER WHITE: Okay, thank you.

MS. SUZUKI: If you're interested, yeah.

COUNCILMEMBER WHITE: And then if you don't mind, Chair, another question. What is your perspective on the viability of the undersea cable?

MS. SUZUKI: Okay, so in terms of the interisland cable, we were asked to look at an interconnection between Maui and Oahu as part of these Power Supply Improvement Plans, and in the analysis it showed that Oahu can still meet or exceed their renewable portfolio standards. The RPS, renewable portfolio standard law, is 40 percent of our sales to be sourced from renewable resources by 2030. And so they can do that without the interconnection of a cable from Maui to Oahu. And it was not cost effective to actually pursue that route right now. And of course to the extent things change, I mean, we would continue to look at that.

COUNCILMEMBER WHITE: Yeah, thank you. I think everyone was a little bit concerned that the cost of that cable was gonna be passed onto customers on both ends, and I don't know what that...

CHAIR GUZMAN: Chair Baisa, did you want...

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER BAISA: Thank you very much, Chair. One other question I had circled it when you said it. I was involved course when Waena was being approved and it's always been there. I'm kinda curious to hear it being mentioned again as a place where you're talking about possibly relocating some of the stuff that's in Kahului. What is the status of that at the moment? Couple times you've been here and said well, it's kind of on hold. So now I'm curious to hear what's happened.

MS. SUZUKI: Okay, well yes, I mean I think annually we have a report --

COUNCILMEMBER BAISA: Yes, yes.

MS. SUZUKI: --and report the status. There's no formal development planned right now, but for our Power Supply Improvement Plan we made an assumption because there's a need for firm capacity as was mentioned. And the assumption is that there can be production or generation located at Waena because we already have the property and it's zoned for industrial, right, because we went through that process. Of course, as Grant mentioned, any new generation would be acquired through a competitive solicitation process or a request for proposal process. So to the extent that a developer comes in, can meet the requirements of that solicitation, and has a different location, I think we're open to that.

COUNCILMEMBER BAISA: Okay. I just wondered 'cause I heard it mentioned as part of the plan and all we've heard on the reports is, you know, it's on hold, it's on hold. Okay, thank you very much.

CHAIR GUZMAN: Ms. Cochran?

COUNCILMEMBER COCHRAN: Thank you, Chair.

COUNCILMEMBER BAISA: Thank you, Chair.

CHAIR GUZMAN: Thank you.

COUNCILMEMBER COCHRAN: Thank you. Getting back to the wind topic, are we utilizing all the wind generation here?

MS. SUZUKI: We don't take 100 percent of what's being generated and it's generally in the early morning hours when the demand for electricity is low. So we have...have lowered and changed how we operate our existing generators to integrate more wind energy...and recently we filed a report with the Public Utilities Commission and it's reported on our website that we've shown that we've been increasing the amount of wind that we've accepted by changing our existing operations.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER COCHRAN: But with the upgrade of your battery storage capacity you're talking about will you be able to take on 100 percent of it, and why should we turn to outside sources for energy?

MR. McNEFF: Sure. Well, just to build on what Sharon mentioned. Currently, we accept over 90 percent of it, so it's only a very small portion. But I anticipate that, you know, with the addition of the battery energy storage systems in the plan, we probably can increase that even further.

COUNCILMEMBER COCHRAN: Okay. And I'm just...kinda boggles my mind that it's taken this long for you folks to get up to speed on the battery storage. I mean, I...that's how I live so it didn't take just...my husband to figure it out and we...I know it's just to the two of us, but...and with all the technology and, you know, resources at hand for you folks in the industry, I would expect it to have been online way quicker and, you know, highest technology available to us. So what seems to be the holdup or I mean are you just waiting for the best thing to turn out and that's why, you know, we're still waiting years later?

