

**CLIMATE ACTION AND RESILIENCE COMMITTEE**  
Council of the County of Maui

**MINUTES**

**January 6, 2020**

**Council Chamber, 8<sup>th</sup> Floor**

**CONVENE:** 9:06 a.m.

**PRESENT:** VOTING MEMBERS:

Councilmember Kelly Takaya King, Chair  
Councilmember Shane M. Sinenci, Vice-Chair  
Councilmember Tasha Kama (in at 10:27 a.m.)  
Councilmember Alice Lee (out at 10:17 a.m.)  
Councilmember Tamara Paltin  
Councilmember Keani N.W. Rawlins-Fernandez (out at 11:44 a.m.)

**EXCUSED:** VOTING MEMBERS:

Councilmember Riki Hokama

**STAFF:** Kasie Apo Takayama, Legislative Analyst  
Chester Carson, Legislative Analyst  
James Forrest, Legislative Attorney (*sitting in gallery*)  
Stacey Vinoray, Committee Secretary

Zhantell Lindo, Council Aide, Molokai Council Office (via telephone conference bridge)  
Denise Fernandez, Council Aide, Lanai Council Office (via e-mail, no internet service)  
Mavis Oliveira-Medeiros, Council Aide, Hana Council Office (via telephone conference bridge)

**ADMIN.:** Richelle Thompson, Deputy Corporation Counsel, Department of the Corporation Counsel  
Herman Andaya, Emergency Management Administrator, Maui Emergency Management Agency  
Dr. Anthony Joyce, Civil Defense Staff Specialist I, Maui Emergency Management Agency

**OTHERS:** Chana Makalea Dudoit-Ane, Maui County Office of Economic Development  
Kelson Poepoe, Hui Malama O Moomomi  
Nick Drance, The Maui Miracle  
Sean Lester  
Hannah Bernard, Executive Director, Hawaii Wildlife Fund  
Kevin Watkins, Founder, Maui Sustainable Solutions  
Tapani Vuori, General Manager, Maui Ocean Center

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Susan Bradford  
Vincent Mina, Hawaii Farmers Union United & HDOA  
Jasee Law

Rita Ryan, Chair, The Climate Reality Project  
Timothy Botkin, Program Coordinator, University of Hawaii Maui  
College, Sustainability Science Management  
Jeff Stark, Publisher, *Our Environment*

(10) additional attendees

**PRESS:** *Akaku: Maui Community Television, Inc.*

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CHAIR KING: ...*(gavel)*... Okay. Members, will the Climate Action and Resilience Committee meeting of January 6, 2019 [sic] come to order. It is 9:06. And I apologize for the...starting a little bit late, we were waiting for the clerk's office to get set up to receive testimony. So, if anybody wants to testify this morning, they're out there now, you can sign up with the...in the lobby. And may I please request that everyone disable their cell phone ringers and other noisemaking devices, and I will do the same. Okay. Welcome to the first meeting of Climate Action and Resilience. My name is Kelly King. I'm the Chair. I'd like to introduce my Vice-Chair, Mr. Shane Sinenci, who also chairs the Environmental, Agriculture [sic], and Cultural Preservation Committee. We have Alice Lee, who's the new Chair of the County Council. We have Keani Rawlins-Fernandez, who chairs the Economic Development and Budget Committee. We have Ms. Tamara Paltin, who chairs the Planning and Sustainable Land Use Committee.

COUNCILMEMBER PALTIN: Aloha kakahiaka, Chair.

CHAIR KING: Aloha. And we...absent is Tasha Kama, and Riki Hokama is excused. He's got some car problems that he's working on. So, we did hear from him. I just wanted to give some remarks this morning since it's the first day. I'm excited to be here as your Chair and the first meeting of the Climate Action and Resilience Committee. Throughout the course of this year, I hope this Committee will answer the call to action we're hearing from climate experts and activists around the world, and especially from Maui citizens. Collaborating with all who understand the urgency, we will address issues related to sea level rise, shoreline erosion, managed retreat, deforestation, drought, wetlands, carbon emissions, pollution, energy, and other related contributors to climate change. My goals for this Committee are to act to help prevent further damage to our environment and atmosphere, assess and create solutions where plausible for the damage that has already been done, and to propose additional actionable strategies to do our part to lower Maui's carbon footprint and mitigate our contribution to climate change. To accomplish these goals, we need to...and...we need to also empower our community to take an active role in government, be it through testimony, serving as a resource in our Committee, or building partnerships with the organizations and individuals who share these goals. I

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thank Councilmembers again for creating this important Committee and allowing me to take the lead on such critical topics. We will be effective only if we work as collaboratively as possible, knowing that many of the issues I mentioned will cross over with other committees. We have much to do and it will take a collaborative effort. Step one was recognizing that we are in a climate emergency, which we did on December 20<sup>th</sup>. And now, we are focusing on taking action. We welcome...we have seven Voting Members of this Committee. We also welcome whenever possible our Non-Voting Members, Mike Molina and Yuki Lei Sugimura. Today, we have with us from the Administration, Mr. Herman Andaya, Emergency Management Administrator of Maui. Thank you for being here, Mr. Andaya. Dr. Anthony Joyce, who is Civil Defense Staff Specialist I, Maui Emergency Management Agency, thank you for being here. We have our Corporate [sic] Counsel, Richelle Thompson. Thank you for being here. Other representatives will be...we have a panel of experts that we'll introduce a little bit later as our second panel, and these are experts in climate change and policy. We have our Staff, Kasie Apo Takayama, our Legislative Analyst. We have Stacey Vinoray, our Committee Secretary. We have Chester Carson, our Legislative Analyst as well. And our District Office Staff as usual are Mavis Oliveira-Medeiros from the Hana District Office, Denise Fernandez from Lanai District Office, and Zhantell Lindo from the Molokai District Office. Okay. So, we're going to go first to testimony, and we'll check with our District Offices. Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Chair, there's no one in Lanai District Office signed up, but Hana and Molokai might have testifiers.

CHAIR KING: Okay. So, would you like to go through the testimonial requirements first, and then we'll call the testifiers.

MS. APO TAKAYAMA: For individuals testifying in the Chamber, please sign up at the desk, just outside the Chamber door. If testifying from one of the remote testimony sites, please sign up with our District Office Staff. Testimony will be limited to the items on the agenda today. In accordance with the Rules of the Council, each testifier will be allowed to testify for up to three minutes per item. There's only one item...two items on today's agenda. When testifying, please state your name and the name of any organizations you may be representing. In accordance with the Rules of the Council, if you are a paid lobbyist, please inform the Committee. We've established a connection to the Council District Offices.

CHAIR KING: Okay. Thank you. And I'm going to go ahead and ask you if you can call our first testifier in the Chambers. And we'll go through the first three folks 'cause I know folks have been waiting, and then we'll go back to our District Office. Thank you.

MS. APO TAKAYAMA: The first person to testify in the Chamber is Chana Makalea Dudoit-Ane. She'll be testifying on CAR-1(2).

**. . .BEGIN PUBLIC TESTIMONY. . .**

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MS. DUDOIT-ANE: Aloha.

CHAIR KING: Aloha. Thank you for being here.

MS. DUDOIT-ANE: O wau o Chana Makalea Dudoit-Ane. No Mililani mai au o Kahului, Maui. Noho ana o Environmental Coordinator, Maui County, Office of Economic Development. Aloha.

UNIDENTIFIED SPEAKER: Aloha.

MS. DUDOIT-ANE: I'm Chana Ane, and I'm the Environmental Coordinator for Maui County in the Office of Economic Development, and I wanted to speak on both topics on the agenda. As always, I always have handouts for you guys. So, if you want them, I have some for you. So, I just wanted to say mahalo for establishing this Committee. How awesome is that? I think it's the first time ever in this whole State that we've had a Council Committee established for climate action, not just climate change. And I think it's really important, and I'm super stoked that you guys actually kept resiliency [sic] in your Committee title. And so, resiliency to me is the fun part of climate action. And this is where all the things actually happen. And so, on your packet, the first page is...it's all the joint...all the different four counties. We have an environmental coordination group that we've established to tackle climate change issues, resiliency in community. And so, this is our definition of what resiliency means to us, and it's to adapt, survive, and thrive to different stresses and shocks to our system. So, how do we as a community be able to get along and work together and support each other when there is shocks and stressors to our system. And so, this to me is the definition of resiliency and how we can move forward as a community. And so, how do we...so I guess for me, this Committee, I would love to see it focus on that community involvement and community aspect. And so, I'm glad to see that there's a lot of community groups here that are going to be testifying today and that are...have a panel. And so, with community involvement, we should really focus on place-based solutions and indigenous solutions to climate change, and that's what makes Hawaii special, right, like that's how we can be a leader and how we can show the world. We are an island community. We probably contribute so little bit to actual greenhouse gas emissions, but we are at the frontlines of this climate crisis. And mahalo for having the resolution for the climate emergency. And really how do communities use indigenous solutions to climate change and really showcase what we can do, what our indigenous people did before. I've...gave a presentation in Molokai at the climate summit that two of our Councils [sic] were there. And I really highlighted that some of the indigenous solutions to climate change are loi kalo. So, loi disburse water. They settle out sediment before the...there's flashfloods and increased...I have two agenda items I'm going to be talking about. So, hopefully, I can get more time. And so, and...so, besides all of the environmental impacts that loi kalo help with climate change, we also feed our people. Loi kalo contributes to food resiliency as well. So, mahalo for keeping the resiliency part in there. And then I also wanted to highlight that as the climate emergency resolution, the key part in there for me was an equitable transition. And so, not just, you know, how do we adapt to climate change, but how can be...we be equitable, how can we target communities, vulnerable

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communities and say, you know, it's okay to give vulnerable populations a step-up. We've been doing this a long, long time, creating policies that only help the people who can afford it. And then the ones that can't are the ones that are getting stuck with the bills. And so, if we can keep that in mind that while we create policies, that we allow ourselves to think about equitable transition and the people who can't afford it, can't afford to relocate, can't afford to put PV, solar panels on their homes, can't afford to put grey water infrastructure, and save on their water bills. And then, so I also wanted to talk about the All-Hazards Mitigation Plan [sic]. So, the Administration wants to integrate our climate action plan and community outreach, or our resiliency strategy into the All-Hazards Mitigation Plan [sic]. So, maybe our Energy Commissioner and Director can speak about that a little bit later. Thank you.

CHAIR KING: Okay. Thank you for being here. And I have a question for you. Because I do plan to bring you into this Committee as a resource, and maybe you can do the full presentation to us at a later date. But also, I wonder if you could be, you know, just part of the...the goal of this Committee is to bring the community together and do a partnership. And so, if you could help us with...you know, we've already reached out to a lot of the organizations that have shown up today. And if you could help us with putting that collective list together so that we can see who's doing what. I think that's one of the goals is throughout our County, there are a lot of organizations doing parts of climate action and resiliency, and we need to kind of collectively figure out who's doing what and start working hand in hand. So, I'm hoping you'll be a major part of helping us put that --

MS. DUDOIT-ANE: Yes --

CHAIR KING: --together.

MS. DUDOIT-ANE: --please. Thank you.

CHAIR KING: Okay.

MS. DUDOIT-ANE: And I also really like to...your opening statement about working collaboratively, I know that this Climate Committee does overlap with a lot of the other committees that we have already, but I think that's the best part of it is that we can have a focused view on how climate change does affect human, housing, and concerns, and natural resource management. And I know it's probably a little extra step and maybe more red tape about addressing these issues and having another Committee meeting, but it really does give a new lens to these issues and hopefully, we can work collaboratively and have a smooth transition and not like extra work for all of us.

CHAIR KING: Thank you. Any other questions? Ms. Paltin?

COUNCILMEMBER PALTIN: Thank you, Chair. Thank you, Ms. Ane, for being here, and I really appreciate your mana'o. I just was, you know, with the...what you were saying about loi kalo, I wholeheartedly agree, and I just was wondering, you know, because I

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think last month, within the last couple months in Honokohau, they had their water shut off that went down the stream that feeds all the loi kalo for at least five days. And no reason was given, no explanation, no like heads-up we're going to shut off the water. And I just was wondering if your office, you know, in the perspective of how important these types of things are, like what a devastation that has to the people that are actively farming their loi kalo. And, you know, if the farmers were to go up and reopen the taro gate by cutting the locks, that would be criminal property damage. But to withhold the water from the loi kalo, in my mind, that is criminal property damage. So, just wondering if there's any plans to address those types of actions.

MS. DUDOIT-ANE: Mahalo for your question. I think this points to a bigger issue in that who controls the water, who is...a lot...I think Kapalua Water Company just got sold to a mainland company. It is a California-Hawaii water company. So, is that even...should that even happen, is it okay to sell out our natural resources and water rights to outside companies? And I guess in America, it's okay 'cause it's free commerce and all of that stuff, but really in Hawaii, we should be thinking about those things. And talking about indigenous solutions to climate change, wai, water was like our main source of food and wealth. Waiwai, was like you say water twice and that's like saying this is wealthy, you were wealthy because you had a lot of water to feed your people. And then kanawai is the law of water. And so, across the world, we're fighting. We...we're going to probably start the next world war on water. And so, we have so many different political issues tied to water. So, I mean that's the center of I think every issue around the world. So, really, we should be paying attention to those things. I think the --

CHAIR KING: Ms. Ane --

MS. DUDOIT-ANE: --next...

CHAIR KING: --I didn't want to cut you off but I got...we've got other people, but we do have a meeting this afternoon. It's the Water, Infrastructure, and Transportation Committee. So, maybe we can also pose those questions, Ms. Paltin, this afternoon because those are where the water rights issues I think will come up too.

MS. DUDOIT-ANE: Yeah. Sure.

CHAIR KING: But did that...do you need more answer than that, Ms. Paltin?

COUNCILMEMBER PALTIN: No, I just hope that we're all working together towards that same goal. And I don't have any solutions from my end, but if you have some from your end, I'd be open to working together.

MS. DUDOIT-ANE: Yeah.

CHAIR KING: Thank you. Thank you very much for...yeah, Mr. Sinenci, you have a --

VICE-CHAIR SINENCI: Yeah.

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CHAIR KING: --question?

VICE-CHAIR SINENCI: Thank you. Thank you, Makalea, for being here and for being here so early too.

MS. DUDOIT-ANE: Got to wait in line to make sure --

CHAIR KING: I know.

MS. DUDOIT-ANE: --you know.

VICE-CHAIR SINENCI: Yeah, you were first in line. My question was, and you guys have been doing great work and established yourselves upstairs in the Administration office, are you...do you have your own department or you're under another department?

MS. DUDOIT-ANE: I'm in the Office of Economic Development, and hopefully with your Committee and with the Mayor's support for creating our own Office of Climate Change, hopefully, we can establish that and figure out how that political system and political body should be set up. So, I'd be very happy to continue those conversations.

VICE-CHAIR SINENCI: Thank you. Looking forward to working with you on that. Thank you.

CHAIR KING: Okay. Thank you.

VICE-CHAIR SINENCI: Thank you, Chair.

CHAIR KING: So, I'm...that...I heard you say the Mayor supports. So, the Mayor is supporting the...a new Office of Climate Change?

MS. DUDOIT-ANE: To my knowledge, yes.

