

# INFRASTRUCTURE MANAGEMENT COMMITTEE

Council of the County of Maui

## MINUTES

October 31, 2011

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

**CONVENE:** 9:04 a.m.

**PRESENT:** VOTING MEMBERS:

Councilmember Elle Cochran, Chair  
Councilmember Michael P. Victorino, Vice-Chair  
Councilmember Robert Carroll (out 10:53 a.m., in 11:09 a.m.)  
Councilmember Donald G. Couch, Jr.  
Councilmember G. Riki Hokama  
Councilmember Danny A. Mateo  
Councilmember Joseph Pontanilla

**STAFF:** Scott Jensen, Legislative Analyst  
Yvette Bouthillier, Committee Secretary

**ADMIN.:** David C. Goode, Director, Department of Public Works (IM-27)  
Michael Miyamoto, Deputy Director, Department of Environmental Management  
(IM-32)  
Michael J. Hopper, Deputy Corporation Counsel, Department of the Corporation Counsel

*Seated in the audience:*

Kalvin Kobayashi, Energy Program Specialist, Department of Management (IM-27)

**OTHERS:** **Item 27:** Steve Sutrov  
Dr. Lee Altenberg  
John Detz, President and General Manager, KAOI Radio Group  
Dr. Michael Reiley, President, HNU Energy  
Dr. Fern Duvall III, Member, Outdoor Lighting Standards  
Committee; and Wildlife Biologist, Department of Land and  
Natural Resources, Division of Forestry and Wildlife  
Dr. Joe Ritter, Chair, Maui County Outdoor Lighting Standards  
Committee; and University of Hawaii, Institute for Astronomy  
Michael Maberry, Assistant Director, University of Hawaii,  
Institute of Astronomy  
Others (1)

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

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CHAIR COCHRAN: . . .(*gavel*). . . Good morning. Will the meeting of Infrastructure Management Committee on Monday, October 31<sup>st</sup> please come to order. It's about 9:04 a.m., and aloha, Members. Happy Halloween to all. Before we begin, please turn off or silence any cell phones or noise-making devices, and I shall introduce Members here present. I have Bob Carroll. Good morning.

COUNCILMEMBER CARROLL: Good morning.

CHAIR COCHRAN: And Chair Danny Mateo.

COUNCILMEMBER MATEO: Good morning, Chair.

CHAIR COCHRAN: Good morning. Donald Couch.

COUNCILMEMBER COUCH: Good morning.

CHAIR COCHRAN: Hi. And looks like Dr. Riki Hokama today.

COUNCIL MEMBERS: . . .(*Laughter*). . .

CHAIR COCHRAN: And Vice-Chair of the Committee, Michael Victorino.

VICE-CHAIR VICTORINO: Good morning, Madam Chair.

CHAIR COCHRAN: And Council Vice-Chair Joseph Pontanilla.

COUNCILMEMBER PONTANILLA: Good morning.

CHAIR COCHRAN: Good morning. And with the Administration, I have Director David Goode here this morning.

MR. GOODE: Good morning.

CHAIR COCHRAN: Hi, Director Goode. And Corporation Counsel Michael Hopper.

MR. HOPPER: Good morning, Chair.

CHAIR COCHRAN: And always never forgetting our Committee Staff members, Yvette Bouthillier as Committee Secretary, and Legislative Analyst Scott Jensen who I believe is handing out some information. Members, in a few moments we'll be taking public testimony. Anyone willing to do so, please sign up at the table in the Chamber gallery. And the testimonies, please limit them to the items on the agenda today, and you will be given three minutes to testify with a minute to conclude. And if you're here representing a group of any kind, please state your

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name and that, that entity. So at this point, Members, without objection, I shall open the floor for public testimony.

COUNCIL MEMBERS: No objections.

CHAIR COCHRAN: Thank you. And, Staff, could you please call our first testifier?

MR. JENSEN: Madam Chair, the first testifier is Steve Sutrov. He'll be testifying on IM-27.

CHAIR COCHRAN: Thank you.

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

MR. SUTROV: Good morning. My name is Steve Sutrov. Good morning, Council, Council Chair. I just heard about this meeting yesterday, and, and because I've been involved with this, this is outdoor lighting situation on Maui since 1993-1994 when I was president of the Kula Community Association. And we were asked to comment on a proposal by the Subdivision Standards Committee on what we need in Maui as far as appropriate lighting for our community, whether it's streetlights, residential lighting, commercial lighting, and recreational lighting. And so we did, and it's been...we got involved talking about it for a number of years after that, and to develop the...your current outdoor lighting standards that we have now, and the Outdoor Standards Lighting Committee. I was on the Outdoor...I was on the Street Lighting Committee also for a couple years, and that was a very frustrating experience. It seems like the current Outdoor Lighting Committee should be given more power as far as I'm concerned. It shouldn't be, it should be more than just advisory or, or...it seems like things are brought to them probably like problem lights that they discuss and make recommendations. I think they should be in the forefront with the professionals that they have on their committee to make decisions, like the Planning Commission makes decisions, and, and have it maybe approved by the Planning...the Public Works Director. But they should have a lot more power, I believe that should be happening. LED is, is new technology and I think it can be, it can be very good as far as energy use and directing the light where...exactly where you want it to eliminate pollution and light trespass. But it's a very powerful technology, too, I understand, where if we don't use the appropriate spectrum of light, it can be very damaging. And I think that's what we're here to talk about today and hopefully that everyone will be agreeable to, to take into consideration that this should be something that we, we should adopt. And, but it should be adopted with scrutiny as far as what kind of lights, what kind of spectrum of light we can live with here as far as our environment, with the observatories, with the special environmental animals we have here to protect, with light trespass, and protecting our night sky. So I also...you will hear

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testimony that I think that it should be, it should be made into...brought into the County Code. It shouldn't, it shouldn't just be Administrative Rules. There have been problems with Administrative Rules in the past that I've dealt with, where it's up to the, the whim of whoever's in, in charge at the time, whether or not it's going to be applied or not. And if it's in the County Code, it's set forth clearly for a good part of time, and people look at it as being something that has to be adhered to. So thank you very much, and, and good luck today.