MR. McNEFF: A couple things. We have had various, I guess explorations into battery energy storage over the years, and many of them haven't turned out so well. Whether the, you know, the supplier couldn't produce...and this is, one difference is, you know, utility scale batteries so they're typically very large battery energy storage systems and they're produced by only a few manufacturers and, you know, frequently those manufacturers aren't around for a long time. So you know, in our battery efforts so far I think we've had several where the manufacturer has gone bankrupt. We've had some where the manufacturer couldn't produce the battery we ordered. So, you know, we've been trying to get into battery energy storage but on a limited way, in a way that sort of didn't put all our eggs in one basket or require a huge capital investment that was a risk for our customers. And then that gets to the, the other aspect of battery energy storage that for, you know, utility scale are large megawatt capacities or the ability to store energy for a very long time it's very expensive and it hasn't really penciled out as being worth it for us.

MS. SUZUKI: Hawaiian Electric recently did a solicitation or a competitive solicitation for batteries so we're closely following, you know, what the results will be and what kind of costs actually come in because, like Mat said, I think till now, utility scale batteries and the cost to actually plan for storage has been very expensive. A couple of the batteries that we included in the plan are not as large and necessarily available for a long period of time so it's used...the plan for the batteries that we designated in our Power Supply Improvement Plan are more for regulation, right. So that way it's not as big and available for such a long time, so we anticipate that the...it's demonstrated in our analysis that it was cost effective. However, like everything else you know we mentioned it's a plan and it's dynamic, right, because to the extent that the technology improves and the costs come down like photovoltaics, right, we're very much interested in the technology and using it on our grid.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER COCHRAN: Okay, and also touching on the biodiesel idea. If I recall, one company that used to be here it was only gonna take them 15 acres to produce all diesel needed for vehicle use, and I just thought if we looked at other acreages to produce enough that you folks could use we wouldn't have to seek outside fuel shipped in. We could just produce it all right here. I mean, was that ever looked at?

MS. SUZUKI: I think we're always interested in, you know, having developers come to us and propose the use of alternative fuels. Our interest is in finding alternative fuels that will help us to lower the cost to customers, because that's what we're hearing that the community wants. So it's similar to other technologies to the extent that locally produced biofuels can be competitive with LNG, we're interested in that.

COUNCILMEMBER COCHRAN: Okay, so no. Anaergia, the contract was touched upon also in the RFD. Are you folks, I know you said your current plant cannot accept, but are you looking into it, have you figured out that no, you're not gonna...I don't know what it takes to convert the plants or whatever the upgrades in order to utilize it, but are you looking at that at all?

MR. McNEFF: Yeah, currently we're just focusing on the gas. All the units we have are liquid fuel. They run on liquid fuel and it's not really cost effective to convert that over to something that can run on pellets if it's even, you know, possible.

COUNCILMEMBER COCHRAN: I believe the company said they could...they could liquefy it. So that could be an option then if it's liquid I guess?

MR. McNEFF: Sure, I mean I think all these things are options. In fact, I think even for the biodiesel the last time we went out for RFP biodiesel suppliers could bid into that. So we're always open for...in fact, we would...I think we would even like it if renewable, locally produced renewable energy resources would become more of our mix.

COUNCILMEMBER COCHRAN: Okay. Okay, very good. And I guess maybe touchy subject, but any elaboration on the disgruntled person that went off the grid here in Wailuku? I don't know the details on that, but is that a person...they just got battery and wind and solar? I know they cut your services to their household or something here in Wailuku the other day? It's on the front page of *The Maui News*.

MR. McNEFF: I don't have any information on that. I mean, other than, you know, the news article and whatnot, yeah.

COUNCILMEMBER COCHRAN: Okay, thank you.

CHAIR GUZMAN: Yes, Ms. Crivello?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER CRIVELLO: In relation to her question, what do you folks foresee in more people becoming their own provider, having their own mini grid or micro grid, whatever you may call it?

MR. McNEFF: So you know the...

COUNCILMEMBER CRIVELLO: So how that will...how does...I mean there's a lotta talk about that that, you know, now that you're mentioning that maybe net metering will be something that you folks would like to eventually phase out. How does, you know, what does the future look like for your utility if more people get off the grid and provide for themselves?