CHAIR KING: Okay. Okay. Thank you. Thanks for being here.

MS. DUDOIT-ANE: Thank you.

CHAIR KING: Okay. Looks like we temporarily lost connection to Granicus. Does everybody still have...all the Councilmembers?

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

CHAIR KING: Okay. We'll continue with testimony, Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Thank you, Chair. The next testifier is Kelson Poepoe, to be followed by Nick Drance.

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MR. POEPOE: Aloha and good morning.

CHAIR KING: Aloha.

MR. POEPOE: My name is Kelson Poepoe. I come from Molokai and here to represent Hui Malama O Moomomi. It kind of catch me off-guard. But I...hopefully I can share some stuff that I experienced in my lifetime and stuff that I continue to work on, especially with the ocean. And some of the stuff that I have to deal with as far as climate change is concern is all our erosion problem that I guess everybody experiencing right now with the super high tides. And it's not just erosion itself, it's...a lot of it is about destroying habitat. So, yeah, I cannot speak as fast as Makalea. So, I might have to need five more minutes, but there's a lot to talk about. And I know in three minutes, I cannot even scratch the surface. But anyway, the other stuff that I'm dealing with personally at my place down in Moomomi is plastics, you know, trash, trash on the beach. Like I said, destroying habitat, so stuff that we don't see, we only see on the surface. A lot of stuff is buried under the sand. A lot of that trash is on the bottom of the ocean. So, our habitat as a whole is being destroyed, not just in a column but on a benthic side of the landscape, on the land side, the shoreline, very destructive. The answer, I don't know. There's plenty answers, and a lot of the answers is kind of like put us in a bind because we can get out there and clean them up, and it's just going to come back. So, government is stuck in a position where you guys have to make some really good choices in the future, and hey, I'm there. I'm always ready to help and whatever I can do, I'm available, just let me know. I know Keani working on that too. Yeah, just call me up. I can help out, yeah. Mahalo.

CHAIR KING: Mahalo, Mr. Poepoe. Any questions for the testifier? Can we...Mr. Poepoe, we have one question from...we have two questions. First is Councilmember Rawlins-Fernandez.

COUNCILMEMBER RAWLINS-FERNANDEZ: Aloha, Mr. Poepoe. Mahalo for testifying and flying over from Molokai this morning. So, in the packet that we received from Ms. Ane, it has some information about Hui Malama O Moomomi. It has about ten points. So, I wanted to make sure that the Councilmembers saw that since three minutes is totally insufficient to hear about all the good work that you're doing on Molokai and beyond. And then after that page, there's another page from...to Mr. Anderson at Division of Aquatic Resources requesting the designation of Moomomi, North Coast of Molokai, a community-based subsistent fishery area. Do you believe that, you know, and what Ms. Ane was saying that in looking toward indigenous practices that this type of designation could help with climate change adaptation and resilience?

MR. POEPOE: Of course. I think a lot of times, we tend to forget that, you know, nature is part of...a big part in a whole...the whole problem that we create, yeah, and we forget that we need to address a lot of these stuff that nature is providing for us, but we overlook all that. A lot of it we shove them under the rug and forget about it. It's

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almost like the water situation, you know, you take away the water, they're not going to grow taro. So, there's a lot of stuff that nature provide for us already. I use that as my way to find answers, not to change nature around, yeah. I try to keep everything in its natural state. And things that need changing, hopefully, we make very good decisions about that because sometimes we cannot unchange it.

COUNCILMEMBER RAWLINS-FERNANDEZ: Mahalo, Uncle Mac.

MR. POEPOE: Okay.

CHAIR KING: Mahalo.

COUNCILMEMBER RAWLINS-FERNANDEZ: Mahalo, Chair.

CHAIR KING: Mr. Sinenci --

VICE-CHAIR SINENCI: One more.

CHAIR KING: --do you have a quick --

VICE-CHAIR SINENCI: One more --

CHAIR KING: --question?

VICE-CHAIR SINENCI: --Uncle Mac.

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . . questions?

VICE-CHAIR SINENCI: Thank you. You're a good testifier. Mahalo for being here from Molokai. You know, one of the...thank you...and thank you for bringing them up, plastic pollution. You know, one of the things that the big questions for climate change is what's going to be our reaction, and we already know the science that comes with climate change, so our reaction to climate change. And so, I wanted to bring up about the plastics because my Committee is looking at limiting some of the plasticware, the usage in our County. And so, I just wanted to ask if Hui Malama O Moomomi would support something like that if we did bring it up to the County?

MR. POEPOE: Yeah, of course.

VICE-CHAIR SINENCI: Yeah, it's just I know we get a lot of plate lunches and we use a lot of that plasticware. And if people can move just one of the small steps that we can do in the schools or at home, that will keep that from getting into our ocean. So, mahalo for your support on that.

MR. POEPOE: Mahalo.

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CHAIR KING: Mahalo. Mahalo for coming all the way from Molokai. We appreciate it. I'm sure we will be in touch. Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Chair, the next testifier is Nick Drance, testifying on behalf of The Maui Miracle, to be followed by Sean Lester.

MR. DRANCE: Aloha. Good morning, Committee Chair --

CHAIR KING: Good morning.

MR. DRANCE: --Councilmember Paltin, Rawlins-Fernandez, Lee, and Sinenci. Thank you for showing up at this very important meeting for your constituents, and I appreciate your regard for them in doing so. Maui is one of the greatest blessings that I've ever been gifted with in my life. I learned at a young age to be grateful for my blessings while I had them. Now, it's become more of a matter of preserving this sacred, special place I feel so blessed with. The previous testifier so eloquently talked about the importance of nature, which I consider one of the fundamental sacred aspects of Maui. So, it's literally about the ability to sustain our way of life. We have no choice but to be mindful of that in every decision that we make. Preserving the island against the fundamental challenges our land and waters have been facing for years is no longer an esoteric thing. We already experienced higher summer air and ocean temperatures. *The Maui News* reported that we broke temperature records 84 times between April and November last year. We continue to experience drought conditions, and winters are now colder and wetter. Our water distribution system can't handle the amount of rain we experience, perhaps even this year, not to mention groundwater contaminating our beaches. Our 12,000-plus cesspools are like a smoking gun. We've been spared from hurricanes in the past years but that could change. This is a radically new world. Growth and expansion are no longer fashionable. Long-term survival is. In business, I learned from 9/11 and the Great Recession in particular, that traditional rules that we used to depend on no longer exist. The unimaginable has happened so many times. Today in business, it's about applying new ways of seeing things in order to maintain a strong revenue stream. Here on Maui, only new ways of thinking can guarantee our way of life. We ask you to make environmental challenges a priority because those issues relate to things like safe drinking water, and even having enough of it to go around. We need to take care of our food supply, how we handle everything related to water. Overall, I ask you to prioritize this long-term well-being of our residents, which does not include expansion to accommodate others. We must take care of ourselves first. We ask you to remember that anything we build today is based on an obsolete mainland business model that stretches resources. It makes the tough challenge of sustaining our way of life even more tougher and costlier than it already is now. I hope that a preliminary 30-year budget projection will be created and distributed. When a final one is made, we can really see what our financial obligations will be and budget for them. But hurry up, two sentences, clock is ticking faster. We're a tiny fragile island, let's remember that please. And I thank you for all of your aloha and wish you wisdom and good decisions in the coming years. Mahalo.

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CHAIR KING: Mahalo, Mr. Drance. We have one question from Councilmember Paltin.

COUNCILMEMBER PALTIN: Thank you, Chair. I just was wondering when you talk about like a 30-year budget protection...projection, if you meant something like putting an overlay of the SLR-XA, sea level rise, and taking out the property tax values of all those coastal properties as revenue stream for the County?

MR. DRANCE: It's such a broad subject, and yes, actually, I hadn't thought about the impact on the absence of property taxes for homes along the coast that will need to be relocated or evacuated. I had more in mind that the effects of climate change, which I have talked about for a couple of years are so broad even like I say the cesspools for example, with more rainwater, that's going to make that wastewater seep down further, whether it's near the coastline or Upcountry. So, my intention in saying a 30-year budget was to take all of these things into account. You're talking about a absence of a revenue sources. I say I hadn't thought about that, but there are so many other additional expenses that are going to go under the tens of millions of dollars to the point where we have to start budgeting for this now and start spending that money now because it's going to get to the point where it's so huge, it will be such a financial crisis for our finances that we're going to be in big trouble.

COUNCILMEMBER PALTIN: Yeah --

MR. DRANCE: Unless we plan --

COUNCILMEMBER PALTIN: --because --

MR. DRANCE: --for.

COUNCILMEMBER PALTIN: --majority of our coastal properties bring in the highest revenue. And --

MR. DRANCE: Right.

COUNCILMEMBER PALTIN: --if they're no longer there, then we won't be having --

MR. DRANCE: Right.

COUNCILMEMBER PALTIN: --the money to --

MR. DRANCE: Right.

COUNCILMEMBER PALTIN: --address the additional problem.

MR. DRANCE: That's right. And that makes the urgency of this...and it has to be a 30-year preliminary budget first because a final budget is going to take a couple years probably. So, you have to have a preliminary one first just to get a handle, grasp on the magnitude of it. So, I ask that you do that, and this really --

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COUNCILMEMBER PALTIN: Thank you.

MR. DRANCE: --needs to be a big --

CHAIR KING: Thank you, Mr. Drance.

MR. DRANCE: --financial budget component.

CHAIR KING: Thank you.

MR. DRANCE: All right. Mahalo.

CHAIR KING: Okay. Ms. Takayama Apo [sic]? Well, did we go to the...we still have no testifiers in the District Offices? Okay.

MS. APO TAKAYAMA: There are no testifiers at the District Offices.

CHAIR KING: Okay.

MS. APO TAKAYAMA: The next testifier in the Chamber is Sean Lester, testifying on CAR-1(1) and 1(2), to be followed by Hannah Bernard.

MR. LESTER: Aloha kakou. Madam Chair and Members, first of all, thank you for setting this up. I believe that the Chair and the Vice-Chair are the two quintessential people to be leading this. Hana is one of those extraordinary places where on, at least on Maui nei, there is an understanding and awareness every day. I lived Keanae for years, and I know how that understanding and awareness of the sea and what's happening with the kalo and the water, it's all kind of a microcosm what's been happening within our islands. There are two words that I really want to bring up, or two concepts. One is ignorance and the other is enlightened intent. We have an ignorance as a...in a way of a slow dissolving change or dissolution of our environment as we know it. We've...we have every day where we're dealing with the crisis of our children, and work, and one thing or another, and slowly, slowly these other things are marching towards an inevitable change. And the changes that are being shown overall, you're taking a look at what was supposed to be a climate change happening over a 100 years, they're now looking at it being over 40 years. And the one thing you find about all of the extraordinary numbers of models that we see is not a change towards well we've made a mistake and there's more time, it's always oh my God, we don't have as much time as we thought. So, this is not a linear change that's happening, it's an exponential change. So, right now, they're looking at a 40...within 40 years having up to a 2-foot rise in our oceans. But what I would propose is the fact we're probably looking closer to 25 years and up to a 3-foot change as we start looking at the demographics overall with the models. So, what does that mean? It means that somewhere along the way, we have to find a place where we put a stake and the awareness of the Council, whoever the Mayor happens to be, and the people here of the type of traumatic changes that are going to be happening here on the island. One

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of the things too is we're a small island in the middle of nowhere. As all of these massive change starts happening in Honolulu and Oahu, mainland, and internationally, the ability to bring in the type of understanding and awareness, and the materials necessary to help us deal with what we're going to be working with is going to be eaten up by the rest of the world, and we're just a tiny little island in the middle of nowhere. So, I would highly recommend that we take a look at a date certain and work our way back, and then keep changing that based on model. A few years back--I was hoping that Councilmember Hokama would be here--in 1998, we had an Alternative Energy Sub-Committee that we put together. And through that, we helped to change the dynamic process of the County. That's where a lot of our environmental awareness came from. And the same thing on the State level...I have two, two points. Thank you. On the State level, we were able to go to renewable 2020...20 percent by 2020. Now, we're at a 100 percent renewable. So, this...there's a possibility of committees and action committees off of that to be seminal in change. We had a cruise ship task force I was part of years ago, and that helped to change the entire awareness. It's supposed to last for three months, it lasted for nine. At the end of it, we wrote up 400-page report that was used all throughout the United States. So, your capacity here, they're amazing people that you can call in from the community that are willing to give time. I'm willing to give whatever time you want. I'm totally committed to this, to each one of you to help. You know, I'm a nuclear engineer. I've got decades of work, and this is the first time I've stepped forward to really be part of a Council thing since 2000 because I see how important this is. And there's no way I can cover where all the technical aspects are. And the wonderful thing is there are so much research or so many resources from the State, now in the County as well. If we have an ability to weave this together, we can come up with action policies. And Councilmember Paltin is on the money. That's one of the things that I also was going to bring up, because as you look at the loss of our base, we have a...we have an endemic problem that's systemically going to get worse. So, how do we capture as much monetarily as we can now to actually put towards what's actually a crisis that's coming so we can try to, in an enlightened state, take care of that. So, I've got tons of data here but I'm not going to bore you with details of data. I'm saying in...as a IAAA member, as a senior engineer, I'm just saying I know where these problems are coming from, and please let us come forward to help you. There are so many people that can give you incredible information. Let...give us the opportunity to help you. And that's all I really have to say, but thank you so much for doing this. This is seminal. I think this is going to be one of the nexus points of the entire, you know, many decades on this Council, what you're doing right now. So, thank you for being here. Okay.

CHAIR KING: Mahalo. Question, Mr. Sinenci?

VICE-CHAIR SINENCI: Yeah, real quick. Thank you, Mr. Lester, for --

MR. LESTER: Sure.

VICE-CHAIR SINENCI: --being here. So, if this Committee created some kind of a community group, would you be interested in being part of that --

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MR. LESTER: Absolutely.

VICE-CHAIR SINENCI: --\_\_\_\_? Yeah.

MR. LESTER: Whatever I can do to help, I'll...

VICE-CHAIR SINENCI: Awesome.

MR. LESTER: Anything at my disposal, including --

VICE-CHAIR SINENCI: Thank you.

MR. LESTER: --my institute, anything else I work with, I'll bring to this Committee to help you with. Absolutely.

VICE-CHAIR SINENCI: Appreciate that. Thank you.

MR. LESTER: No problem. No problem.

CHAIR KING: Mahalo. Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Thank you, Chair. The next testifier is Hannah Bernard, testifying on behalf of Hawaii Wildlife Fund. She'll be testifying on both agenda items, to be followed by Kevin Watkins.

MS. BERNARD: Aloha, Madam Chair.

CHAIR KING: Aloha.

MS. BERNARD: Aloha kakahiaka, Committee Members. Thank you so much for creating this Committee for recognizing this issue and giving it the urgency that it so desperately warrants. Hannah Bernard, Executive Director and co-founder of Hawaii Wildlife Fund, dedicated to the recovery and thriving health of our native wildlife, focus in the ocean. This could not be more important to the work that we do, and the work that we do is really very much focused on recovery of our habitats because we are losing habitat. And I believe in your panel, you will have some expertise talking about the effects of global warming on the ocean, specifically. So, I don't need to really go into detail on that, nor do I have time, nor the expertise myself, but I'm going to provide you with an *Issues Brief* from the IUCN, the International Union and the Conservation of Nature [sic]. I'd like to provide this to the...