CHAIR COCHRAN: Thank you, Mr. Sutrov. And, Members, at this point, any need for clarification from our testifier? Seeing none, thank you for your time. Next testifier.

MR. JENSEN: Madam Chair, the next testifier is Dr. Lee Altenberg. He'll also be testifying on IM-27.

MR. ALTENBERG: Good morning, Chair Cochran and Committee members.

CHAIR COCHRAN: Good morning.

MR. ALTENBERG: I'm Dr. Lee Altenberg. I served on the Outdoor Lighting Standards Subcommittee of the Public Works Committee in 2002 and 2003, which drafted the law that eventually became Chapter 20-35 [sic] which is proposed to be amended today. Now I haven't been able to see the bill proposed by the Director of Public Works, so I, I'm not certain what is in it. Perhaps...but so I could only address from what I was told orally which is that he wants to amend it to put in...to allow light emitting diodes as a light source for streetlights, and that the...any kind of spectral limitations be a...be crafted as Administrative Rules. Perhaps he could nod if I've correctly characterized it. Good, all right. So I'm proposing an alternate bill that the main difference is that the, the limitations on the spectrum be in the Code itself. So what does a light, light pollution ordinance do? It has...it puts basically three kinds of constraints: one on shielding, one on the spectrum, and if it allows...if it's lenient with respect to those two, it puts limits on the time of operation. And so basically the policy then controls the shielding, the spectrum, and the time of operation. So the Public Works Director is asking basically to be given a pen to be, to be able to write the spectral policy for outdoor light standards on, on streetlights, and I think this is a very, very bad idea. Administrative Rules are meant to allow the Administration to, to decide how it's going to administer and execute the offices and enforce the law. It's not intended to write law. And in this case, the spectral limits are a key feature of the law that's not going to simply affect the Administration in its carrying out the law, but affect the public, affect the observatories, wildlife, and human health. So the key...the, the bill I propose makes...basically proposes three things. One, it replaces the category of monochromatic...augmented monochromatic light with spectral compliant light, and the details are in there on how the spectrum should

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be limited are, I've gained from Doctor Joseph Ritter and Dr. Richard Wainscoat at the Institute for Astronomy. Second, it, it copies the, the language from the Sign Ordinance which allows citizens to file complaints to get enforcement of outdoor lighting standards. And third, it deletes the, the open carte blanche for parking lot lights. The difference...the reason Class 1 and Class 2 were separated was that Class 1 is where you had like a, a car lot...a car showroom...parking lot where you wanted full spectrum. And Class 2 was basically you just needed functional lighting and you...and it wasn't so important to have the pure white light. And as it's written now, Class 2 has basically carte blanche in terms of spectrum, no spectral control which was against the original reason for dividing Class 1 and Class 2 lighting. So that's the proposed bill in a nutshell, and I hope you will give it equal consideration to that submitted by the Director of Public Works.

CHAIR COCHRAN: Thank you...

MR. ALTENBERG: Thank you.

CHAIR COCHRAN: Thank you, Dr. Altenberg. Members, need...any need for clarification from our testifier? Seeing none, thank you, Dr. Altenberg.

MR. ALTENBERG: Thank you.

CHAIR COCHRAN: We have your submitted testimony also. Thank you.

MR. JENSEN: Madam Chair, the next testifier is John Detz, he'll be followed by Dr. Michael Reiley. Both are testifying on IM-27.

CHAIR COCHRAN: Thank you.

MR. DETZ: Council members, thank you for hearing me this morning. I became aware of the situation with the addition of the LED lighting, and which has started...

CHAIR COCHRAN: Sorry. Can you state your name and any group you may be representing?

MR. DETZ: Oh, I'm sorry. John Detz, D-E-T-Z, the the President and General Manager of the KAOI Radio Group here on Maui.

CHAIR COCHRAN: Thank you.

MR. DETZ: I'm sorry. I speak in understanding of the need for both conservation and for a new type of lighting throughout Maui. My concern is that the National Association of Broadcasters on the mainland is currently conducting a study on

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what LED lighting does to radio reception. All LEDs emit what's called radio frequency, RF. That's the same thing that you get from your cell phone, a microwave, or such. The problem that's starting to occur more and more on Maui is as we get more and more LEDs predominantly right now in certain traffic signals, that, that interferes with radio reception on certain parts of the island. So what I would ask is, is the Council and as they write the bill, take into effect...take into recognition the fact that there may be radio frequency interference to commercial and noncommercial broadcast stations throughout the island. It's an important problem that seems to be growing on the mainland, and a good number of agencies throughout the mainland have started to take this into consideration. It's a problem that, as I said, is very embryonic now on Maui. Certain areas of Lahaina, if you will drive your car through Lahaina there will be areas where local radio stations will fade, some fade to complete obscurity, others fade with a noise level that comes up. LEDs that may be added to the, the system Countywide, I would hope that would take into affect the fact that at a certain point, this may impact throughout majors areas of the County. Thank you.

CHAIR COCHRAN: Thank you, Mr. Detz. Members...yes, seeing a hand from Mr. Carroll. You have questions for our testifier?

COUNCILMEMBER CARROLL: Yes, thank you. When you were saying that in the mainland they were having problems already, since your position in the radio field, do you have any documentation of the problems they had or any solutions they might have had addressing those problems?

MR. DETZ: I have several articles published by the National Association of Broadcasters showing that. I did not bring those with me today.

COUNCILMEMBER CARROLL: Could you make them available to us?

MR. DETZ: Certainly.

COUNCILMEMBER CARROLL: Thank you. Thank you, Chair.

COUNCILMEMBER PONTANILLA: Chairman?

CHAIR COCHRAN: Thank you, Mr. Carroll. Yes, Mr. Pontanilla.

COUNCILMEMBER PONTANILLA: Thank you. You know very interesting about frequency transmission. Have you heard anything in regards to like cellular phones usage in regards to what effect it does have should we put in LED lighting?