MR. McNEFF: Sure, and thanks for the question, Councilmember Crivello. You know, I did mention the phasing out of net energy metering, but as part of giving customers more choice we're gonna have additional programs that people can participate in. So our hope is that they'll be able to find one of these programs that meets their needs; and, you know, many of them will be sort of addressing the various ways that maybe photovoltaic customers may wanna interact with the grid whether they want to use us as their battery or they want to, you know, have a system that serves only part of the circuits in their house totally independent of the grid. So we are trying to come up with more and more options for photovoltaic; and, you know, maybe any customer generation technologies that going into the future. So that is part of our plan, I hope it is that they remain connected to us in some way and we'll have these programs that will help facilitate that desire.

COUNCILMEMBER CRIVELLO: Thank you.

CHAIR GUZMAN: Any further questions? Mr. White?

COUNCILMEMBER WHITE: Thank you, Chair. I'm not sure I know how to ask this question, but I'm trying to get a comparison between the LNG and your diesel fuel and what we're all most familiar with, the price of gasoline. What is the unit of measure? Is there a small unit of measure for LNG that would be equivalent to the BTUs from a gallon of gas or the BTUs of the low-sulfur diesel?

MR. KANJA: Yes, so the...on a percentage basis I would say that the BTU content in comparison to diesel is about two-thirds, LNG versus diesel. So the actual BTUs per gallon would be about one-third less for LNG in comparison to something like diesel. So hopefully that answers your question. But what we try to do is actually go back as opposed to using on a volume metric, cost on a volume metric basis, we go cost per energy basis because that's...

COUNCILMEMBER WHITE: Yeah, right so BTUs or something like that.

MR. KANJA: Exactly.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER WHITE: So that was my real question is how do the BTUs compare and is that where the cost savings are?

MR. KANJA: Right. The actual cost savings is due to the low cost of the natural gas commodity itself. Actually that's where we are disadvantaged as being geographically isolated. In the mainland gas is actually under \$4 per million BTU, and a lot of utilities will...that's what their fuel cost is. Unfortunately here we have a lot of petroleum fuel, and the petroleum fuel is actually about \$23, \$24 on Maui. So in terms of comparison, in terms of just fuel costs which is the largest component of the electric bill, we're paying on order of magnitude of about five times higher for our fuel here. So it is, we are substantially disadvantaged by our isolation. If we had that pipeline to Hawaii, we would have access to the \$4 gas and our prices would be substantially lower. But unfortunately, we...there's the price of paradise.

COUNCILMEMBER WHITE: Yeah, I don't imagine you spent much time pricing out a pipeline?

MR. KANJA: No.

COUNCILMEMBER WHITE: Thank you.

MR. KANJA: Thank you.

COUNCILMEMBER WHITE: Thank you, Chair.

CHAIR GUZMAN: Any further questions, Members? What about our Administration? Do you have any comments? We'll start with...I guess we'll start with our Mayor's Office of Economic Development, our Energy Commissioner, Doug McLeod. Any comments?

MR. McLEOD: I guess if there are any specific topics I'm happy to try to answer them. If you're asking for general comments, I guess what I would say listening to the presentation today is that you did not receive any information about what drove this plan, and you received no information about quotes from the PUC Order. And I think that some of the questions that you asked were really good, and some of them, particularly the one about geothermal goes to what was really required by the PUC. And they didn't just say go make a plan. This wasn't a voluntary process. This occurred because they rejected the last planning effort. And they were very specific in the words that they used: they said, we want to see actionable items. And so some of these when you talk about geothermal, it is very hard to see how it could possibly fall in that category today. And when we listen to them say well, we're just sort of putting this plan out there for the community, that is not the history of this specific plan. This was ordered by the PUC. They had to answer very specific questions. They did not answer all of them. And one of them was you know, should you change your business model itself? The discussion about LNG here is basically a discussion that says if you keep the business model the same where the utility