CHAIR KING: Thank you.

MS. BERNARD: It's just a synopsis of the major threats to the world's ocean. And as all the previous testifiers have noted, and I just have to say ditto to absolutely everything that everyone has said before me. We are the epicenter. Hawaii is the epicenter. Our island State, island nation, we are in the middle of the biggest, widest, deepest ocean

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on the planet, and we are affected by climate change right now by climate crisis. So, our nonprofit has been working to protect our Native Hawaiian hawksbill sea turtles since 1996. And we've had to move their nests from the nearshore waters further back into the higher vegetation line now the last, not last summer but the two summers in a row before that, because the king tides, like Uncle Mac was mentioning the super high tides, the king tides or the spring tides that we're having that are coupled with the major changes to our storm tracks and our intensity of our storms, are leading to major inundation, massive flooding on the coast, and that's taking away our beaches. So, not just the gradual sea level rise, but we're having catastrophic shoreline destruction from these events from our king tides coupled with storm events that are exacerbated by the major changes to the ocean, which include the warming of the ocean. Though I don't know if most people realize the impacts to our greenhouse gases, the heating of the atmosphere are being...they're all being held in the ocean. More than 93 percent of the heat generated by our greenhouse gases is being held in our ocean. Our ocean has actually protected us from feeling the consequences of our greenhouse gas emissions more than we actually should be. So, the heat in the ocean has consequences. There's massive heat waves rolling through the ocean around the world and it's causing coral bleaching events worldwide. And here in Hawaii, we were impacted this past summer when areas where there were more than 60 percent areas bleached out. And not all the corals die. So, they are beginning to recover, I'm happy to say, and I did mention that last time I was here. We're starting to see some recovery but we have lost a lot. We lost more than 50 percent of some of our coral...cauliflower corals. In certain areas, 98 percent from the 2015, '16 bleaching episodes from the major warming of our ocean. So, there is no time to waste, and we do need to work with our community, and with our indigenous wisdom and the loi kalo are really important. We work with Uncle Oliver Dukelow in Kahakuloa Valley, bringing youth there every single year all summer to help restore the terraces and do all the work in the kalo there because it is a natural system to reduce the raging stream flows that are occurring from these major rain events from our storms that are exacerbated by global warming. So, it's a very ancient and wise way of reducing the stream flow on the coral reefs offshore. So, we're very supportive of anything that can be done to support the stream flow recovery and water to the taro farmers. It's essential for our health and we can show the world how to manage the increased rainfall that might be occurring in some times of year, and manage it with wisdom, with indigenous wisdom. Also, we need to change our usage of our injection wells and our wastewater treatment plants. They are too close to the coast. They are placed close to the coast to protect drinking water assets, but the truth is they will be taken out. As sea level rises and storm events occur, they will be actually in the impact zone, and they will cause major damage when they get hit by these major storms and major erosional events that we're already experiencing. So, to the extent that the planning can address moving our infrastructure, not just the houses on the shoreline but some of our very important features like our wastewater treatment plants, which in some cases, we have injection wells tens of meters from the water, from the ocean. And there isn't any way that those will stay contained with these major changes and major events that are occurring with the storms and the king tides. Is that first time or second time? I'm already past, oh, into the...my second?

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CHAIR KING: Thirty seconds.

MS. BERNARD: Okay. So, in summary, with the projected sea level rise even at the lowest possible level, we're going to lose the nesting habitat for our sea turtles. We've already lost one of the most important nesting habitats in the northwestern Hawaiian Islands to Hurricane Walaka, which is a huge change in the hurricane tracks that are occurring now because of the change in water temperature. We are facing major change and it's now. So, thank you for the --

CHAIR KING: Thank you.

MS. BERNARD: --work that you're going to do. Mahalo.

CHAIR KING: Thank you, and thank you for being part of the community that's working on this. We'll have you back again I'm sure. We have a...one question for you from Councilmember Paltin.

COUNCILMEMBER PALTIN: Thank you, Chair. Thank you, Ms. Bernard, for being here.

MS. BERNARD: You're welcome.

COUNCILMEMBER PALTIN: You know, because of your extensive knowledge of the state of the corals and I just was wondering, you know, with the climate action and all, do you have a opinion about protecting our mother coral off Olowalu from future development?

MS. BERNARD: I sure do. So, the one thing...the biggest recommendation that's coming from the scientific and the conservation community around the world is to protect what we can locally. Because we have these major changes...the ocean warming isn't going to reverse anytime soon. It will take a long time for the ocean to cool down again even if we stopped our greenhouse gas production now. So, to the extent that we can fix things and take care of things locally like sediment runoff, coastal development, injection well emissions into the ocean, everything that we have the power to do, we need to get on it and jump on it, and stop coastal development that might be destructive to places like Olowalu, which are considered one of the most important sources for other coral reefs around that side of Maui, even --

COUNCILMEMBER PALTIN: So, like --

MS. BERNARD: --all the way to Lanai.

COUNCILMEMBER PALTIN: --no more cesspools or septic over there and no sprawl development would be your recommendation?

MS. BERNARD: I've...that would...that'd be my absolute agreement that that will be a huge mistake, huge mistake.

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COUNCILMEMBER PALTIN: Thank you.

CHAIR KING: Thank you, Ms. Paltin. Thank you, Ms. Bernard. Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Thank you, Chair. The next testifier is Kevin Watkins, testifying on behalf of Maui Sustainable Solutions, to be followed by Tapani Vuori.

MR. WATKINS: Good morning, everybody. I'm Kevin with Maui Sustainable Solutions. I'm very grateful to be here. Mahalo for creating this Committee and for everything that this Committee and the other committees...the things they overlap on. So, a big thank you, and thank you to our other speakers that came before. They put it so eloquently some of the beliefs and values that I have as well. And so, with the limited time, I don't want to spend too much time in gratitude 'cause I could write a novel. I'm also grateful to be the only millennial in the room. Part of this Committee is to get the youth involved, and I'd like to think that I'm spearheading that. When we talk about what climate disaster is, to me, it's really pollution. It's pollution of our air, of our water, and of our land. And what we focus on is mitigating that with my company, and I look forward to working together with you guys. A lot of our plastic problem is rooted that 90 percent of our food is imported because we don't have agricultural independence or sovereignty. And we've created several programs with my company that address rapid, lucrative solutions, so that we can make this transition quickly. That's going to increase the equity of the community for our residents and for our guests. We provide products and services that are sustainable for Maui, but a bigger part of that is we do awareness, education. I do that through events. I go to all the Fourth Friday, Second Friday events. I go to a lot of different nonprofits events. I've met some of these other people, wonderful people in this room before, doing that, and it's really about bringing people together. Our community and our tourists, they're all on the same page that we need to do some change, that some things could be better. And this, of all places in the world, should be an example and should be preserved and should be a leader. And so, once again, I'm blessed to be in this room with people that are striving to make that happen. One of the things we've done is we've started a social media movement, part of being that millennial again. It's #plasticfreemaui, and it pairs up really well with #plasticfreehawaii. And we do sustainable products and services, and one of those addressing the plastic pollution problem, just plastic water bottles are billions and billions of tons of trash going into our oceans regardless of how we manage it. We just need to completely remove it, and part of how I propose doing that is a distributed water refill network across the entire island.

CHAIR KING: Thank you, Mr. Watkins. We have a question from Councilmember Rawlins-Fernandez.

COUNCILMEMBER RAWLINS-FERNANDEZ: Mahalo, Chair. Aloha, Mr. Watkins. Mahalo for your testimony. So, I was encouraging to have younger voices out. How old do you think I am? I felt offended. You called me old.

MR. WATKINS: I thought you were like 22, 23.

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COUNCILMEMBER RAWLINS-FERNANDEZ: So, wouldn't that make me a millennial --

MR. WATKINS: No --

COUNCILMEMBER RAWLINS-FERNANDEZ: --too?

MR. WATKINS: --you're the next generation under.

CHAIR KING: No, I think we're...we have two millennials in the room.

COUNCILMEMBER RAWLINS-FERNANDEZ: I know.

MR. WATKINS: Sorry.

COUNCILMEMBER RAWLINS-FERNANDEZ: Good, good.

MR. WATKINS: Pardon me.

COUNCILMEMBER RAWLINS-FERNANDEZ: Saved, saved.

MR. WATKINS: Pardon me.

COUNCILMEMBER RAWLINS-FERNANDEZ: I'm just --

MR. WATKINS: I just...

COUNCILMEMBER RAWLINS-FERNANDEZ: --kidding.

MR. WATKINS: Everyone on Maui ages so gracefully. You never know if someone is an  
aunty or a cousin.

COUNCILMEMBER RAWLINS-FERNANDEZ: Mahalo for your testimony. I'm sure we'll be  
reaching out to you too.

MR. WATKINS: Thank you.

COUNCILMEMBER RAWLINS-FERNANDEZ: Mahalo, Chair.

CHAIR KING: Mahalo. Mr. Sinenci has a question for you, Mr. Watkins.

VICE-CHAIR SINENCI: Yeah, Mr. Watkins, yeah, we just wanted to...we're also...

CHAIR KING: Are you a millennial too? Is that...

VICE-CHAIR SINENCI: No, I'm not.

CHAIR KING: Okay.

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VICE-CHAIR SINENCI: Probably generation X or something.

MR. WATKINS: You could have fooled me.

VICE-CHAIR SINENCI: We're...in our EACP Committee, we're working on some of those plastic solutions, plastic-free Maui solutions as well. So, we're hoping that Maui Sustainable Solutions will come out and help us support that. I know it's a big...you know, the public is, you know, they're used to using all of those things. And so, it's going to take some time to kind of wean out the use of plastic. So, part of it is just the education of people and not using those products. So, I'm glad that you guys are on board already, and we look forward to you guys helping in that education of a plastic-free Maui. So, mahalo for being here.

MR. WATKINS: It's my pleasure. Part of what we do in addition to education is we actually have mapped out infrastructure change that is very superficial in execution but impactful and equitable in delivery. So, really easy to install and really simple to execute, but big, lasting, impacting change.

VICE-CHAIR SINENCI: Okay. We'll contact you guys.

MR. WATKINS: Thanks.

CHAIR KING: Thank you. Mahalo, Mr. Sinenci. Ms. Takayama Apo [sic], next testifier?

MS. APO TAKAYAMA: Thank you, Chair. The next testifier is Tapani Vuori, testifying on CAR-1(2), to be followed by Susan Bradford, who is our last testifier signed up in the Chamber.

MR. VUORI: Good morning, Chair.

CHAIR KING: Good morning.

MR. VUORI: Good morning, Councilmembers. Thank you for starting or convening this Committee. This is really awesome. My name is Tapani Vuori. I'm the General Manager of Maui Ocean Center. I'm also the President of Maui Ocean Center Marine Institute. We have three foundational pillars. We have a coral repository, which is a fail-safe depository for rare Hawaiian endemic corals. So, to mitigate against the climate change. We also have a turtle rescue facility. And then the third foundational pillar is educational outreach. As I believe education is a human right, we need to reach all the segments of our population with STEM-based, data-driven education as well. I am also the board member of Maalaea Village Association. Part of the task force working on regional wastewater treatment facility and as part of that dynamic, I have met with several of you as well with some other individuals from the State of Hawaii, and the...really, the purpose is to remove all the injection wells from Maalaea condominiums. We have ten condominiums. All the injection wells are about 40 to 60 feet in depth. And we actually have data sets going over 25 years, showing the

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water quality data in the Maalaea Bay, and there is a very strong link and correlation of the, you know, the injection wells along with the commercial agriculture, and I'll talk briefly about that as well. We met also with the Mayor along others, and we hope that there is enough consensus, and political will, and money available to actually address these issues like Hannah mentioned earlier, we should really prioritize issues that we have control over. This is the low-hanging fruit. We should not wait any longer to address this issue. As of today, many of you may not know this, but as of today, coral reef coverage in the Maalaea Bay is about 7 percent. About 30 years ago, it was close to 85 percent. DLNR has studies on that, and I believe Steven Dollar has done some studies as well. On an anecdotal note, I met many old timers who with tears in their eyes, they share with me that they do not want to go into the ocean anymore because there's no more fish there. So, as Mr. Lester mentioned earlier, climate change is real. One really important point that he pointed out it's exponential. Please keep this term in mind to what will happen most likely. The goal post will be actually moved forward towards our time. So, what we need is we need a paradigm shift and we need new kind of thinking. We...if I may continue a little bit more?

CHAIR KING: Certainly.

MR. VUORI: Ultimately, this discussion or the issue, as Mr. Lester pointed out, will become an issue of funding. How do we get money available to actually afford to address these issues? We have nations such as Palau, Mexico, Philippines, we have other nations in the so-called third world that are able to make immediate action on these issues and they are taking action. So, we need to get beyond talking about these issues. I'm very appreciative that we are talking about it, but let's set some goals that are actually firm and timelines that actually we will hold on to. And I think on a closing note, money, I've been thinking about this a little bit, and well, how do we as a community, how do we actually afford to pay for this? Because ultimately, it's going to come down to that. Do we increase taxes? How do we finance this? We've talked previously with some other people, you know, one option is to consider a for example, \$20 environmental fee for all the tourists who come to Maui, or in Hawaii. We have over 10 million visitors coming to Hawaii annually. In five years, we have more than a billion dollars. Think about what this would allow us to do on our infrastructure. And instead of centralized infrastructure, the...start decentralizing it. One option or second option is green bonds. We could easily...well, we could consider doing something like that. I'd be happy to invest in them personally. And third one is increase taxes. I will be happy to pay additional taxes as a community member if those specifically go to address these climate change issues. Thank you for your time. Thank you for being here this morning.

CHAIR KING: Thank you, Mr. Vuori. Just to clarify, so you...on your data, you stated that the coral reef is diminishing down to 7 percent from 80 percent?

MR. VUORI: That is correct, yeah.

CHAIR KING: Okay. And over...

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MR. VUORI: DLNR has a study I --

CHAIR KING: Over what --

MR. VUORI: --can provide.

CHAIR KING: --period of years?

MR. VUORI: Over about 30, 35 years ago.

CHAIR KING: Thirty, 35 --

MR. VUORI: Yeah.

CHAIR KING: --years --

MR. VUORI: Yeah --

CHAIR KING: --we've gone down --

MR. VUORI: --it was about --

CHAIR KING: --to 7 percent --

MR. VUORI: --80 percent.

CHAIR KING: --in the Maalaea Bay area?

MR. VUORI: That is correct.

CHAIR KING: Okay. Thank you. Councilmember Paltin, you have a question?

COUNCILMEMBER PALTIN: Thank you, Chair. Thank you, Mr. Vuori, for being here and for meeting with me previously. I just was wondering, you know, in all the things that you've looked into as a way to finance these environmental solutions, for Maalaea injection wells specifically, have you investigated the Community Facilities Districts?