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MR. DETZ: The only effect that I've actually looked at is the fact about the fact that anywhere from about what's called ten kilohertz which is below the radio frequency dial, all the way up to 30 megahertz which is into the television dial part of the spectrum that it...what's called blanketing. If you're near an LED light or below it, it saturates a radio or television receiver and lowers its sensitivity to pick up over the air broadcasts. I've had no studies that show that LEDs have any other affect, outside of the fact that it's like a little mini transmitter, and that's a side effect of what fires the LED component. And when that component is fired in a light, it emits a radio frequency. Not enough to harm anyone, not enough to cause massive destruction, but if you're right below it or right near it, it's the same effect that you might have if you're in a room that has a great deal of computer operation on it. If you'll notice if you're in a room, sometimes you'll have trouble picking up radio stations next to a computer. The computer is emanating a certain degree of frequencies off of its screen. Same problem with LEDs in streetlights, traffic signals, or just common desk lamps.

COUNCILMEMBER PONTANILLA: Thank you. That's something that we need to talk to our probably Police Department regarding E...E911 should this affect that particular frequency that they utilize tracking cell phones. Thank you.

MR. DETZ: Thank you.

CHAIR COCHRAN: Thank you, Mr. Pontanilla. And, Members, any further clarification needed from our testifier? Seeing none...oh yes, Mr. Hokama.

COUNCILMEMBER HOKAMA: ...*(inaudible)*... Chairman. So you're, you're stating to the Committee this morning, anything that emits or has an LED component can interfere with radio frequency? So could be all of our TVs in our house that is an LED television set?

MR. DETZ: If, if you look carefully on the back, if you have like an LED lamp or unit at your house, generally if you pick it up and look underneath of it, it says that it emits radio frequency. And again, there's certain ones that are mitigated less, and there are others, and all I'm asking is that we take into...potentially a consideration, low-emitting LEDs from an RF standpoint. But all LEDs emit radio frequencies, it's part of their technology.

COUNCILMEMBER HOKAMA: Okay. I, I appreciate your presence this morning. Thank you so much.

CHAIR COCHRAN: Thank you, Mr. Hokama. Yes, Mr. Victorino.

VICE-CHAIR VICTORINO: Thank you, Madam Chair. Mr. Detz, how, how long or how far along are we with these various studies? It's been four years, five years,

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ten years. How many years and how much effective information has come out from it?

MR. DETZ: From a broadcast standpoint, it's recently as two years. It's because it's become an ever increasing problem that honestly no one really thought of going in. We all have devices that...in our houses and everything that say may produce and then whatever, you know, after effect it does. But now with the increasing thrust to going to more LEDs and the new type of light bulbs in homes and everything, it's become a larger and larger problem, an unintended consequence of doing the right thing, of changing to efficient lighting.

VICE-CHAIR VICTORINO: Okay. Mr. Detz, thank you. And I guess like everything else, Madam Chair, we get into things and then we see the residual effect years down the road, and that's the challenge we face, yeah?

CHAIR COCHRAN: Yes.

VICE-CHAIR VICTORINO: But thank you. Thank you, Madam Chair.

CHAIR COCHRAN: Thank you, Mr. Victorino. Members, any further discussion? Seeing none, thank you, Mr. Detz, for being here.

MR. DETZ: Thank you.

CHAIR COCHRAN: And you're welcome.

MR. JENSEN: Madam Chair, the final testifier who signed up thus far is Dr. Michael Reiley.

MR. REILEY: Good morning. My name is Michael Reiley. I'm the President and I'm here representing this morning HNU Energy. It's about a mile down the road from here. And just want to encourage you to, you know, thoughtfully consider this, but the high pressure sodium at the time got codified into, you know, the, the County ordinance such that, that is all that can be used now. And there...it precludes LED or any other kind of technology. You know HNU Energy, we, we really are in a bunch of different areas of, of the technology from demand side, the LEDs, to generation solar panels, to storage. We're very different than a lot of the companies in that we have a lot of R&D right in house, including optical coding chambers where we can make our own LED elements. We have a spectrophotometry lab where we can characterize nanometer by nanometer the full spectrum that LEDs cover. And, yes, LEDs are a solid state device, they do emit radio frequencies as do any other electronics you have, as does just about anything. People...I mean that's, that's...don't, don't get scared by, by LEDs have RF there. Study it and find out what's there, and see that what, what they



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bring you is an incredible energy savings. We had...any of you are welcome to come by our facility. Like I said, it's a mile from here. We have a cobra head light there. We have full range of LEDs, dimmable and, you know, indoor/outdoor, 50,000 hour lifetime. They bring so much to the table in terms of technology, in terms of light quality. We did a demonstration at the Tech Park where on a double-headed cobra, we had a high pressure sodium and had an LED, and we for months collected data on that and be happy to show any of you that briefing that compares side by side the two technologies. So I really encourage you all, it's an, it's an important element. I think all that's being asked from this bill is to open it up beyond high pressure sodium and to let other technologies compete. And then the studies and the characterizations of exactly what spectral characteristics and what emissions will be permitted, that will be the, the next step, but right now it's just trying to open it up beyond being limited in to high pressure sodium.

VICE-CHAIR VICTORINO: Madam Chair.

CHAIR COCHRAN: Thank you. Yes, Members, some...yes, Mr. Victorino --

VICE-CHAIR VICTORINO: Thank you.

CHAIR COCHRAN: --you have comments.

VICE-CHAIR VICTORINO: And thank you for, you know, that overview, and can some of that information be shared with us? I mean going down to your place would be nice but a lot of us have a lot of things to do. Would you be able to give us an overview of what you just said as far as the setup of your business and how it can help us --

MR. REILEY: Sure. I...

VICE-CHAIR VICTORINO: --your studies and, and the...some of the reports you were just referring to?

MR. REILEY: Yeah, absolutely. A number of different things, data we have right now, briefings that have been shared with the former Administration, with MECO --

VICE-CHAIR VICTORINO: Okay.

MR. REILEY: --that actually show side-by-side data, I, I can share that with you as well. I think just the knowledge that right here in our community we have a company, we have the Institute for Astronomy that has a lot of very similar capabilities in their laboratories to characterize the performance of the devices, so just knowing that that's there.

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VICE-CHAIR VICTORINO: And, Dr. Reiley, the other question I have, I've been told the disposal of these LEDs is another challenge that we face. Because are they...does this contain mercury at all?

MR. REILEY: No, you're confusing that with CFLs.

VICE-CHAIR VICTORINO: CFLs, okay.