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

customer has all the risk of swings in fuel price, but right now LNG looks good because it looks cheaper than oil and the customer benefits. But their plan does not consider options for them to share in the risk. If they're so sure that LNG is a great idea, then there ought to be a scenario where they share in the risk and maybe some upside. Right now they have a course that counts on prices being very low in 2024; and, you know, as we sit here today, that looks like a risky decision and we really think if they're going to have that kind of a plan, there needs to be consideration of who has the risk if the plan doesn't work out. So those are general comments and I don't wanna just sound negative. There's a lot of good stuff in here. It's good to see them moving to 60, 70 percent renewable energy. The work they did in Kihei looking at an alternative to a transmission line was really exceptional. It's the best work I think we've seen from them. It's creative. And so there is some very good stuff in there, but just trying to be honest here, this was not a voluntary process. This is not lists thrown out to the community. This is, they were ordered to answer some questions and they answered most, but not all of them.

CHAIR GUZMAN: Thank you. Do you have any comments, Mr. Kal Kobayashi? This is from the Managing Director's Office, the Energy Coordinator.

MR. KOBAYASHI: Thank you, Mr. Chair. I'll just add one comment to elaborate on what Councilmember Crivello commented on about personal power systems and personal micro grids. I think that's probably one of the biggest factors missing from this plan. That's something that's not easy for Maui Electric to get their hands a hold, get their hands on. But it could totally disrupt their business plan, totally disrupt their operations, decoupling won't save them. People around the country and around the world are talking about photovoltaic systems and batteries taking off, and it would be irresponsible to ignore that resource opportunity and it would be irresponsible not to plan for that. It may not happen, but if it does and there's a good chance that it could, it will change the way we produce power on Maui. It will be radically different with most people producing a lot of their own power, and that's something I think this plan needs to address. Thank you.

CHAIR GUZMAN: Thank you. Do we have any follow-up comments from MECO?

MS. SUZUKI: No, we appreciate the comments from Mr. McLeod and Mr. Kobayashi. We state that the...yes, Mr. McLeod is correct this was in response to orders from the Public Utilities Commission and we had 120 days to put together the plan. So we believe it's a very aggressive plan, aggressive for an electric utility, and we recognize that we need to transform and this is a step forward and definitely can be enhanced with ideas like were mentioned, and we certainly are continuing to look into more detail changes in business models as well as different types of products and services that we can provide to our customers.

COUNCILMEMBER VICTORINO: Chair?

CHAIR GUZMAN: Yes, one more. Mr. Victorino?

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

COUNCILMEMBER VICTORINO: Yeah, thank you. And I wanted to ask Mr. Kobayashi, thank you for your comments and even you, Mr. McLeod, you're mentioning about people being self-sufficient, in other words having their home systems, backup, battery storage and all that. What would something like that cost? Because it sounds like, you know, everyday people not going be able to afford that. So, you know, there's a real world I live in and there's a fantasy world others live in. Let me get real right now. Tell me what that would cost, Mr. Kobayashi, approximately?

MR. KOBAYASHI: Approximately \$10,000 a kilowatt of capacity which is equal to maybe a photovoltaic system almost ten years ago.

COUNCILMEMBER VICTORINO: Okay.

MR. KOBAYASHI: And the price of photovoltaics dropped radically less than half of that now.

COUNCILMEMBER VICTORINO: Just like solar and other things have come down drastically.

MR. KOBAYASHI: So batteries are projected to go along the similar trend. So even though now it may be very expensive but cost effective in some applications right now, over the next ten years you can expect them to come to the point where everybody can afford them. And in addition, there are companies now packaging photovoltaic systems with batteries and offering them on a per kilowatt hour basis. So just as you're buying power from Maui Electric at a unit price per kilowatt hour, you'd be able to buy a home battery PV system under this similar type of arrangement.

COUNCILMEMBER VICTORINO: Per kilowatt hour?