MR. VUORI: That discussion has been on the table. I'm not sure how that will actually come around. The option we have presented most recently would actually...I think you had mentioned collaborative approach, so it would actually involve Maui County, State of Hawaii, and Maalaea community working together in terms of how to pay for this solution. The discussion that there has been is Chair King, and Mayor Victorino, and Councilmembers have been in discussions with Waikapu Treatment Facility with the Maui Tropical Plantation development with Mike Atherton, and he has seen plans on developing a regional wastewater treatment facility. So, how...ideally, you know, the wastewater is actually pumped up to that location, and then you can use...you can look at different uses for that wastewater like, you know --

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COUNCILMEMBER PALTIN: I understand --

MR. VUORI: --agriculture.

COUNCILMEMBER PALTIN: --that. I just was wondering are you opposed to Community Facilities District to finance rerouting the sewage to Mr. Atherton's?

MR. VUORI: That will be up to the Maalaea Village Association to decide what our official stand is on that. I'm just a board member.

COUNCILMEMBER PALTIN: Oh, so you haven't had a chance to make a decision yet?

MR. VUORI: Not the final decision, no, because the whole situation is still in discussions.

COUNCILMEMBER PALTIN: Okay. Thank you.

MR. VUORI: Yeah.

CHAIR KING: And I can fill you in on some of the details of that, Ms. Paltin, if you want to know. Thank you for being here, Mr. Vuori.

MR. VUORI: Thank you. Appreciate it.

CHAIR KING: Ms. Apo?

MS. APO TAKAYAMA: Chair, the next testifier is Susan Bradford, testifying on CAR-1(1), to be followed by Vincent Mina, and he's the last person signed up in the Chamber.

MS. BRADFORD: Good morning, Council --

CHAIR KING: Good morning.

MS. BRADFORD: --people. And what a...as contentious 2020 coming on, what a positive way to start the year. So, it makes me happy. I'm...no...my name is Susan Bradford. I'm no expert, not like the other people that have testified. But I wanted to put it in a little context that I had the privilege of living in Minnesota this summer and working at the International Institute with adults from all over the world, 4,000 adults at the institute from 98 different countries. And we helped with the English for those who were going to university. In the last group before I returned to Maui, I had 14 people in my group from 14 different countries, Korea, Bangladesh, Ukraine, Palestine, Brazil, Argentina, Africa, and the topic was climate change. And they read the articles. We worked on their language, and then I asked each one of them in conversation, what is going on in your country? They each, even though they may be in education or whatever, they knew so much about what was going on in their country. Their countries around the world are addressing this and really working hard at it. One of the people in my group was an agronomist from Brazil who is

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working a Ph.D. at Minnesota on regenerative agriculture, and he said it's just huge in Brazil. So, I want to put this in context that this is great that we're here, and the whole world is really up in arms. Their lives are just so destroyed as we've seen in the paper recently. So, one of the things that they talk about is resiliency. And Scott Fisher with the Hawaiian Island Land Trust [sic] has made resiliency on island...on the islands, you know, a big priority. He's getting another degree in it, and he also works in Madagascar to help them with resiliency towards climate change. Climate change is coming. What can we do to address it? So, resiliency is one. The second address is how to reverse climate change. And that's where my passion is, although it's all important. I wanted to remind you or if you don't know already of a book by Paul Hawken called *Drawdown*. Paul Hawken was an environmentalist, cutting-edge man that's been on Maui several times in the '90s. He's well-known internationally. He wrote this book 2 years ago about the 100 ways to reverse climate change. Number 11 in his book was regenerative agriculture, which we can easily do here on Maui. Since then--I just...just about --

CHAIR KING: Okay.

MS. BRADFORD: --finished--since then, he has come out and said actually it's number one. Number one is regenerative agriculture around the world. So, I just wanted to share with you the larger context, I wanted to encourage you, there's probably other great books out there but this is Paul Hawken's is certainly somebody that if you're interested in this Committee and whatever, to begin reflecting on where...what are all the ways we can reverse climate change. And one way, I think would be to have him come to Maui, come to Hawaiian Islands, and others like him, and work with these experts, kind of work with the County, work with the State, work with various organizations --

CHAIR KING: Okay.

MS. BRADFORD: --to see what we can all do to reverse this worldwide. Thank you.

CHAIR KING: Thank you. And, Members, Ms. Bradford is going to be on the Committee, so she can share more detail on the panel presentation. So, we'll reserve questions till later.

MS. BRADFORD: Okay.

CHAIR KING: Thank you.

MS. BRADFORD: I am going to be on the Committee? Well...

CHAIR KING: Well, you were listed as one of the...

MS. BRADFORD: I didn't --

CHAIR KING: Yeah.

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MS. BRADFORD: --read it yet. Okay.

CHAIR KING: So...

MS. BRADFORD: Well, we'll see. Okay.

CHAIR KING: Okay. Ms. Takayama?

MS. APO TAKAYAMA: Chair, the last person signed up to testify in the Chamber is Vincent Mina, testifying on CAR-1(2), on behalf of Hawaii Farmers Union United & HDOA.

MR. MINA: Good morning, Chair. Good morning, Council. Aloha. Chair, I have some of our compost from our farm. Could I pass it around to the...

CHAIR KING: No, you can't pass it around but you can give it to our Staff --

MR. MINA: Okay.

CHAIR KING: --and, you know, it will --

MR. MINA: Well --

CHAIR KING: --probably...

MR. MINA: --I want it back --

CHAIR KING: It will probably...

MR. MINA: --you know.

CHAIR KING: Oh, well, if...oh, you just want to pass the --

MR. MINA: I just --

CHAIR KING: --pack?

MR. MINA: --want them to feel --

CHAIR KING: Okay.

MR. MINA: --it, smell it, take a look at it. So, I want to speak first of all...

CHAIR KING: Sorry, I thought you were going to try to distribute it --

MR. MINA: Oh, no --

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CHAIR KING: --to each --

MR. MINA: --no, that's --

CHAIR KING: --person, so.

MR. MINA: --okay. This is compost from our family farm, urban farm, that we've produced over the past 25 years. This is material that once we cut our flats, we recycle it back on to the land, and we've been doing that for the past 25 years, and this is the result of that. And the reason I bring this today and bring this to light today is I'm so happy that this Committee is now a committee. And there's four places on this planet that we can store carbon, and one is in the ocean, one is in the sky, one is in plant life, and the other one is in the soil. Well, breakneck speed, we are now storing carbon in the ocean and in the sky where it doesn't belong to the extent where it is right now. If...the numbers are kind of...I've heard different numbers, but from what I understand, 1, 2 percent of all our agricultural lands were to be sequestering carbon into our soils, we could mitigate climate change or climate emergencies basically with where it's at right now. And so, it's really heartening to know that something that we've been beating the drum on for a lot of years, we had our first soil health conference here on Maui in 1998, is finally coming to fruition in a way that people are understanding the importance of sequestering carbon into the soil. We have a...an amazing island here as far as the ecosystem goes in that it's a biomass machine. And in elaborating on what that means is, if you folks have yards and you see, you know, all your plant life growing, and after a heavy rain and you cut it back, what happens? It just comes back with a vengeance. And that's the biomass above the grounds and where we're so fortunate to have. What we need to do with that biomass is take it and put it below the ground in the way of compost. And what happens with compost is...I call myself a manager of the rhizosphere. The rhizosphere is...I'm speaking to two things --

CHAIR KING: Okay.

MR. MINA: --here to testify, Chair. Thank you. The rhizosphere is the top seven inches of the soil. That's where all life happens. That's where fence posts rot. If you're putting a fence post in down the seven inches, that's where all the aerobic, all the life, living bacteria occur. And then below that is the anaerobic zones, which are very important too. But the point being about that rhizosphere as a farmer, the reason why I want to manage that rhizosphere as a living organism is because then my roots go down deeper, it opens the soil up, the aquifers get recharged. When there's a rain event, it doesn't just run off, and it's basically microbes living and dying at an unbelievable...to extent that are producing free nitrogen for the plants to take up. There was a work done by a man by the name of Francis Chaboussou down in Brazil and France. And he...a 50-year thesis on...his thesis was healthy crops. And what he found was when you add soluble nutrients to the plant, when you flood soluble nutrients to the plant, it inhibits protein synthesis. Basically, what that means is the plant can't express itself as a complete protein. Well, we need complete proteins to be well. And so, who likes incomplete proteins? Bugs. Yeah, they attack a plant that's expressing itself as

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an incomplete protein because it can't...the bugs have not evolved to eat complete proteins. So, they go after the incomplete proteins. So, if you see a bug on your plant, eating the plant, you don't want to eat it anyhow. You know, you want plants that are expressing themselves as a complete protein to be well. So, this is really a perfect storm that's occurring right now. We, as a human race, we kind of deal in crisis mode as...that's how we operate unfortunately. But the point being is, we have the ability to respond, and that's responsibility, yeah, having the ability to respond. So, we're at a very fortuitous place right now to put our attention towards all this. And on...I sit on the Board of Agriculture, and I'm basically bringing forth that I want to see a cover crop seed industry developed here in the State. So, where we can start to apply all this technology to rebuilding our soils, and we have the EKO Compost site on island. It's producing amazing amount of material that can be utilized, especially if the EKO Compost is inoculated, and to where then they can become something of covering our lands, planting cover crops, and rebuilding the biomass in that rhizosphere, getting that rhizosphere back to where it's vital and it's operational, and it's doing what it needs to be doing to...for us to be well. So, in a nutshell, I'm not an agronomist. I'm not an expert on anything, I...except my 25 years of being a farmer. I did stay at a Holiday Inn Express last night, but other than that, you know, I just wanted to share that mana'o in the spirit of my experience in working the land all these years. Thank you.

CHAIR KING: Okay. Mr. Mina, we'll probably we'll ask you to return as well because we want to have this deeper conversation about the topics you brought up. And if you can share with us any State legislation that the Farmers Union has put forward to that end, that we can also possibly add that to our Maui Legislative Package that might be helpful.

MR. MINA: Thank you, Chair. And --

CHAIR KING: Okay.

MR. MINA: --then thank you so much for all your support in our organization regarding farmer apprentice mentoring and our chapters. We have 13 chapters Statewide. So, the four here on Maui are really --

CHAIR KING: Okay.

MR. MINA: --appreciative of the support this Council has stepped forward to create for us. So, imua.

CHAIR KING: Thank you.

MR. MINA: Mahalo.

CHAIR KING: Thank you. Thank you for sharing your dirt.

MR. MINA: Soil, soil.

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CHAIR KING: It smells great. That's one of the best smelling soils I've ever smelled. Is that...Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Chair, there's no further testimony from our District Offices or in the Council Chamber.

CHAIR KING: Okay. We have one person stepping forward in the Council Chambers.

MR. LAW: Aloha kakahiaka.

CHAIR KING: Mr. Law?

COUNCILMEMBERS: Aloha.

MR. LAW: Good morning, everybody, out there in TV land, that's what that means in Hawaiian. Thank you, Council, for tackling this very important issue. I just saw my Upcountry Councilwoman, Yuki Lei Sugimura, come in. She's probably listening on the TV in her office. So, yeah, I got some stuff about the...I've been...had some problems with the Portuguese up there Upcountry. So, yeah, we'll get to that later on this afternoon. Point of order, Madam Chair, you don't have to wait for the clerk's office to start a meeting any more than we have to wait for the rest of the world to start action on climate change. Mahalo.

CHAIR KING: Is that your testimony? Okay. Thank --

MR. LAW: I'm sticking to it.

CHAIR KING: --you for being here. Any other testifiers, Ms. Takayama Apo [sic]?

MS. APO TAKAYAMA: Chair, there's no further testimony from our District Offices or in the Council Chamber.

CHAIR KING: Okay. So, any objection...we do have some written pieces that have been submitted. Any objection to submitting that into the record?

COUNCILMEMBERS: No objections.

CHAIR KING: Okay. So ordered. And any objection to closing testimony at this point?

COUNCILMEMBERS: No objections.

**. . .END OF PUBLIC TESTIMONY. . .**

CHAIR KING: Okay. Thank you.

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**CAR-1(1) MITIGATING CLIMATE-ACTIVATED DISASTERS (RULE 7B)**

CHAIR KING: So, I want to go right into our first presentation. We have with us today, Mr. Herman Andaya, Emergency Management Administrator; Dr. Anthony Joyce, a Civil Defense Specialist from the Emergency Management Agency. And I asked Mr. Andaya to be here to provide us with information on the Maui Emergency Management Agency's current and projected efforts towards mitigating and responding to climate-activated disasters. So, we're kind of looking at it through this lens here, and I see that the first slide is exactly what I had asked for. Thank you, Mr. Andaya. And I want to recognize that our new Committee received this item from the Healthy Families and Communities Committee. And I hope we can collaborate closely with that Committee going forward on this issue. But we have a Budget Session coming up, and I thought in preparation for our Budget, we can try to anticipate what additional resources are going to be needed by this Office. We've heard over and over again how small the space is and how cramped they are, and I've seen it for myself. But as we move forward into these larger issues, that that space was never intended to address, I think we need to work closely with this Agency. Can you...is it on Granicus, Mr. Sinenci?

VICE-CHAIR SINENCI: I don't see anything.

CHAIR KING: Did we lose Granicus again?

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

CHAIR KING: Okay. So, you have to look at the screen because Granicus is down again. It's been up and down all morning. But with that, I'm going to turn it over to Mr. Andaya and Dr. Joyce for their presentation. And thank you so much for being here. I really appreciate your presence.

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

CHAIR KING: Okay. Well, Members, we had...we have bare quorum right now. So, if you have an emergency, wave your hand. Thank you. Thank you, Mr. Andaya.

**. . .BEGIN PRESENTATION. . .**

MR. ANDAYA: Madam Chair, Members of the Committee, good morning.

UNIDENTIFIED SPEAKER: Good morning.

MR. ANDAYA: Thank you for inviting us so we may provide comments on mitigation measures as it relates to climate-activated disasters. We welcome all opportunities to

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speaking about the operations of MEMA, and specifically as it relates to mitigating the effects of natural disasters. We were just here two weeks ago in this Chamber to discuss emergency management. And so, we will try not to overlap our discussion at that meeting with this. I do want to remind the Committee however, that there are four phases of emergency, preparation, response, recovery, and mitigation. We were asked to discuss this fourth phase today, mitigation, in today's meeting. Over the years, emergency management has evolved to reflect the changes and the kinds of threats and the manner in which we deal with them. For this reason, we updated our mission statement two years ago, and it reads as follows, realizing emergency management principles, we protect all persons within the County of Maui to achieve whole community resiliency. It is with this mission in mind that we are in the process of updating the County of Maui's Hazard Mitigation Plan. In the update of this plan, we are using a different approach and engage the experts when it comes to dealing with these threats. And these experts are the local communities that have endured these threats over the years. We will be meeting with local communities and learning from them their approach to dealing with disasters, and disasters in particular in their neighborhood. These members of the community are most familiar with threats that have occurred where they live. And so, we want to collect this valuable data. We'll be meeting with local communities and discuss the update of the Hazard Mitigation Plan in the next few months. Last month, our office transmitted a letter to the Council to request names of individuals who can take part in these meetings, and thank you to those Councilmembers who did provide us those names. I'm here today with our Hazard Mitigation Specialist, Dr. Anthony Joyce. This is his first presentation before the Council. And so, I would like to provide some background on him. Dr. Joyce holds degrees in Meteorology and Climatology from Rutgers University and the University of Massachusetts Amherst, respectively. He has studied in the Arctic and Greenland, where he has examined the effects of climate change in our environment. And his presentation will focus on the effects of climate change within the County of Maui and some of the mitigation measures that we...that can be used to lessen its effects. And so, Madam Chair, with your permission, I would like to turn over this portion of our presentation to Dr. Anthony Joyce.