MR. REILEY: The compact fluorescents do, and LEDs, that's what their benefits is they, they do not contain mercury.

VICE-CHAIR VICTORINO: So the, the disposals of LEDs are not as bad as the CFLs?

MR. REILEY: That's correct.

VICE-CHAIR VICTORINO: Okay. Thank you. Thank you, Madam Chair.

CHAIR COCHRAN: Thank you. Mr. Pontanilla.

COUNCILMEMBER PONTANILLA: Thank you. What's the name of your company?

MR. REILEY: HNU Energy.

COUNCILMEMBER PONTANILLA: H and...

MR. REILEY: H...it's HNU, it's actually an equation, H is Planck's Constant, and NU is the frequency of light, so HNU is the energy in a photon of light.

COUNCILMEMBER PONTANILLA: And you're located where?

MR. REILEY: Wili Pa Loop, kitty-corner from Sam Sato...right across Asian Star if you're familiar with that.

COUNCILMEMBER PONTANILLA: Okay. So the demonstration that you provided I guess the last Administration, can you provide a demonstration again?

MR. REILEY: Absolutely, yeah, anytime, individually, collectively.

COUNCILMEMBER PONTANILLA: Okay. Yeah, I'll contact you. Thank you.

MR. REILEY: Thank you.

CHAIR COCHRAN: Thank you. Yes, Mr. Couch.

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COUNCILMEMBER COUCH: Thank you. Mr. Reiley or Dr. Reiley, you mentioned you did a lot of these comparisons. Did you do any kind of testing on the possibility of radio interference?

MR. REILEY: We did not.

COUNCILMEMBER COUCH: Okay. Are you guys...

MR. REILEY: We, we could. I mean there you're going to look broadly at all the LEDs, or you're going to come down to the specific devices that are being recommended to go out. That, that's where you gotta characterize it for that.

COUNCILMEMBER COUCH: And that's the next question I have is, is there a difference between the LEDs that are...that we're considering for streetlights and LEDs that are in traffic signals now?

MR. REILEY: There certainly is. There's different color temperatures, there are different . . .*(inaudible)* . . .

COUNCILMEMBER COUCH: But I mean radio frequency, would there be a difference in the radio frequencies?

MR. REILEY: I'd, I'd say on...in the broad sense, probably not. The, the general spectrum that they, they would occupy would be the same.

COUNCILMEMBER COUCH: Okay.

MR. REILEY: But, but you can tune those, just like you can tune the light color. You can put filters, you can do things to, to abate that if, if that's...is an issue. That's, that's the nice about it, if you engineer it you can pretty much make them do whatever you want them to do as opposed to when you're heating up a gas or something or, you know, in a halogen or whatever, you're stuck with what you get there. LEDs let you tailor it to what you need.

COUNCILMEMBER COUCH: Okay. Thank you.

CHAIR COCHRAN: Thank you, Mr. Couch. Members, any further discussion, clarification needed? Seeing none, thank you --

MR. REILEY: Thank you.

CHAIR COCHRAN: --Dr. Reiley, for being here. Staff.

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MR. JENSEN: Madam Chair, there's an additional testifier, Fern Duvall.

CHAIR COCHRAN: Thank you.

MR. DUVALL: Thank you, Madam Chair and, and --

CHAIR COCHRAN: Good morning.

MR. DUVALL: --Council. I just found out about this hearing just at about 8 o'clock this morning, so I didn't have much preparation. I'm a State wildlife biologist, and I deal lots with lighting issues and seabird fallout or I guess more generally how it affects wildlife. And I am also on the Outdoor Lighting Standards Committee for the County, and I'm wishing to have, you know, a little bit of input on the current plans. I did send to the Committee members this testimony that I'm preparing, but I just did that at like quarter of 9:00 or something like that. I, I find it sort of curious that being on that committee that we didn't have an agenda covering the topic, because I think it could have serious import for the County. So my, my concerns are just a few. The...if there is going to be LED lighting, the thing that still needs to be, to be correct for wildlife would be full shielding of all new and replacement lighting, actually any kind of lighting that's here to protect wildlife and human biology. Limit the spectrum of new and replacement lighting to the correlated color temperature to less than 4...41,000 K, that is to make the light no bluer than moonlight. Limit the amount of light via the, the best energy codes available such as the IECC 2009 Code. And then wherever possible, use the lowest intensity light that's needed for the job, use motion sensors, and limit hours of lighting whenever and wherever possible. And then I think LED lighting may be the solution to do energy saving policy within the County and, and address wildlife concerns. Thank you.

CHAIR COCHRAN: Thank you, Mr. Duvall. Yes, Member...Mr. Couch.

COUNCILMEMBER COUCH: Thank you. Thank you for being here, Mr. Duvall. Question for you. You said you handed that out to Staff, do we have that testimony?

MR. JENSEN: It was emailed this morning...*(inaudible)*...

MR. DUVALL: I emailed it.

MR. JENSEN: ...*(inaudible)*... binders.

COUNCILMEMBER COUCH: Great. Have you discussed this with the Institute of Astronomy? I know they've been working hard at trying to get everybody

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satisfied in, in the proper spectrum and, and color of light. Have you been working with them on that?

MR. DUVALL: I guess not specifically; however, usually what fulfills the needs for astronomy also addresses wildlife issues in almost every case.

COUNCILMEMBER COUCH: Okay. Thank you.

VICE-CHAIR VICTORINO: Madam Chair.

CHAIR COCHRAN: Thank you. Yes, Mr. Victorino.

VICE-CHAIR VICTORINO: Mr. Duvall, thank you for being here. You mentioned that you're on the Outdoor Standards Committee --

MR. DUVALL: That's correct.

VICE-CHAIR VICTORINO: --and you're saying that the Administration or the Director of Public Works never sent any agenda item for you guys to review in this matter?

MR. DUVALL: That, that is correct, and actually we've had several meetings in the last months cancelled because there was no agenda items. And so...yeah.

VICE-CHAIR VICTORINO: Okay. Madam Chair, I'll wait to speak to the, the Director and find out why, 'cause if this committee is set up for that purpose, then I would have assumed--and I'm assuming too much maybe--but that would have been the first place this would have gone for review and then coming to us.

CHAIR COCHRAN: Right.