MR. McLEOD: Fifty thousand for a presumed average home. It would...kw system is kind of what the math works out to.

COUNCILMEMBER VICTORINO: Fifty thousand more or less. And even with the drops and all that you know, I mean, people can't even afford to buy homes over here so I don't know what we're dreaming about something else, but that's another story, you know?

MR. KOBAYASHI: Another metric would be the cost per kilowatt hour. So, right now, we pay close to 40 cents --

COUNCILMEMBER VICTORINO: Of kilowatt hour, yes.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

MR. KOBAYASHI: --so for a PV battery system, depends upon the battery system, you can get it under 40 cents a kilowatt hour now, and that's projected to drop down maybe towards 20 cents a kilowatt hour which may be very attractive in ten years.

COUNCILMEMBER VICTORINO: Okay. I just wanted, you know, because again there's everyday people that, you know, just some of the stuff, you know, cannot afford. Even buying solar panels for solar heaters is very, very...is stretching them a lot and yet we have many homes that have that. So just wanted to get some idea so that the public isn't to the impression that oh, this is no problem and that can be done by everybody, just like photovoltaic has not been done by everybody in this community and some of us may not be able to afford it in the future. Thank you, Mr. Chair.

CHAIR GUZMAN: Thank you.

COUNCILMEMBER COCHRAN: Chair?

CHAIR GUZMAN: Last one. Ms. Cochran?

COUNCILMEMBER COCHRAN: Sorry, I beg to differ about the whole cost thing 'cause I as everyone knows here that have heard me speak before being off the grid with solar, wind, and battery didn't cost me \$50,000. Granted I piecemealed it together for many, many years before it was hip and cool to be this way 'cause I cannot get connection via you folks. So we were, me and my husband were forced to live this way. So we're...you know, I don't know the total amount, but it is not that much. So I'm just saying it can happen for everyday people. I did it when I was cocktail waitress at the hotel. So it's not out of reach for everybody. Thank you, Chair.

CHAIR GUZMAN: Thank you. Mr. McLeod, can you send me some questions that you said that some of them weren't answered in written form? And then without objections, Members, I'd like to call my recommendation. I'd like to entertain a motion to not...sorry, without objections, I'd like to defer the matter.

COUNCIL MEMBERS VOICED NO OBJECTIONS.

ACTION: DEFER.

**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

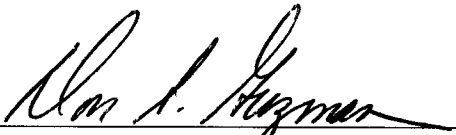
CHAIR GUZMAN: Thank you. I'd like to thank the Administration for coming, Doug and also Kal, and also MECO, thank you for the great presentation. Thank you for Ms. Suzuki, the President as well as Mr. McNeff, and Tsukiyama, Mr. Tsukiyama, as well as Mr. Kanja, and Grant Imamura. Thank you very much for your presentation, and good job. Thank you. Without any further, Members, we'll adjourn the meeting for today.

COUNCIL MEMBERS VOICED NO OBJECTIONS.

CHAIR GUZMAN: Thank you. . . . (*gavel*) . . .

ADJOURN: 3:09 p.m.

APPROVED BY:



DON S. GUZMAN, Chair
Economic Development, Energy, Agriculture,
and Recreation Committee

ear:min:141021

Transcribed by: Carolyn Takayama-Corden

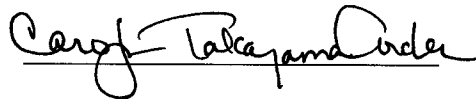
**ECONOMIC DEVELOPMENT, ENERGY, AGRICULTURE,
AND RECREATION COMMITTEE**

Council of the County of Maui

October 21, 2014

I, Carolyn Takayama-Corden, hereby certify that the foregoing represents to the best of my ability, a true and correct transcript of the proceedings. I further certify that I am not in any way concerned with the cause.

DATED the 10th day of November, 2014, in Makawao, Hawaii



Carolyn Takayama-Corden