CHAIR KING: And thank you so much. Dr. Joyce?

DR. JOYCE: Thank you, Chair, and thank you to the entire Council. And also, I want to thank the testifiers for testifying today because they were wonderful. The information that the testifiers also relayed to everyone here will be able to fill in some of the gaps in my presentation 'cause I can't talk about everything, otherwise we'd be here for a day and a half. But they...all the testifiers' information has been wonderful. So, take what they say, and take what I say, kind of put it together, and you have yourself a really great presentation. So, thank you, everyone. So, the...part of my talk is going to be a...it's going to be a crash course. The first part is going to be crash course on global climate change, which a lot of us know already. I'm going to go over it again. The second part of my presentation will be some of the mitigation activities that Emergency Management has been involved in and/or planning for the future in relation to climate change. So, I want to start off talking about the greenhouse effect. Now, we all know what the greenhouse effect is. We've been hearing the greenhouse effect a lot with a,

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unfortunately a negative connotation. But the greenhouse effect in general is not technically a bad thing. The greenhouse effect allows the earth to keep temperature at an equilibrium. That's what makes our planet habitable. The way it works is that the sun releases radiation. The radiation travels to the earth. Some of it gets reflected off of the earth's atmosphere, but the rest of it goes through the atmosphere, gets absorbed by the surface of the earth. And this absorbed radiation ends up warming the surface. Some of the radiation from the surface is re-emitted back to space; however, on the way back to space, some of this infrared radiation is absorbed by molecules and re-emitted back to the earth's surface again, acting as a blanket. These molecules are what we traditionally know as greenhouse gases, and they include CO<sub>2</sub>, carbon dioxide, methane, and water vapor. Unfortunately, too much of a good thing can be bad as we know with climate change. The extra CO<sub>2</sub> that we have in our atmosphere today is not allowing the earth to emit enough infrared radiation back into space, basically causing an overabundance of heat energy at the surface, raising the global average temperature. Essentially, the earth is out of temperature equilibrium. This is...I want to bring your attention to this figure here. This is a fantastic figure. This figure shows carbon dioxide for the last 800,000 years. The carbon dioxide or the data in this figure set here was taken from Antarctic ice cores, the little oxygen bubbles that we...that you can see in the ice. Just to give you a idea of the timescale, I have with yellow arrows here, the formation of Big Island was around 400,000 years ago. And the first appearance of Homo sapiens in Africa was around 300,000 years ago. So, that just gives you kind of a good idea of the time span that we're working with here. The atmospheric CO<sub>2</sub> concentration for the last 800,000 years, you can see barely exceeded 300 parts per million or 3...that's basically the concentration of CO<sub>2</sub> in the atmosphere, parts per million. It barely exceeded 300,000...300 PPM. However, you can see in the section labeled now, off to your left side here, you could see the very fast increase in carbon dioxide in the atmosphere. Now, the bottom of that line on the very right there, just above the N in the word now, that's approximately around the Industrial Revolution, which was around 1850. After that, CO<sub>2</sub> rose dramatically, about 40 percent from 1850 till now. This data is from 2018. It says 409 PPM. However, as of 2020, we are at 412. Now, the increase in CO<sub>2</sub> that you see here was...is mainly driven by, or was mainly driven by industrialization. And you could see that greenhouse gas emissions come...they come from multiple sources. The largest sources of greenhouse gases are from electricity generation and transportation, followed by industry, commercial/residential, and then agriculture. The top...but, you know, it's important to reiterate that the top two is electricity generation and transportation, especially with transportation using gasoline and most of electricity generation done by coal. So, it's...in this slide here, I have a really wonderful figure from NASA that I pulled up here. This is the Global Surface Temperature Relative to 1880 to 1920. On the right-hand side there, you could see the last data point is 2020. So, just about now if not a few months ago. The five warmest years on record in this data set here have been the last five years. So, that's very important to know. Since 1950, the temperature over the Hawaiian Islands, they've...it's risen about 2 degrees Fahrenheit. Current global average temperature is about 2.2 degrees Fahrenheit, with predictions suggesting that by 2030, the global average temperature will be 2.7 degrees Fahrenheit, and by 2050, 3.6 degrees Fahrenheit. Now, what does this mean for Maui specifically? Well, the data suggests a few things. There's been a

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decrease in annual precipitation since 1950. That would be figure A at the top left there. Data from Lihue, Honolulu, Kahului, and Hilo weather stations show there's been a general decrease in precipitation based on the trend. There's been, you know, projected climate model simulation suggest a 5 percent reduction in annual rainfall. And if you see C, the figure labeled C, the big one there at the bottom, there's also been a decrease in the number of extreme precipitation events with precipitation greater than three inches. So, there is some suggestion, there is some evidence that believe it or not, Hawaii in general, is getting drier, which could mean our dry seasons will be drier, and our wet seasons will be drier. Some effects of this, you can get a decrease in stream base flow. Over the...there has been actually, excuse me, there has been a decrease in stream base flow over the last 70 years according to some gauges. This creates negative effects on aquifer recharge and negatively impacts Maui's freshwater availability. Also, one of the most important effects of climate change as the...as we heard from many of the testifiers here today, is sea level. Sea level rise has been and will remain a major concern and present challenges to Maui County, actually, Hawaii's shoreline planning. I just want to...I want to point out the figure here. This figure here shows several predictions of sea level rise at different levels of atmospheric carbon dioxide concentration, and these are known as RPC scenarios. I will not go heavily into these scenarios. We can talk about it later for sure. But basically, each of these scenario, you can see them off to the right, RCP 2.6, 4.5, 6.0, and 8.5. Those are progressively different carbon dioxide concentration scenarios. And you can see, RCP 2.6 is known as the better situation out of all of them. RCP 8.5 is considered business as usual, status quo, no change in emissions. So, you can see that in the best-case scenario, global sea level will still rise about a half a foot. In progressively I guess worse scenario, you could see a 1.1 foot of global sea level rise. RCP 6 shows a 2-foot sea level rise. And 8.5, which would be the worst-case scenario, shows a 3.2-foot sea level rise. Now, it's important to note that this is global sea level. It's also important to note that sea level does not rise the same everywhere. So, you may not get 3.2-foot sea level rise in Hawaii, but you may get it on the coast of California. There's different variables involved such as gravity. I won't get into that today, but it's just important to note that sea level doesn't rise the same everywhere. There's also been data from Hilo Bay suggesting a one-inch increase in sea level per four years. Scientists believe there could be a total of 6 inches of sea level rise in the next 12 years. So, sea level rise is accelerating. Now, the increase in sea level will not just hurt shoreline industry, but it will also exacerbate coastal inundation and coastal erosions, especially the low-lying areas. At the same time, it will also affect, as we know, costal ecosystems. So, here, the next few slides I have, this is a depiction of Kahului Harbor as you could see. There's University of Hawaii, Maui College, down at the bottom left there. This data is from University of Hawaii, Sea Level Rise Viewer, which is publicly accessible. You can go ahead and go to...Google that, click the link, and you'll be able to show the kind of coastal inundation with multiple levels of sea level rise. The first slide here is for RPC 2.6, which is the, if you will, best-case scenario. You could see that even with a half a foot of sea level rise, you start to get coastal inundation on Kahului Beach Road. You get more coastal inundation in the center of the harbor there, towards some of the developments and industrial area. And it's important to note that the water doesn't stop there. You have increased erosion as well just past that waterline. In the next

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case scenario, RCP 4.5, you could see there's more inundation. If you keep your eye on here every time I change slides, you'll be able to see the change. I know it's somewhat difficult, but there's more coastal inundation. This is a total of 1.1 foot of sea level rise. So, now, Kahului Beach Road is almost completely inundated. You still get encroachment towards the center of the harbor there. RCP 6, more encroachment. Now, you're starting to hit some industrial areas and buildings. Kahului Beach Road is almost completely submerged at the moment. Parts of the harbor, up in the top right there, you can see where it says Pride of America Ship, you see coastal inundation into the parking lot. And RCP 8.5, which would be the worst-case scenario, you get Kahului Beach Road is completely inundated. Parts of the harbor, the top right there, completely inundated, as well as industrial zones. And this is important because this is millions of dollars of infrastructure that's being affected because of the sea level rise. And like I said, erosion, if you include this sea level rise here, and then you include storms that may come through, high-wind events, high tides, you can possibly get erosion that is further away from that blue water line there. So, you're looking at, well, it's not just taking out maybe that industrial zone area, it might be taking out several yards away as well, other buildings, and parking lots, and roads. So, the...I guess I got a little ahead of myself, but yeah, coastal erosion, so, the impact of coastal erosion is definitely a serious threat with climate change. These are some pictures that I took myself. The first three pictures are from Waipuilani Beach Park in Kihei. And the last picture on your right here was taken at Puamana Beach on the west side. You can see in the third picture here, I have a little pen, just your normal pen if anyone has a pen, you can see how long a pen is, there's a pen at the bottom left there. I use that for scale. You could see there's literally several feet of erosion of this park. The green at the top there, the green at the top is the grass of the park where people play. There's park benches. You could see there literally is several feet of erosion to this park. Just...if you look at the first picture all the way on your left there, you could see that...you could see all these trees down, and you can see the beach and roots exposed. Just two years ago, there was a tree line here, and...tree line...the trees were embedded into the soil. Now, yeah, you could see the trees have fallen. The roots are exposed. The trees are dying. This is just examples right in your backyard, of erosion. Now, parts of the west side besides Puamana Beach, parts of the west side are even worse where there's one to two feet of erosion per year according to the University of Hawaii, Coastal Geology Group, especially towards Lahaina and Kaanapali area. So, erosion is definitely a big factor that we, as a County, we really have to start thinking about very seriously. Now, we've also been seeing not just erosion when it comes to climate change, but we've also seen, especially around Maui, Hawaii in general, we've also seen ocean acidification. Now, there may be some of you that know that the, or all of you that know that the oceans are getting more acidic, and there's a reason. The...you know, the oceans act as normally, under most circumstances, the oceans act as a carbon sink. They draw down carbon. The ocean absorbs about one-third of CO<sub>2</sub> from the atmosphere. What happens is as the CO<sub>2</sub> gets drawn...drawn down into the ocean, you end up getting...CO<sub>2</sub> plus H<sub>2</sub>O equals carbonic acid. So, you actually get an acid that's formed. Now, this acid ends up stealing carbonate ion. Carbonate ion comes from calcium, sorry, carbon. And the shellfish, the reefs, they all use carbonate ion to make their shells. Carbonic acid, because it's an acid, it actually it ends up stealing that ion and taking it, essentially

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dissolving it. And this is one of the reasons that we've seen major ecosystem effects, and we've seen coral reefs starting to degrade, because it's essentially not only is the ocean more acidic, but it's also stealing that carbonate ion. Ocean acidity has increased 25 percent from pre-industrial, around 1850. Twenty-five percent from pre-industrial, it's the most acidic in over 2 million years. So, this is also important. And, you know, it's also important to think about that the pH scale is on a logarithmic scale. So, if you go down one pH, you go from eight to seven, that's ten times more acidic than going...than from where you start out at. You can see really quick here that the top figure there, you can see some bars there. You have red, black, and green. Red means coral degradation has been observed. Black means no change. Green means there has been some recovery. Now, this data is a little old. I haven't gotten my hands on newer data yet. I'm sure it's out there, I just haven't gotten it. This data is from 1995 to 2005, so it's over a ten-year period, but you could see that the reefs in Kahekili, Olowalu, and Maalaea within 1995 to 2005 has seen major degradation. And like I said, I don't have the data now, but I'm assuming that this degradation has further increased because of ocean acidification. One other thing before I move on, it's also important to note that reefs play a significant role in protecting Maui from large waves and storm surge. They actually act as a barrier, creates friction, and actually weakens the waves as they come to shore. So, when these reefs become degraded [sic], they shrink and there's no barrier to dissipate wave strength causing large and stronger waves to hit the coastline, and essentially exacerbate erosion. So, now that you've gotten a small little crash course on what's going on around Maui, in Hawaii in general really, what is Emergency Management's role in climate change regarding Maui County? Well, Maui Emergency Management Agency's role is to mitigate and assess risk associated with the loss of life and property, prepare the community for disasters, respond to the disaster, and aid in the recovery after a disaster. Remember, as an emergency manager, you are...you're not a scientist or engineer, rather the experience lies in reducing the vulnerabilities, and that's very important to...it's very important to understand. Emergency manager's role is also important to build...is also important in building partnerships for risk reduction involving government, non-government organizations, business, and the public. Essentially, it's a team effort. Emergency Management was designed to manage the resources and responsibilities associated with all humanitarian aspects of an emergency. Our job isn't to manage all the aspects of climate change, as a global response is needed for that, but our role is to help Maui County prepare for and respond to major disasters that are exacerbated by climate change. And the way we're doing that is we are working on the Maui County Hazard Mitigation Plan. The Maui County Hazard Mitigation Plan serves as an essential guide to reducing current and future risks to natural hazards and improving the emergency preparedness of the County's three islands. This is a very important document. It's a very important document for the government especially FEMA. This is not just a document that Maui County Emergency Management writes and we store it. This is an official government document that the government wants from us every five years. So, the plan is updated every five years according to FEMA standards, and it is designed to be a living document for the next five years until it gets updated again, it's going to be a living document. This allows us to stay eligible for pre and post-disaster mitigation Federal funds. The Hazard Mitigation Plan is steered by...I've had the privilege to work with a

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wonderful committee, and it's still growing, but it is steered by an interdisciplinary committee with...I have the members of Maui County government, multiple departments, a lot of NGOs, non-governmental organizations, and other local individuals from the community. So, this is an effective way for Maui County to work together to find mitigation opportunities. We expect this plan to be completed and adopted by Maui County in October...around October/November of 2020. While developing this plan, a list of mitigation projects will be created, and a project tracking tool will be developed to keep track of these certain projects. This is one of the main reasons this document will be living until it gets updated again in another five years. Now, if we take from the four phases of emergency management, I grabbed a few here 'cause I think this is very pertinent to my presentation, the adaptation, mitigation, and response. So, I'm going to go through each of these bullet points. But each of these bullet points is related to or an example of the adaptation, mitigation, and response that Emergency Management would team up with the rest of the County to do. So, in conjunction with the Planning Department, the Hazard Mitigation Plan, one of the main focuses of the Hazard Mitigation Plan is risk identification. And we will do a risk identification study, and we'll identify and map vulnerable areas of Maui County that are susceptible to a disaster of some sort. Economic impacts will be modeled using FEMA's HAZUS model, and we'll be able to get estimates on how much economically, how much infrastructure would be affected whether it's hurricane, whether it's earthquake, whether it's sea level rise, we will be able to model this using the HAZUS model. It uses GIS data along with historical data to estimate the economic impacts. Community meetings will be held to identify local hazards and public opinion on hazard mitigation, particularly in rural and under-represented areas are important, and that's what we are focusing on in this mitigation plan. It's important to local community as those members of the local community, like the testifiers we saw here today, are the boots on the ground. As an individual, you are essentially your own emergency manager. Local community members can identify micro-scale hazards that we, in Emergency Management, we may not see because we are always looking at a top-down of Maui County as a whole. So, we will miss things, and that's where the local community members will be able to help us out. So far, we have several meetings scheduled for February. We will be going to Molokai, Hana, and I'm in the process of scheduling one more meeting. And that's just the first round. So, there'll be more to come. But right now, February is the...is what we are currently working on. MEMA strongly encourages looking at updating building codes, and this would be in conjunction with Planning Department and the County in general; in improving stormwater management, in conjunction with Department of Public Works and Environmental Management; preserve areas that are designated as floodplain, Department of Environmental Management; and when possible, perform or update LiDAR studies, usually in conjunction with either NOAA or University of Hawaii. That data becomes very useful especially for risk identification and mapping. We also explore...one other thing in that bullet, all of these updating building codes, improving stormwater management, these are also very important regarding our flood...Maui County's flood mitigation priorities. We...currently, Maui County's CRS rating is a seven. Basically, the scale goes from ten to one, ten being not...basically, each level will give you a discount on a homeowner's flood insurance. Ten will give you a very low discount, give you like maybe a 5 percent discount. One will give a hefty discount