VICE-CHAIR VICTORINO: So I'll wait for when we have a chance to ask the Director, Madam Chair.

CHAIR COCHRAN: Thank you, Mr. Victorino. Members, any need for clarification from Mr. Duvall? Mr. Duvall, I have a question, and it's in regards to you being on the Outdoor Lighting Standards Committee. 'Cause I pulled up some...what agendas and minutes that I could from that particular committee.

MR. DUVALL: That's correct.

CHAIR COCHRAN: And I know back in May, it was...there was a little talk or discussion, I guess, so I'm not...I can't quite remember if you were there or not, there were a couple of members who were not present at that meeting. And so I know it had been brought up this year. And it was just discussed. I'm not saying

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that you folks had concrete, you know, decisions being made at that time or anything.

MR. DUVALL: Yes, thank you. I obviously wasn't there.

CHAIR COCHRAN: Okay.

MR. DUVALL: I, I think I've missed very few of the meetings though.

CHAIR COCHRAN: All right. All right. Okay. Well thank you for being here. And --

MR. DUVALL: Thank you.

CHAIR COCHRAN: --yeah, aloha. Any further testifiers, Scott?

MR. JENSEN: Madam, Madam Chair, no other testifiers have signed up.

CHAIR COCHRAN: Okay. If there is anyone there, out here in the Chamber gallery that would like to, please approach the podium, we shall give you that time and then you can fill out your forms later. I'm looking around, seeing no one approaching. Members, without objection, I will now close this meeting for testifiers...testimony.

COUNCIL MEMBERS: No objections.

CHAIR COCHRAN: Thank you, Members.

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

**ITEM NO. 27: USE OF LIGHT EMITTING DIODE LIGHTS IN STREET LIGHTING**

CHAIR COCHRAN: And we'll move on with our agenda. So, Members, we have two items on our agenda today, and the first one is IM-27 regarding a proposed bill that would enable the County to install light emitting diode lighting on County roadways. The second is IM-32, transmitting Grant G2607-3 which relates to the Lahaina...Lanai Recycling Center. First item IM-27, as some of the Committee members will recall, Chapter 20.35, Maui County Code, relating to outdoor lighting standards was established by Ordinance 3430 in 2007. Today's item includes a proposed bill that would amend that chapter to allow more recent technology, specifically the use of LED lighting on County roadways. The letter from the Director of Public Works indicates the Outdoor Lighting Standards Committee approved in concept the proposed amendments at its meeting of

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May 5, 2011. I intend to begin today's discussion with a brief presentation by Director Goode regarding this proposed bill. I will ask him to clarify what the Outdoor Lighting Standards Committee approved as well as justify the proposed modification to the Section 20.35.060. So at this point I shall turn the floor over to Director Goode.

MR. GOODE: Okay. Thank you, Madam Chair. Good morning, Members.

COUNCIL MEMBERS: Good morning.

MR. GOODE: Member...and also to the audience, and in particular our testifiers today, I thought we had some really great testimony. And it kind of underscores, you know, the number of issues that need to be analyzed in this. Yes, the, the Department had been aware of LED and other types of technologies as it relates to our streetlights, and of course when we went to Budget Committee last March and April, we looked at, you know, the line item that we have for street lighting. And just as background before we do a PowerPoint is we have somewhere between 6,000 and 7,000 streetlights, and that costs us about \$2 million a year. There are better technologies out there that can lower our costs, at least our energy costs, and I thought it was prudent that the Department take a hard look at that and see what, what could possibly be done. I was here previously when the Public Works Committee, the then Committee, started a subcommittee. I think it was referred to in one of the testimonies this morning, the Outdoor Lighting Committee, I think it was called. And that committee wrestled, you know, with this issue actually for a number of years because there are so many issues, and it ended up with chapter...Maui County Code, Chapter 20.35 on outdoor lighting. And that was passed in January of 2007, so it took a long time to get there. And what...really what we're focusing on are streetlights, and so I want to emphasize that, our streetlights in County roadways. We're not looking at parking lots, we're not looking at housing, we're not looking at any of the other lighting, we're solely focused--pun intended maybe--we're solely focused on, on streetlights. And so while we heard testimony on, on other lighting, that's something the Committee might consider, but for our perspective we're, we're focused on streetlights. So with that I can say we did work with the Outdoor Lighting Committee. We worked with Corp. Counsel to first look at the ordinances and see what we needed to do. We found there's a gaping hole. Our ordinance basically says you gotta use high pressure sodium for streetlights, that's it. So really we had to, we had...we gotta come to Council to try to see what else we can do. So we started the Outdoor Lighting Committee. I think we had agendas maybe in March and April. We didn't have quorum. We had an agenda item in May. We had bare quorum. I don't think Mr. Duvall was there. We had bare quorum and they said yes this looks fine in concept. We prepared the draft ordinance and draft rules, and I said okay fine, let's go to Council and see what we can do. So transmit to Council and here we are today, and we've met with the folks from IFA to address,

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try to address their concerns. I think we're all on the same page. It's a question of how to get on the same page. And that's pretty much it. I'd also like everyone to know that Mr. Kal Kobayashi from the Managing Director's Office, our Energy Analyst is here to assist me in any very technical matters that come up for discussion. And also Mr. Joe Ritter, who is the Chair of the Outdoor Lighting Standards Committee and a Physicist at UH, he's going to be doing like a companion PowerPoint and a little light show to give you an idea of what these lights are all about. So I think without further ado, Madam Chair, I'd like to get started on the PowerPoint.

CHAIR COCHRAN: Okay. Yes. Questions from Members? Mr. Hokama.

COUNCILMEMBER HOKAMA: Chair, thank you. I am very aware of the parameters of your posting, Chair, but I just was wondering if, Mr. Goode, you folks view signals...lighting at signals...intersections regarding signalization to be a separate issue or, or component of street lighting or is this going to be included with signalization also?

MR. GOODE: No. I guess we would consider traffic signals something else. Most of our traffic signals if not all of them now are LED...but, no, I'm just looking at the actual lights. And I think that the cobra headlights you see at intersections and along roadways.

COUNCILMEMBER HOKAMA: So, so signalization is not a concern for the County at this time?

MR. GOODE: No, I think we're about as advanced as we can get in that area for lighting.