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of over 50 percent. Right now, we are at a seven. Our goal in the future hopefully, would be anywhere between three and one. Right now, we're at a seven. With the third bullet here, we can hopefully increase that CRS rating from a seven to...I would love to see at least five. Also, it's important that Maui County explore long-term options for managed coastal retreat and elevation of major coastal highways. This is also very important as on the west side, as of all over Maui really. But on the west side, I know there are a few schools that are right on the coast. These schools eventually will either be succumbed by increased sea level or erosion, or both. So, we should definitely look into managed coastal retreat. And the last bullet I have here is creating a hazard mitigation website to educate the public. This would be a standalone website from the counties that would be hosted. We could put a link on the Maui County website. And it would be a completely educational website with nice graphics and maps that the public could bring up, they could possibly search their own address to see if their property is in danger of any one of the hazards that Maui County faces. This will be incorporated into the Hazard Mitigation Plan if we can secure the funding. Now, just a few examples I have here before I end, this is an example here, and I'll describe this. This is an example of hurricane preparedness. So, it's kind of a mixture between adaptation and mitigation for the homeowner. MEMA recommends hurricane clips if the home does not have any. We also...MEMA also recommends that new developments, which we have expressed, we've expressed our concerns to new developments that want to build on Maui. We recommend that the developments be hurricane rated to at least a category 3. On Maui, homes built after 1990 would likely have hurricane clips, and a complete load path if built after 1995. So, the top picture here on your right, that's a great example of hurricane clips. The number one failure of a home during a hurricane is the roof. The roof will usually be the first to go. With hurricane clips, as you can see in the top here, those hold all the joints together. It also holds the joints to the rest of the home. So, less likely that this gable of the roof here, the triangle portion, will fail. For single-walled construction, a lot of the plantation homes that we see especially in Wailuku, the bottom picture here on the right, this is called the Hawaii Plantation Tie, or an HPT clip. This will secure the roof to the home. Basically, the clip will secure to the roof rafter, and it will secure to the wall. You could see that right there. Now, this can be done by the homeowner themselves. It's not very difficult. If the homeowner is unsure, they could ask a contractor. On average, it's about \$2,000 to do this via a contractor. And also, there's a great book, if anyone after wants to ask me for the link. It's called the Handbook to Prepare for Natural Disasters [sic]. It was written by D. Hwang at University of Hawaii, Dennis Hwang, in conjunction with the University of Hawaii and Sea Grant. He just put a fourth edition out recently, a couple weeks ago. So, it's really...I mean I think every homeowner on Maui should definitely own a copy of this book. One of the...the next example here is an example of flood control mitigation. Basically, everyone is familiar with this scene. This is the Wailuku River flood control system. This was done years ago, a few years ago, before my time, in conjunction with the State, the County, and the Army Corps of Engineers. And this is literally to do what it says, it's to prevent flooding of that river, especially during major flood events. And it seemed...I...I'm not completely sure on the history, but it seems to have so far done its job. And I'm glad that this was a project that was completed. So, in conclusion, climate change hazard mitigation affects everyone. It needs a

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multi-disciplinary approach with multiple groups of stakeholders. There isn't anyone that is not included. Everyone needs to be included especially during...especially in a situation like this. Some climate change impacts are unavoidable and may not be effectively mitigated. And that's...that is something to realize as well. You know, there will be impacts that are unavoidable, and some of them just won't be able to be mitigated because of economic...whether it's economic feasibility or some other issue. Some impacts are unavoidable but can be mitigated such as coastal erosion, preservation of dunes. A Change in Zoning codes would help, streamline permitting, and maybe moving to a less reactionary management situation. So, instead of taking action because we react to something, let's...the County, we can be a little more proactive and try to heed these issues off before they get worse. Some impacts are unavoidable, but Hawaii will adapt. I mean we will adapt. And changes in infrastructure and maybe...changes of infrastructure may be needed to adapt to flooding. Say, changes in infrastructure may be needed to adapt to hurricane preparedness, things like that. But it's important that everyone know here today that MEMA will work with all Federal, State, and local organizations to reduce the loss of life and property in Maui County because that's our job, and we stand with that. Thank you very much.

**. . .END PRESENTATION. . .**

CHAIR KING: Thank you very much for that presentation. I think that was on point. I want to welcome Councilmember Tasha Kama. Thank you for joining us.

COUNCILMEMBER KAMA: Thank you, Chair.

CHAIR KING: She's one of the Voting Members of this Committee. And, Members, I think we could probably have a discussion about this all day long if we wanted to. We have another panel that I wanted to bring on. And so, my preference will be to break at this point, bring the second panel on. I will bring, you know, with your approval, Emergency Management back for a full discussion on...now that we've heard kind of the basis for how they're moving forward, I'd like to have a deeper dive at some point before Budget Session as to how we can help this Department. I want to congratulate Emergency Management for just widening your scope, Mr. Andaya, bringing on Dr. Joyce, and, you know, getting proactive on these issues and...so, I think we have an opportunity to make some decisions before the, you know, what everyone's calling the imminent disaster. I mean Maui has been pretty lucky so far, but our luck is not, you know, going to hold up forever. So, thank you so much for what you, you know, the thought that you've put into this, the preparation, the communication with the Council, and other departments. And with that, I'd like to kind of keep the door open, defer this item, and come back at least one or two times before Budget starts. If you can start thinking in terms of how this Committee can help you, you know, with your resource needs, and we'll have, I'm sure some more questions about some of the slides we've seen. But can we get that at some point downloaded to Granicus, Ms. Takayama Apo [sic]? It wasn't working today, but I think all the Councilmembers would like to have a copy of it. So, thank you very much.

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**COUNCILMEMBERS VOICED NO OBJECTIONS.** (Excused: AL, RH)

**ACTION:           DEFER PENDING FURTHER DISCUSSION.**

CHAIR KING: Members, can we break right now, come back at 11:00, or maybe 11:05, and start the next...or get the next presentation set up, with the understanding that some of it has already been given in testimony. We had some great testimony today, and this is the first step in trying to coagulate all the information into the ideas that we need to have on the floor. So, let's take a recess right now, come back at 5 after 11:00. We'll have the next presentation set up, and then we will have a discussion after that presentation. Thank you. . . .(gavel). . .

**RECESS:           10:54 a.m.**

**RECONVENE:      11:13 a.m.**

**CAR-1(2)           CLIMATE ACTION POLICIES BY GOVERNMENT AGENCIES** (RULE  
7B)

CHAIR KING: . . .(gavel). . . All right, it's 11:13. The...we'll reconvene the meeting of the Climate Action and Resilience Committee, and oh...now, we've got more than a bare quorum. Yay. We have Mr. Sinenci, Ms. Rawlins-Fernandez, Ms. Paltin, and Ms. Kama, and myself, Kelly King, as Chair of the Committee. Continuing on to our CAR-1(2), and this is the presentation. The purpose of this presentation, Members, is to get the conversation started on climate action by learning about what other communities are doing and discussing the policies that have been taken, are pending, and could be taken by government agencies. So, I...we've got three panelists here today, and we have Ms. Rita Ryan, who's the...represents Hawaii, I believe, the 350.org organization, and she's also the head of the...what we recently formed at the HSAC conference, the Hawaii State Association of Counties, The Climate Reality Project for Hawaii, the Hawaii Chapter. And then Ms. Stark has also...I mean I'm sorry, Ms. Ryan, has also brought in Mr. Jeff Stark, who is publisher of *Our Environment*; and Mr. Tim Botkin, who's the sustainable science management program coordinator at the University of Hawaii, Maui College. Dr. Chip Fletcher who was going to join us by Skype unfortunately had to leave at 11:00. So, he's gone to his next meeting. So, Ms. Ryan will be following the other presentations with Dr. Fletcher's presentation. But the...a lot of the information that was going to be shared has been shared by Emergency Management. So, we really appreciate getting all the background, and then we can kind of try to dive into what actions this Council Committee could be taking, and what we should be looking for. So, with that, I'll turn the mic over to Ms. Rita Ryan. And if you could go through yours, and then introduce the next two presenters. Okay.

MS. RYAN: Thank you, Chair King.

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CHAIR KING: Oh, you need to push the button --

MS. RYAN: Oh, push the button.

CHAIR KING: --. . .*(inaudible)*. . .

MS. RYAN: Thank you, Chair King. And thank you to the Climate Action and Resilience Committee. And --

CHAIR KING: I'm --

MS. RYAN: --I really...

CHAIR KING: --sorry to interrupt you.

MS. RYAN: Sure.

CHAIR KING: I was just reminded that we have to designate all of you folks as resources and make sure there are no objections by Councilmembers.

MS. RYAN: Oh.

CHAIR KING: So, Councilmembers, we have Ms. Rita Ryan, Mr. Jeff Stark, and Mr. Tim Botkin. Is anybody...is any...are there any objections to these folks being resources for the Committee?

COUNCILMEMBERS: No objections.

CHAIR KING: Okay. Thank you. Continue. Sorry about that.

**. . .BEGIN PRESENTATION. . .**

MS. RYAN: Thank you. And I want to thank the newly-formed Council, Committee, excuse me, on Climate Action and Resiliency [*sic*]. We really look forward to positive change being effected here in Maui County in 2020. So, I have a presentation ready to go here, and I understand that most of these topics were covered by Emergency Management. So, I'm going to skip over some of the slides that have already been covered. But please forgive me, they're in there. So, we're going to go right past them. And I'm going to do a brief intro, and then I'm going to turn it over to Professor Tim Botkin from University of Hawaii, and Mr. Jeff Stark. And then I'm going to come back and go over some slides on what other municipalities in the United States and around the world are doing or have done regarding the climate crisis so that we can see if these apply to Maui County, I think they do, and kind of set our compass moving forward with this Committee. Thank you. So, my first slide here of course is the big blue marble as seen from space. And when we got our first satellite, or actually Apollo pictures, we realized that the earth really wasn't such a big place. And when seeing it

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in view and seeing the weather patterns, and seeing how those weather patterns have changed over the years is quite daunting. So, I think this was already discussed, but we have a very, very thin atmosphere. If you were to drive a car, it would basically be maybe the length of Haleakala Highway from Hana Highway up to Pukalani.

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

MS. RYAN: Oh, is it too close? I'm sorry, I'm sorry. So, basically, if...it's a five to ten-minute drive straight up to the atmosphere. That's how thin...it's a thin shell, eggshell of atmosphere. And fossil fuels of course are the largest source of global warming. And I think we've covered this, carbon dioxide is being released faster than ever. This slide here shows the CO<sub>2</sub> concentration--excuse me, I got \_\_\_\_--and it shows the temperature. So, you can see the correlation between temperature and carbon. Now, if we go at the current rate, well actually, the CO<sub>2</sub> concentration in 2019 was 415 parts per million. So, if we go at this current rate, this is where we will be in 40 years, and that is not habitable. So, our global surface temperatures are increasing as you can see in this graph, oh, since 1880. Now, I need to update this one. Actually, 19 of the 20 hottest years on record have occurred since 2001. So, 2019 was one of those as we all experienced. So, the hottest of all have been the last six years, 2019 needs to go in there. And we're setting heat records all over the world. As you can see here, this is 2018 statistics. Two thousand and nineteen surpassed those statistics, and we did as well here on Maui County. What's going on around the world is people are dying from the effects of heat. This was 90 people in Quebec in 2018. This is some of the things we don't really focus on in the US news media. In Algeria, in 2018, it hit a 124 degrees, not very livable. Siberia was 40 degrees Fahrenheit higher than normal in July 2018. So, just a little bit of science, which you may have already gone over about polar ice caps. So, there's the North Pole in February 2018. And as you can see, it was melted. It was far hotter than normal, 50 degrees Fahrenheit hotter than normal. And our polar ice caps are really important. They pretty much, you know, they're the air conditioning, the air conditioning system for the planet. And we have currents, we have air currents and ocean currents that have been reasonably predictive, and they're changing. So, one degree centigrade increase at the equator equates to three times as much at the poles. And the circulation patterns of the air and the oceans changes. So, in 2018, the polar vortex at the North Pole split in two, which has never happened before since we've been observing and recording. So, that was a normal jet stream, 2017, the jet stream was normal. Two thousand and eighteen, it split. The same day in 2018, it was snowing in Rome. So, it pushed the polar caps down from the North Pole down farther south. Here's about a year ago, January 2019, and you can see, look at where the North Pole is there, and that red shows how warm it got while pushing the cold fronts down the continents. So, in this one, you can see in the dark blue the air temperatures. And there's Chicago, Illinois. So, basically, the polar vortex is invading North America and Europe, and what should look like the North Pole is now being seen in cities around the United States, and Europe, and Russia, and China.

UNIDENTIFIED SPEAKER: Sorry.

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MS. RYAN: So, Arctic Sea Extent is very important, that's our ice. And this is what has happened from...how we're losing in the last 1,500 years, how...

UNIDENTIFIED SPEAKER: . . .*(inaudible)*. . .

MS. RYAN: I'm sorry, how rapidly we've lost--can you hear me? I'm sorry --

UNIDENTIFIED SPEAKER: Yeah.

MS. RYAN: --how rapidly we've lost...

COUNCILMEMBER RAWLINS-FERNANDEZ: Keep your mouth about four fingers away from the mic, and then it will...

MS. RYAN: Okay.

COUNCILMEMBER RAWLINS-FERNANDEZ: Yeah.

MS. RYAN: I'm sorry.

COUNCILMEMBER RAWLINS-FERNANDEZ: It's okay.

MS. RYAN: Yeah. Okay. There we go.

COUNCILMEMBER RAWLINS-FERNANDEZ: A little further back.

MS. RYAN: A little further back?

COUNCILMEMBER RAWLINS-FERNANDEZ: Yeah.

MS. RYAN: Right there? Okay. Great.

COUNCILMEMBER RAWLINS-FERNANDEZ: Yeah.

MS. RYAN: Okay.

COUNCILMEMBER RAWLINS-FERNANDEZ: Thanks.

MS. RYAN: Sorry about that. So, the North Pole is having mid-winter heat waves. That includes 2019, not quite on there yet. We don't have all the statistics in from 2019, but I can tell you that that's happening. This is a very interesting slide about Greenland. There's a big glacier in Greenland that is responsible for a lot of the air conditioning that we have here on earth, and this is what's happening up there. This is happening as we speak. This has been happening for a while. It took thousands of years for that snowpack and it is rapidly leaving. Sled dogs are having to learn to swim. So, 60 percent of the ice sheet in Greenland melted on July 31<sup>st</sup> of last year, losing more than 10 billion tons of ice in a single day. That's not supposed to be

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happening. That's a river. That's ice turning into a river up there in Greenland. There's an octopus in a parking structure in Florida in November of 2016. And even on sunny days, the water is rising in Florida, and they're seeing sea creatures in places sea creatures are not supposed to be. So, 93 percent of this extra trapped heat goes into the ocean. And you can see how the ocean has been absorbing heat quite dramatically. And I think some of this you've already seen in the last presentation. So, I'm going to skip through some of these. But basically, a hotter ocean means storm events, means hurricanes, cyclones, flooding. Maui, Kahului, could look like this. In the Philippines, there was a terrible typhoon in the Philippines a few years ago, and that's what it looked like. And we don't want our island to look like this. However, we can't stop...whether...we can't stop these storm surges, we can only prepare for them. There's Mozambique. So, I don't know if we talked earlier about the hydrologic cycle, but basically, we have more evaporation means more rain. Water returns to the sea, and this is happening at an increased pace, and the storms are getting stronger, having...that was a water bomb basically is what's happening. One fell on Houston a couple of years ago, and it was catastrophic. So, this is, you know, precipitation or rain anomalies. You can see how they're increasing rapidly in the last 20 years. This was Japan in this past June, and more than a million people had to be evacuated due to flooding, landslides, due to heavy rain. So, here is a graph on extreme weather catastrophes. So, you can see how they're growing, and they will continue to grow. And it's daunting, the economic losses, you know, over 600 billion in economic losses. So, as we get, you know, more water, more...as we get more heat, we get more evaporation, more water comes up, you know, stronger storms, droughts. This is a water reservoir basically, and they're running dry. And this is going on all around the world. This was in 2018. Australia sort of explains what's going on there right now with all of the fires. I think as of this morning, there was a 136 fires raging in New South Wales. And of course, hotter years have more fires as we experienced here on Maui last year. Here's South Korea. So, the fires aren't just out in the wilderness areas. They're encroaching on inhabited urban areas as well. So, the fire season in the US is a 105 days longer than in 1970. So, these are the biggest and most expensive wildfires. Now, in California, the most expensive ones are going to be in California of course, because the population and the land cover. Here on Maui, we're seeing wildfires, and we need to prepare for those wildfires encroaching on urbanized areas. So, there's more on Australia that was in 2019. That was last winter, their last winter, or excuse me, summer, the end of their last summer, and already Australia is having severe wildfires early in their summer. Russia burned horribly last summer. And here's a statistic I think not a lot of people know about, but 10 years ago, almost 10 years ago, in Russia, there were fires and 55,000 people died. Our media is not reporting on the climate catastrophes. So, the human crisis is that people are migrating, mass migrating. So, Syria was a result of a drought. One point five million people flooded into crowded cities causing mass migration out into Europe. Here's a good quote, and this was from 2014. So, that was five-and-a-half years ago. Climate change will lead to food and water shortages, pandemic disease, disputes over refugees and resources. This is what's coming. One billion climate migrants, and we will be no exception because of the Pacific islands that are getting covered with sea level rise. Those people have to find higher ground and most likely, will be looking towards Hawaii for refuge. The migrants coming up at the border of

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Mexico are coming up because of a drought in Central America. It's another...it's a climate migration. Honduras and Nicaragua were the highest on the global climate risk, and they have the most migration. This is El Salvador, June 2018, two months later, look at how dried out. That's their food. So, food security gets affected. Okay. I got to move along here. So, what I'm going to do is I am going to...can I turn this off and move it to our other speakers for now? How do I do that?

CHAIR KING: Sure. Yeah, we can...we'll introduce...who is going next? Is it Mr. Stark?

MS. RYAN: Next is going to be Tim Botkin from --

CHAIR KING: Okay.

MS. RYAN: --University of Hawaii Sustainable Sciences Management, and then I'm going to wrap up with what other municipalities are doing after Tim and Jeff speak.

CHAIR KING: Okay. So, you just push the button and you can turn your mic off.

MS. RYAN: How do...

MR. BOTKIN: Okay.

UNIDENTIFIED SPEAKER: Okay.

MR. BOTKIN: Yes, my slides are...they're kind of vanilla. I didn't know if we were going to combine and make them pretty for you. So, I apologize for that. No disrespect intended. I just want to say first...

UNIDENTIFIED SPEAKER: ...*(inaudible)*...

UNIDENTIFIED SPEAKER: ...*(inaudible)*...

CHAIR KING: Maybe hold it a little closer.

MR. BOTKIN: All right. Can you hear...okay.

CHAIR KING: Yeah.

MR. BOTKIN: Now it's better. Like I said, first thing I want to say to you is I know this is really hard sitting in your seat, trying to be a community leader, listening to all these voices, having all these things coming from different angles, hearing about things that are 10 or 20 years out when your political lifespan can no chance go that long. These are very, very difficult times, and leadership is hard to come by. I teach sustainability. It's a refuge I have taken. I think I've had some political background and I've had a legal background. I've had other backgrounds. And what sustainability does is allow me to help teach others about how to understand the full breadth and what all the players are in various scenarios and problems that we have to deal with. And so, we

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use a systems approach for that. I know this does not necessarily mean much. But the truth is, it does allow you to really pursue truth and honesty, which is really, really critical and helpful. That being said, climate change is probably the most common case study that we look at because it is so massive, because it is so intensive, and it includes so many different options. So, that doesn't make it easy. But I will say this, it's not the fact of it that's hard. Scientifically, it's there. We know what it is. It's not hard to prove out. Every day, we see new things that tell us this is what's going on. This is the problem we have. Even though over the holiday, even I have relatives tell me well, you know, we may have a ice age anytime now too. And so, we have all of these amateur scientists trying to find a way to explain that this really is not a problem. We can't let that kind of influence affect us even though the next step over, which is the hard one is the political side, which is at least allegedly tied to economic side, and change is hard. People don't want to do it. People don't want to admit we've made or created problems that we have to fix. And so, that's where leadership has to come in. And so...but my approach is to talk about Maui. It's to talk about where we live and to talk about the unique circumstances we have, both good and bad that hopefully can help you as you decide what are the appropriate actions for us to take. So, the first one is to understand how deeply intertwined our economy is with this concept of climate change. What we need, and that is in the way of imported things like people, and food, and et cetera, cause climate change. That's a problem. We know there have even been people for instance have cancelled conferences coming to Hawaii because they said no, we're not going to create that kind of emission to get here. Flick, flick, the light is gone, our economy, our economy, we got to be careful with it. How can we admit this even when we have that kind of a potential loss, but we have to. We have to find a way to do it. On the other hand, even worse, as climate change is exacerbated, we lose more than most people. So, these things that we've got that drive our economy, beaches and reefs, and water supply, are the things that are most critically undermined by climate change, and that we have to worry about. So, that puts us in a really tough catch-22. So, what can we do? Yeah, I'm going to say that's tough, but it doesn't mean we can't do it because we live here, we need to take care of this place as well as we can. Another one that is equally distressing perhaps, is that we could take away every single emission Maui makes today and forever, and we would not impact climate change. That's very disappointing. We can't take care of our own problems. This is a globalized problem and we know it. And so, we have to get others and partners, and affiliates to help us work on this kind of thing because that's the only way we're going to get anywhere. And that makes it tough too. So, that means we really need people to hear about us, and for them to join in and...but that's where we've got some leverage. I went to school in New York. Everybody I knew, knew about Maui. Everybody said, oh man, I want to go to Maui. None of them said I'm ready to trash Maui. And nobody I don't think in the world says, I'm ready to let Maui just turn into a desert. So, that's a major advantage. You...we don't have to go and tell people about it. It's there. So, that's part of what we've got to do. And then...but that leadership aspect and how we can strategize, how you can strategize how to do this, is what is really the trick. And so, I think that's where we are today, right, trying to figure this stuff out. When I think of climate change, this red line is what I think of. It is what we call an exponential graph, a J curve. There are plenty of them out there in the world today. This one in particular represents emissions. The other ones can

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represent sea level rise. They can represent energy consumption. They can represent population, lots of things. And these are red flags in the sustainability world. Because when things start going up at that level, we know it can't go on forever. Something is going to crash, right? And so, this is where we are though. But this is what worries me when we have our discussion sometimes about what to do. Because we have to understand, this trend line doesn't stop. It doesn't just say, okay, I'm going to quit for a while and I'll come back later. It's compiling every year, every day, more, and has been for a long time, and it's going to continue to do that unless we have radical changes and behaviors in this world. That's distressing in a way, right? It also means that our attempts to act by virtue of adaptation or mitigation, sometimes they overuse the word resilience, really aren't going to help much because they're going to help us find a little spot on this line, but then the next day, it's going to be all over again. What that tells me is we have to work on helping flatten this curve out. That's where we have to be. And again, I realize from what I'm seeing, this is truly a monumental request, but at the same time, it might help us decide where we put our resources, where we put our efforts to help try to understand. We...we're watching on TV what's going on in Australia. That will have an impact on a lot of people in the world. The thing that probably had the most impact ever was way back in 2005 with Hurricane Katrina, and the US quit buying SUVs for two years 'cause we were afraid that climate change was real. But then we went back to buying SUVs, right? So, helping work that through, and how do we do that? And then in the end, we find that history doesn't really tell us that we've got allies at least in the United States who are going to do this first. We have to be careful. There are some out there. We need to find them. We need to work with them, and maybe there are some opportunities. But when we talk about this curve, when we talk about what we're doing, and where we're finding, and the statistics that allow us to say, oh here's how much sea level rise or whatever, understand that for one, those statistics even as we heard about earlier, and I discussed with our neighbor friends, that issue is that's somebody's version, but the national assessment by NOAA puts the top at an eight-and-a-half feet or 8.2 feet. That's a lot more than three feet. Bottom line is nobody is sure. Everybody has a caveat. It always depending on how quickly the polar caps are going to melt as Rita's slide show, as others show, it's always happened a little faster than we thought. So, for us to prepare for a scenario and that only be our only strategy seems to be running in circles. It doesn't necessarily get us where we want to be. So, our challenge is to be leaders. Our challenge is to tell the world this is really a problem. And unless you want to kill places like Maui, we've got to start to work on it in earnest. So, when I look at the things that can be done, and I...Rita pointed out to me that this was on the list, and again, I...this is a...I'm hoping understanding this to be kind of an introduction. And I'm hoping then to give some background and certainly if I can help more later, I will no doubt do it. This keeps me up at night. But our understanding of what...about the climate or carbon cycle and GHG emission...GHG, greenhouse gas effect, is all very clear, but what the impacts are going to be, we don't know yet. We don't know for certain. It's changing every time. We're seeing compounding effects like the release of methane from the permafrost, or the overexpansion of the ocean by thermal...by warming increases sea level rise. We missed that. We missed ocean acidification until about 12 years ago. So, the...we're still learning. We're just people. We're still working on this stuff. But the point is, the one thing we've got to do is try to

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figure out how to change our behavior to get away from this thing that captures heat, and that is our emission. So, how can we do it? Well, we know that there's carbon tax. We know that there are huge opportunities and economic development for those who go out and say, hey, we're going to sponsor alternative energy technologies that do not produce greenhouse gases. My little cracker in the ear of sustainability says yes, but be careful and don't create batteries and PV to such an extent that we're going to have millions of them in our landfills. So, we can still do that too. But right now, we can head off the curve, and we have to be able to do that. So...but then I want to point out, and I want to congratulate those of you who've talked about it, and that is as much as I hate to say it, because I know what it is, litigation is something you have to look at. There have been litigations in the world, in the country that have worked to take on this phenomenally large entity that controls so much of our politic, and they have no reason to change because their business model works. When I was in public office around the turn of the century, when I went to Washington, D.C. the first few times, I was told by senior staff of congressional, senate and/or congress, do not say climate change, do not say global warming while you're in this office. Democrat, Republican didn't matter. Do not say it. It's something we're not going to talk about. And if you go look even deeper, the history of the Kyoto accord, which was the thing that was going to transform our entire planet in the way we use fossil fuels and the way we allow emissions, was approved by pretty much every country in the world except one, which was the United States, right after Al Gore had led the Kyoto framework, the initial part. But for the Kyoto accord where our Senate needed to ratify the treaty, the vote against it was 0 to 95. We did not have a US Senator vote for it despite the world's voice. So, this is what we're dealing with, but it helps us see where we are, where those problems are. The litigation concept conceivably allows little guys to take on big guys, and that maybe what we have to try to do.

CHAIR KING: Mr. --

MR. BOTKIN: Now --

CHAIR KING: --Botkin, can I just...

MR. BOTKIN: --we still have to try --

CHAIR KING: Mister...

MR. BOTKIN: --and work...

CHAIR KING: Can I just ask you to wrap it up 'cause we're going to lose quorum at --

MR. BOTKIN: Okay.

CHAIR KING: --noon. So, I --

MR. BOTKIN: I just...

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CHAIR KING: --got to move on --

MR. BOTKIN: Just want to --

CHAIR KING: --to Mr. --

MR. BOTKIN: --say --

CHAIR KING: --Stark.

MR. BOTKIN: --this one last thing, that doesn't mean we don't have to do and work on the things you talked about. They still need to be done for the short term, but that shouldn't be the completed plan. We need to work on the curve as well. Thank you.

CHAIR KING: Thank you. Okay. You want to introduce our next presenter, Ms. Ryan?

MS. RYAN: Our next presenter is Mr. Jeff Stark.

MR. STARK: I can't figure out how to turn on this microphone. Hello.

UNIDENTIFIED SPEAKER: Hello.

MR. STARK: Hello.

CHAIR KING: Okay. There you go.