COUNCILMEMBER HOKAMA: Okay. 'Cause I can see 'em from miles away, some of those lighting. So...*(inaudible)*...

MR. GOODE: The newer they are...yeah. Sorry, to interrupt. Yeah. The newer they are before they have any dust on 'em or dirt buildup, they can be bright.

COUNCILMEMBER HOKAMA: Okay. Thank you, Mr. Goode.

MR. GOODE: Sure.

CHAIR COCHRAN: Thank you, Mr. Hokama. Yes, Mr. Couch.

COUNCILMEMBER COUCH: Thank you, Madam Chair. Mr. Goode, you know, you mentioned in, in, in the ordinance, in 20.35, that it pretty much says you have to use that type of lighting, the high...high pressure sodium. I'm looking at it and



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it...and I'm not a lawyer and I'm not the one who has to interpret this, but it, it seems that there's a thing for all others, categories, a category for all others.

MR. GOODE: I'm going to address that in the PowerPoint.

COUNCILMEMBER COUCH: Oh, okay. Okay. Good. Thank you.

CHAIR COCHRAN: So...yeah, Mr. Pontanilla.

COUNCILMEMBER PONTANILLA: Thank you. Couple questions. The...so this is only on County roads, right, not on State highways at all?

MR. GOODE: Correct. And that's how the ordinance is currently set up.

COUNCILMEMBER PONTANILLA: Okay. The other thing, I know we put in a lot of money in regards to properly shielding the high pressure sodium and there was a timeframe to do it. How far have we gone, you know...?

MR. GOODE: I'm going to address that in the PowerPoint, too.

COUNCILMEMBER PONTANILLA: Okay.

MR. GOODE: Well we're meeting our requirements, bottom line.

COUNCILMEMBER PONTANILLA: And then the last thing I have is, what is IFA?

MR. GOODE: Institute for Astronomy.

COUNCILMEMBER PONTANILLA: Okay, fine. Thank you.

MR. GOODE: Right? Yeah. The astronomers are nodding I got that right.

CHAIR COCHRAN: Okay. Members, sounds like we, we should proceed and let Director Goode go with his presentation, and that would hopefully relieve our questions that we might have at this point and it might give us more questions. But anyways, I shall recess for two minutes to get the room ready for Director Goode's presentation. We are now in recess. . .(*gavel*). . .

RECESS: 9:38 a.m.

RECONVENE: 9:40 a.m.

CHAIR COCHRAN: . .(*gavel*). . . Infrastructure Management reconvene. And we're here with Director Goode to give us a presentation. Director Goode, the floor is yours.

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

CHAIR COCHRAN: You're welcome.

MR. GOODE: (PowerPoint presentation) Okay. Is this...okay. Thank you, Madam Chair. Yeah, hopefully this can address some of the questions that have come up. Anyway, we're pleased to present this, and like I said, I'll do a short presentation. Dr. Ritter is going to do a short presentation and a little light show. Okay. So what we're trying to accomplish here. We talked about this a little bit. First of all, there's certainly a potential--and I have to use the word potential--savings in our monthly energy charges of up to about 50 percent. And as background, we pay Maui Electric on a per fixture basis which is set in a, in a rate case, and they provide all the maintenance. So I'm sure you've had constituents call you in the past about replacing a streetlight that's burnt out and we always direct them to Maui Electric. We have...the industry is claiming that the lights last longer in the field, and I think no one will dispute that, so we're less likely to have lights go out. But we're not here...we're not trying to abandon all the hard work that's been done in the previous committees. It really tried and I think accomplished trying to get the right type of light in the right situations that met a lot of folks' need. And the one group that we didn't hear about today that didn't testify is actually the law enforcement agencies, and the Police Department in the past has been very concerned about color rendition which is something hopefully our light show is going to show. Because certain types of light at night make it very difficult to recognize certain types of colors, and so if a car is speeding away from an accident and you can't tell if it's a blue or green car, that's an issue. So we're not here to abandon that hard work. We want to recognize that hard work and try to recognize new technologies that can assist us. So currently high pressure sodium is basically the type of light that can be used, and I'll explain that in a minute. We like to look at other types, LED comes to mind immediately, and I think there was testimony this morning...well there was testimony this morning about using other types of light as well, and I think that's something we should definitely look at. The bill...the ordinance, the current ordinance actually has a requirement that we replace 50 percent of the lights within 5 years to the new standards which is basically high pressure sodium with certain types of shielding requirements, and we have done that. So we're requesting that, that section be deleted. It's simply been done. We also want to clean up on the name of Department since the time the original bill was passed it was the Department of Public Works and Environmental Management, we're now the Department of Public Works. And finally we want to amend our street lighting rules which were last promulgated in 2000, to...again to allow the type of lighting we're discussing today LED with specific attributes, i.e. what type of lights spectrum, perhaps we're going to have to look even at radio interference, et cetera. There's a host of things to look at, and so I think that's one of the key discussion items that came