MR. STARK: Okay. Good morning. I want to first thank you for creating this Committee. This is a fantastic step in my opinion. It puts global climate change on the same level as other big-time ideas and big-time issues. So, congratulations. I think it's a great step. Just real quick, I'm a writer by trade for the last 30 years. I've been writing primarily on environmental issues. I published about 4 or 500 newspaper columns, 20...2,000 radio shows, and worked with many nonprofits here on Maui, and also covering a wider scope. So, I don't know if I know what I'm talking about, but I do talk about it. I want to...like most of us, some of the things I was going to say about climate change and so forth and so on, have already been presented. So, I'm going to cut right to the chase. I'm here today as a representative of an organization known as the Citizens' Climate Lobby. This is a national organization with over a 170,000 volunteers in chapters in all 50 states. We are working now a bill that has the potential to make a giant impact on our...on the problems that we're dealing with. It's called the Energy Innovation and Carbon Dividend Act. It's now in the US House of Representatives. We have 65 co-sponsors. That's 65 Representatives to the House of Representatives have signed on this bill. Here on Maui, we've been working for the better part of a year in setting up the Maui chapter. And so far, we have 95 members on Maui. The name of this bill is indicative of really what it promises to do. It's the Energy Innovation and Carbon Dividend Act. So, there are...we're dealing with two separate issues in effect. I'm going to read a little bit from a handout about the bill in order to guarantee that I'm accurate, which is not always the case. We'll deal first

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with the energy innovation section. This bill imposes a fee on the carbon content of fuels including crude oil, natural gas, coal, or any other product derived from these fuels that will emit greenhouse gases into the atmosphere. This fee is imposed on the producers or importers of the fuels and is equal to the greenhouse gas content of the fuel multiplied by the carbon rate, blah, blah, blah. The story here is that if you are a big carbon user, you're going to pay a surtax, excuse me, a surcharge on your purchases of those fuels. And this is the carbon...this is the energy innovation side of this bill in that it will raise the cost of doing business if you use these fuels, so you will naturally be impelled to develop ways to not use the fuels, to innovate. The surcharge will go up every year until such time that it's no longer needed. But it's immediate, it hits the people who produce the greenhouse gas emissions, and it is pretty simple to understand. The best part is the second part, the carbon dividend. Tim just briefly mentioned a moment ago the idea of a carbon tax, which is what this bill sort of fits into, but not really. The reason is that unlike the other bills, and for example, our US Senator Brian Schatz has introduced a similar bill in the Senate, and there are several other similar bills also working. And most of them distribute the funds that are generated by the surcharge to government organizations. With our bill, the carbon dividend will be routed into a trust, which will then write a check to essentially every American citizen for their portion of the funds that have been generated by the surcharge. So, unlike other programs which generate an inflow of money to the government, this isn't going to get lost in some bureaucracy, or it's not going to support some tax increase. It's pure and simple, from the guys who buy the fuel to the people who use it. So, that to me is an extremely important difference, and it's what makes our bill as doing as well as it is. For example, in the first Democratic debate back couple months ago, whenever it was, virtually, every candidate mentioned our bill, some by name. But the idea of what we're doing, which is what a lot of the other bills recommend as well, is enhanced by the carbon dividend, and that's really important to remember. The...there's a couple other points I'm going to go through real quick, and then I'm pretty much going to be through. We need to remember that this act is going to be effective. And I'll tell you how effective in a minute. It's going to be good for people. It's going to reduce...it's going to put money in our pockets. It's going to be good for the economy 'cause that...those funds will stimulate the economy, and it's revenue-neutral. The annual dividend for a family of four under the current configuration of the bill is \$3,456. If you've got a husband and a wife, and a couple of kids, you're going to get \$3,500. It's going to come right to you. It's not going to be a tax credit. You can do anything you want with it. I'm a little unclear on this, but I believe you won't be taxed for it. In any case, that's how this bill distributes the funds that it generates. The bill will create 2.1 million jobs over the next ten years in communities all around the country. The money...excuse me, the bill will also produce a healthier environment. Today, we lose a 114,000 lives a year to pollution-related disease. In the future, we'll be saving 295,000 lives per year. The bottom line is that if this bill is enacted, in ten years, and this is a figure which is supported by a study that Columbia University's Global Climate Change Policy [sic] produced about a month ago, as well as several other academic studies, the bill will produce a 40 percent reduction in climate change...excuse me, in greenhouse gas emissions over a 10-year period. And that's just the start. If we produce that 40 percent, that's a huge number. It will build upon itself. This is a simple enough

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concept that it can be exported around the world. I mean virtually, any industrialized nation can do the same thing, and it's not...it's easy to understand. It's not infrastructure critical. It's a very simple idea. The guys who use the most of these fuels and produced most of the greenhouse gas emissions will pay to do that until they figure out how to not do it. And the people they pay will be us. It's not going to go to a government committee or an industrial organization. You're going to get a check in the mail, and you can spend it any way you want. That's pretty much the overview. I'm here because I intend to come back and ask this body to sign on with several hundred other municipalities, cities, towns, and states. California is a co-sponsor. I want Maui County to be a co-sponsor of this bill, along with all these other organizations, municipalities, governments. We can accomplish a great deal. We can do it right now. And I will ask you to do that as quickly as I can. I think that's all I need to...

CHAIR KING: Okay.

MR. STARK: Oh, one other point. And I'm still not sure about this, a couple nights ago, I was watching the CBS evening news and they covered the Australia fire as Rita talked about a minute ago, and they said that half of Australia was burning. And I could not believe that. I record it, so I rolled the tape back and they said it again, half of a continent is burning. So, we better get on this pretty quick. Thank you.

CHAIR KING: Thank you, Mr. Stark. So, real quickly, we'll go back to Ms. Ryan, and, you...and focus on things that we can possibly do here in Maui County. And if Councilmembers are able to stay, then we can do question and answer after this. Okay. Ms. Ryan?

MS. RYAN: Okay. So, oops. This is the fun part. This is what's going on around the world, who's doing what, and some of the success stories that we can also model ourselves after if we want. We have different, you know, circumstances sometimes and needs here in Maui County, and this Committee I'm sure will focus on that going forward. But let's look at what other municipalities have been doing. So, wind, let's talk about wind a little bit. In 2000, they thought that the wind capacity would reach 30 gigawatts by 2010. And what happened in 2018, that was exceeded by a factor of 20. So, we are able to use wind as an energy solution. You can see the global wind energy capacity here. Wind could supply electricity 40 times over, just wind. So, excuse me, I'll go back to that one. Portugal provided over 100 percent--let me see if I can go back--over a 100 percent of their energy, I think they exported the rest, with wind energy by March 2018. Scotland is producing wind energy not only for themselves but they're exporting it to other EU countries. Solar and wind are becoming cheaper. I think we're experiencing that certainly here in our island community than fossil fuel. So, 2002, they thought solar energy would grow one gigawatt by 2010. And actually, that was exceeded 17 times. Oops, 2018, a 109 times. Worldwide solar PV installation is increasing. Nevada signed an agreement to purchase solar electricity at 2.4 cents per kilowatt hour. That's pretty cheap compared to Maui's. Oh, I think we're about 40 cents, 38, 40 cents a kilowatt hour here for our electricity. A 100 percent in January and May of electricity in

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Germany was from renewables. We can get there too. One in five houses in Australia are using solar. China, 53 percent of new capacity is solar. India, 65 percent. This is new capacity. This is not current capacity. This is the new installations. Europe, 88 percent of all new energy systems were built from solar and wind. United States, not quite as impressive, but 49 percent from solar and wind. This is...I just like this slide. So, this is the Kentucky Coal Mining Museum. And that's the roof of the Kentucky Coal Mining Museum. So, they are...they're solar-powered even though they are a coal museum. So, it tells you the way the world is going. In Chile, you can see this solar farm in a area that looks like it suffered from desertification...desertification, excuse me. In Chile, the solar market has skyrocketed. Look at this. Well, it's going and going. Where will it end? It keeps going, and going, and going. So, we can do it here on...in Maui as well. We can increase our renewable energy capacity with enough will. So, you know, solar energy is just totally available, you know. And in one hour of solar energy, the entire world can be powered. India is doing similar renewable energy capacity, skyrocketing. Now, storage is an issue, and it's a big issue here on Maui. So, storage prices are coming down and storage capacity is increasing. And this is what's projected for 2040. Okay. And they're doubling...at the end of 2019, they doubled. So, lithium ion battery prices, which we use now...I'm not saying this is a sustainable solution, we know that lithium ion batteries end up in, you know, landfills. We...there's new lithium sulfur batteries coming on the market as well that will hold more gigawatts, kilowatts, megawatts. And that's something that we have to look forward to, but we shouldn't wait for that to happen. We need energy storage. In South Australia, Tesla built the biggest lithium ion battery at a wind farm, kind of cool. So, Florida, in Manatee County, they're totally replacing all of their gas-fired power plants with solar farms and a new battery system. And four...it's going to be the...four times larger than the largest one that we have. So, we can replace our gas-fired power plants here on Maui County too...in Maui County. So, traffic is a problem, I don't know if anybody has been to Los Angeles. Electric vehicles are increasing and we need to create infrastructure so that we can have more electric vehicles, hybrids, and other renewable energy transportation. And this...I'll skip past this in the interest of time. But by next year, the electric vehicles will be on par with the combustion engine vehicles as far as cost goes. And this is a fossil fuel vehicle phase-out in other countries around the world, and what years they're doing it. Norway, in 2025, that's five years away. Other ones, 2030, up until 2050. We need to set a goal here on Maui County as well. So, globally, 11 million people are working in the renewable energy sector. So, there's a lot of jobs to be had. We're importing our energy here. We can create it here, and we can employ more people. Rather than sending money off the island, we can create a healthier ecosystem, a healthier economy here on the island by creating our own solar and wind energy jobs and bio energy, and employing people. So, solar energy jobs are growing. We need to keep the incentives going for solar energy for both commercial grade and residential grade. Solar installer is one of the fastest growing job categories in the US, and wind turbine service technician is second. So, there's a lot of jobs to be had. So, net zero greenhouse gas emissions by mid-century. Okay. So, in 2015, Paris...we joined the Paris climate accord last year. Thank you, Maui County, for doing that. Thank you to the Council for doing that. However, only one country in the world has been following their goals, and that's Morocco. Every other country is seriously behind their

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commitment. And the US is rated lowest. Now, we're not out of the Paris Climate Agreement because we can't get out until the day after the Presidential election. So, your vote counts. So, Indiana used to...well, is producing 65 percent of its electricity from fossil fuel. It's going to close all power plants in the next eight years, and it's going to save its customers more than \$4 billion. We can have huge savings here on Maui County as well. Several states in the United States have committed to a 100 percent clean electricity by 2050 at the latest. We need to set a commitment as well here in Maui County. So, companies too, companies...it's not just municipalities but global companies are committing to go 100 percent renewable. And we do have a campaign with The Climate Reality Project where we are asking businesses to set their goals for a 100 percent renewable energy. So, here's just a few of those companies that have signed on to be 100 percent renewable energy. And clean energy purchase agreements is increasing, and we need to see graphs like this as well here in Maui County. So, China and India are on track to overachieve their Paris commitments. They haven't done it yet but they are on track to do it. And then, so what are the recommendations for Maui County? These municipalities were able to achieve these great results not accidentally. There were economic factors certainly, you know, the cost of renewable energy being lower than fossil fuel. But they have proactive climate action plans, and that's one of the things that I think this Committee really needs to start acting on initially is a climate action plan, not a climate reaction plan. I recommend a commission on climate action to support the Committee here, a people's commission of climate experts who can help guide you. You know, there's, you know, mitigation, adaptation, and resilience. So, you know, adaptation is okay, we're going to have to live with the changes. Mitigation is well, let's try to, you know, decrease...go net-neutral, decrease our contribution to the problem, and that's something we need to focus on as well. And then resilience, which is, you know, let's, you know, move the water treatment plant that we know is going to be inundated with storm surge and sea level rise, move the roads that are going to be washed out and cutting off West Maui from the rest of the island, move some of the power plants. And also, a recommendation is, you know, climate justice and a just transition. The climate effects hit the poor, the elderly, the homeless far more than it hits people who have homes and shelter, and good health. And we really have to look at that. And then the just transition is about people who are employed right now and in the fossil fuel industry here on Maui County, or related, you know. Transportation, most of our transportation certainly is fossil fuel. So, we need a just transition so that they can transition to this renewable economy without losing their jobs, but by creating opportunities here on Maui County for new jobs and a just transition for those folks. So, that ends my presentation. Thank you for listening.

**. . .END PRESENTATION. . .**

CHAIR KING: Okay.

MS. RYAN: And thank you to my co-panelists, Jeff Stark and Tim Botkin.

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CHAIR KING: Okay. Thank you so much. That gives us a lot to think about and a good foundation. Members, any questions for any of the panelists? Ms. Kama?

COUNCILMEMBER KAMA: Thank you, Chair. I think I have a question for Mr. Stark. You mentioned regarding the Energy Innovation and Carbon Dividend Act, that there were 65 members of Congress that were supporting that.

MR. STARK: Correct.

COUNCILMEMBER KAMA: So, is it both House and Senate or just...

MR. STARK: No, it's...the bill originates in the House --

COUNCILMEMBER KAMA: Okay.

MR. STARK: --and I'm told, I don't follow it closely enough to be authoritative, but usually, if you have five co-sponsors, you're considered to be pretty good, and we have a lot including an ex-candidate for President. So, what happens is the House will act on this bill, and then it goes to the Senate under ordinary circumstances, and then they either create their own version or negotiate changes, or whatever. There's a process they go through. As we all know, that process is not occurring now with the business --

COUNCILMEMBER KAMA: Right.

MR. STARK: --around the Trump Administration. But as soon as that's settled, we'll be able to move the bill forward.

COUNCILMEMBER KAMA: And I just had one more, Chair --

CHAIR KING: Sure.

COUNCILMEMBER KAMA: --if you could...what Ms. Ryan had mentioned earlier about getting Maui to make a commitment in some way, shape, or form, is that something that you would be bringing back again later on too?

CHAIR KING: Yes.

COUNCILMEMBER KAMA: Okay.

CHAIR KING: Yeah. A lot of this information is just kind of step one, and we'll move on. Do we have a...

UNIDENTIFIED SPEAKER: ...*(inaudible)*...

CHAIR KING: Oh, we need to recess?

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UNIDENTIFIED SPEAKER: . . .(inaudible) . . .

CHAIR KING: Oh, okay. Well, is...are there any other questions or...if not, we will defer this item and --

UNIDENTIFIED SPEAKER: Okay.

CHAIR KING: --there's a lot more information to come.

**COUNCILMEMBERS VOICED NO OBJECTIONS.** (Excused: AL, RH)

**ACTION: DEFER PENDING FURTHER DISCUSSION.**

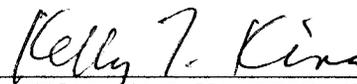
CHAIR KING: This was a really good first step. And I thank the Councilmembers for being here, and I thank our presenters for being here. And I think one of the items that came up was, you know, I like this idea of a commission. So, that's something we can explore like a body of experts and professionals. Because we all know that we are decision-makers but we're not the experts, we're not scientists, and we need that information. We need the objective information going forward. So, with that, I will thank everybody for being here and especially Emergency Management. I really appreciate your input and being able to collaborate on this with you. And until the next Committee meeting. Thank you, everybody, for being here. We'll recess at 12:10.

MS. VINORAY: Adjourn.

CHAIR KING: I'm sorry, we're adjourning at 12:10. . . .(gavel) . . .

**ADJOURN:** 12:10 p.m.

APPROVED:

  
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KELLY TAKAYA KING, Chair  
Climate Action and Resilience  
Committee

car:min:200106:acqp

Transcribed by: Ann Carmel Q. Pugh

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CERTIFICATE

I, Ann Carmel Q. Pugh, 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 25<sup>th</sup> day of January, 2020, in Kihei, Hawaii



A handwritten signature in black ink, appearing to read 'Ann Carmel Q. Pugh', is written over a horizontal line.

Ann Carmel Q. Pugh