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up in our testimony this morning is should that be done by...via ordinance or via rules? And we're...we'd like to have it in rules. So that's what we're trying to accomplish in a nutshell. So let's look at our existing ordinance. So our existing ordinance has four types of lighting classes, Classes I through IV, and we're focused on street lighting which is Class IV. There's other classes and I mention them here: general commercial lighting, we see throughout; the security lighting; decorative lighting like Christmas lights or I suppose this time of year we could have jack-o-lanterns. And so we're focused on Class IV. In the ordinance they have a table and in Classes I, II, and III, it allows various types of lighting plus a category called "others". Class IV, our roadway lighting doesn't even have the word "others". So we have proposed adding a "light emitting diode", LED as a permissible lamp type. So that's the key difference, and I think that was Mr. Couch's question on others. It's just simply there is no others currently in Class IV. So other cleanup language, again we talked about the name change. And we want to remove the 50 percent requirement within five years. That was Ordinance 3430, that was effective January 25, 2007, so our five year date is coming up. We're currently at about 60 percent plus or minus, and so we felt this requirement, it's a good time to strike it since we were looking at the ordinance. Okay, rules. We've heard about rules. As you, as you all know, there's a number of rules that are promulgated throughout the County and, and State agencies. Rulemaking is an authority that's provided under Chapter 91, Hawaii Revised Statutes, and allows for rules to be promulgated in certain instances. And generally your ordinances will also say promulgate rules, you know, to help effectuate the ordinance. The street lighting standards is Title 15, Chapter 901, and the last time it was amended was March 23, 2000. So it was actually in place before the Outdoor Lighting Ordinance came in, into place. So for us as regulators, we are regulated under 20.35, Maui County Code and these rules. Currently the rules look at some technical requirements primarily for wattages to be used in rural and urban roadways, and it requires HPS. So this is an interesting difference between our ordinance which actually says for street lighting you can use high pressure and low pressure sodiums, but our rules say only high pressure sodium so we are using high pressure sodium. It requires shielding which is also in our County Code. And that's pretty much what the, the rules do. It also stipulates where on roadways we would seek to have lighting which is primarily at intersections. So in your package, I...we have not only the proposed ordinance but the proposed rule changes. So what are the changes to the rules? Well again let's rename the Department to make it correct. Let's add LED, so when the rules talk about wattages which would be like an LED equivalent. We're proposing to remove the section on shielding since it's already covered in the ordinance. And we want to develop--which hasn't been done yet, there's been a lot of discussion and moving towards that--is specific language on the characteristics of the LED light that are acceptable. And this is where we would get into very technical language on how and what types of light frequencies to be used and certain light frequency ranges. There could be other requirements, like we heard today, the

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possibility of interference with radio signals. There might be distinct standards in that area. We also are proposing to add language that the Outdoor Lighting Standards Committee to review requests for nonstandard lighting. This is kind of a cleanup measure in the rules that we were proposing to make it consistent with the ordinance. Now again, rules are promulgated by the Department, it goes to a public hearing or, or a series of public hearings to get public input, and they're eventually promulgated by the Department without Council oversight, I guess other than our normal departmental oversight. Rules are everywhere, if you look the various commissions have rules, almost all the State agencies have a significant amount of rules, and it's...we think it's a decent process that allows for a lot of flexibility down the road and maybe doesn't have to necessarily bog down the Council with technical details which in this particular case can get quite lengthy. Oh, I kind of jumped ahead. But anyway, we go to make rules, we go back to the Outdoor Lighting Standards Committee, we'll continue our discussions with IFA and others, and we've heard some others today, and to develop the language on these technical specifications, we, we draft the rules, we conduct public hearings, and then we publish the final rules. Okay. Let's talk quickly about Maui Electric. As I mentioned earlier, we pay on a per monthly basis, it's kind of a flat rate, and that rate is negotiated as part of a rate case. This is where Mr. Kobayashi comes into play. I think there's a current rate case, but we've already discussed...started discussions with Maui Electric. They want to know more information obviously about what type of energy savings there might be, how long the fixtures could last, et cetera. And that we would start negotiating a new rate, but we've at least initiated those discussions. And this piece that's before you today is just really the first step. The ordinance needs to include something else besides high pressure sodium. We need to amend our rules, and then we need to get a rate...a new rate established with Maui Electric. And then finally we've got to install all these things, and either come up with the money or come up with a partnership to install the lighting. So I see this as a median term project for our Department, but again, this is the first step. As we started to hear a little bit about what light is considered bad, this is from...this is my view of it, at least having talked to IFA, and so it's somewhat...I'd say it's fairly nontechnical, but really it seems to be blue light. There could be even maybe blue-green light is really the bad light, and really blue light kind of emulates the daytime sky. Dr. Duvall testified, you know, wildlife concerns closely match astronomy concerns, and I think that really boils down to is if you have certain types of light that throw out blue light, you're basically making the night sky or a portion of it into like a day sky. And it doesn't work for astronomers and it doesn't work for wildlife, but if we, if we completely eliminate blue light then identifying that blue vehicle that's speeding away from the intersection is a problem. So there's some portion of blue light that works, and getting to that right portion is the key, and that's what we're committed to. All right, that's...wait, did I miss...oh. So anyway I'm going to turn it over to Joe.

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Joe's going to give a little slightly more technical discussion here and then do a little light show that I want to thank the Committee for allowing me this time.

CHAIR COCHRAN: Thank you, Director Goode.

MR. GOODE: Mr. Ritter.

CHAIR COCHRAN: Good morning, Mr. Ritter.

MR. RITTER: (PowerPoint presentation) Good morning, Madam Chair, Council members, and public. Thank you for the opportunity to come and elucidate some of the science issues. I'll have a little bit of material to cover. I'll try not to make it too un-understandable. It is essential that we all understand the science here as this is a very important issue that impacts all of us. The following is a, an overview of facts that we all need to know about, a discussion of LED streetlights, light pollution, and requirement for both efficiency and spectrum compliant lighting. Some of you know me. But why am I here speaking? I've been asked by Director Goode to come here. I'm the Chair of the Maui County Outdoor Lighting Standards Committee. I'm a scientist in many fields, specifically my doctorate was in Atmospheric Radiation Transfer theory and in, in...understand the language, that's light scattering in the atmosphere and remote sensing. I'm a physicist at the University of Hawaii Institute for Astronomy, and I've had faculty appointments in astronomy, space systems engineering, even animal science. I've lectured at three of the major national NASA centers on light scattering, and I know about energy, lighting, environment, some stuff like that. Just as an overview, the Maui County Outdoor Lighting Standards Committee was established by 20.35. We are made up of experts in lighting, Hawaiian culture, wildlife, biology, astronomy, and the public at large, also attended by representatives of the police force. We serve as an advisory committee to the Department of Public Works of Maui County. A point of law, all matters pertaining to street lighting presented to or pending before the Department of Public Works shall, before any action thereof, be referred to the Street Lighting Committee for investigation, survey, advice, and the recommendation of the committee. There's been talk about what committees in Maui are essential and what are not. This is an essential committee and will particularly be essential should lighting standards be established by rule making rather than by ordinance. I'm not going to get into the discussion of which way to do this today, unless you ask me. Okay. What is light pollution? Light pollution is any adverse effect of artificial light including sky glow, glare, light trespass, clutter, decreased visibility at night, and, and it's related to energy waste. Light pollution obscures stars at night, interferes with astronomical observatories, and like any other form of pollution, disrupts ecosystems and has adverse health effects. And in fact this is one of the most rapidly increasing types of pollution. Here's an example of the night sky with pollution on the left and without pollution on the right. There's a

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drastic difference. On the left, you see sky glow created by artificial lighting, and, and you see how it obscures a great fraction of the sky. Light pollution equates to energy waste. Over-illumination is the excessive use of light, and in the United States, lighting energy accounts for about 5 million barrels of oil per day in usage. There are a number of energy audits that show anywhere from 30 to 60 percent of the energy consumed is, is gratuitous, it's unneeded. Over-illumination and light pollution is responsible for wasting over 2 million barrels of oil per day in the United States. Proposed energy changes, if...that we're discussing today, that is putting in a form of LED lights and can save over \$1 million per year in energy production cost. So these changes are happening all over the country, they will happen, but they must be done carefully and responsibly. So I'm going to give you an overview of some of the important issues. Okay. I'm trying to have a rather simple explanation of a lot of these things. What is light? Well visible light is electromagnetic radiation that the eye can see. It has properties like how bright it is, we call it intensity, the direction it propagates, and wavelength spectrum which is color. So what...we'll try to use the, the real basic terms. I have a little light wave propagating across the top. You can see from peak to peak like you would see on ocean waves. That distance between those peaks, that's what we call a wavelength and that is how we classify the color of light. Visible light is a very small portion of the electromagnetic spectrum, so at the bottom I'm showing you colors versus what we call wavelength. So what is a spectrum? This is something you need to understand as well. A spectrum is the measure of the power contained in different wavelengths or colors from a light source. On the right top, you will see something that is reminiscent of maybe you guys have seen an album cover that looks a bit like this. This is actually a beam of light going through a prism and being split into its component colors. In astronomy we use this to determine the chemistry of planets and stars. I have an example on the bottom where a planet...light from a planet went through a spectrograph, a prism essentially, and you can see absorption of light at certain colors, and this tells us about the chemistry of things far away. What is a full cutoff fixture? Well a good fixture is a full cutoff fixture. A full cutoff fixture has no light directed up, and in fact light that's directed up is of no use to anyone and is damaging. A good design also has low light at high angles and illuminates evenly. This is important for understanding parts of the legislation. So why should we or why should we not use LEDs? There are a lot of facts. I'm, I'm only going to list a couple here. High pressure sodium lights like we use now and mercury fixtures and things like that have a very intense downward beam and it falls off rapidly as you go to the side. That is it's bright right under the light and it's not so bright if you go away from the light. And so unfortunately in order to have minimum required light levels in between luminaires, you either have to put them closer or you have to jack up the amount of light being emitted. Neither one is good. So LEDs, on the other hand, have very good directionality and they allow you to use less light, considerably less, minimum 25 percent, some estimates are 50 percent depending on the design. And so they...you don't have

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to generate as much light in the first place to have good coverage. So the point is efficiency means putting light where you need it. My laser pointer is not doing anything, so. Okay. So well designed LED luminaires are vastly superior in many respects, but it's essentially the light coverage, less lights ultimately directed skyward which is important. LED fixtures can provide better visibility and less glare. They use less energy but there's an environmental concern, we must not use blue-white LEDs, as we've heard from some other people earlier today. I'm going to go into that in more detail. Why not? And sorry but I've got one equation here and that's...I promise that's the only one today. The sky is blue because blue light is scattered more than red light. Green light is scattered more than red light. When light hits the ground, it goes back up into the sky, it's scattered, and it will get scattered off of air molecules into our telescopes. Blue light is bad for a number of reasons, but primarily we're concerned about light scattering in the atmosphere. Shown is a graph showing how much more blue light scatters than red light. We talked about what a spectrum is. Here I'm showing the sensitivity of light in a number of things versus the color. So first, I bring your attention to the dashed line, this is what's called Circadian Sensitivity. Oh, a laser pointer. Thank you. That button right there. Thank you, I appreciate that. Circadian Sensitivity is sensitivity of biological creatures and to their potential disruption of, of their internal biological clocks. Photopic Sensitivity which is the...the bottom one, thank you. Photopic Sensitivity, this curve, shows the sensitivity of our eyes in, in daylight conditions or in well lit conditions, and it has a peak in the green. Blue light is of very little use, this curve is very low. Extreme red light is of very little use. Finally, I'll show a high-temperature blue-white LED which needs to be avoided, and this is this curve here that has a substantial amount of blue light that clearly affects biological things but has very little effect for how well we can see. There's...this blue light is here, you can see in the PowerPoint, and our sensitivity of our eye is here. So blue light is, is not a good way to go for LEDs. There is a small amount needed for color rendition and we must limit this. A brief comparison of types of lights: low pressure sodium, high pressure sodium, white LEDs, amber LEDs, and a spectral compliant, eco-sensitive light emitting diode. LPS and HPS lights have very poor directionality, they use more energy than LEDs, they require high maintenance, and they degrade rapidly. LPS lights have...although wonderful environmentally, have poor color rendition, and we want to be sensitive not only to environmental needs but also to the requests of the Maui Police Department. HPS again has high maintenance and it has a lot of blue light. White light LEDs have a huge environmental impact and would be devastating. They have a tremendous amount of blue light as you saw in the previous graph. Amber LEDs have good directionality, use low energy, low maintenance, but they provide poor color rendition, and so you can't see things that are blue. LED, I'm going to demonstrate to you, has good, good directionality, low energy consumption, very low maintenance, good color rendition, and good environmental properties. So this is something that I came up with in order to satisfy the wildlife community,

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the police community, the astronomy community, and those who want to save energy. Light pollution adversely affects wildlife, human health, the Maui economy, and astronomy. Let me elaborate. There's a lot of endangered wildlife in Hawaii. Lights on tall structures can disorient migrating birds, the babies in particular, and they fall and they die or they fly until they're exhausted and die. Estimates by the US Fish and Wildlife Service, the number of birds killed, after being attracted to tall lights where there's light directed up, are from 4 to 5 million deaths per year, some people say a factor of 10 higher than that. Light sources look similar to stars, confuse endangered night-flying birds and endangered sea turtles. And I think you all have probably heard about the lawsuits and where the Federal government intervened in Kauai. Kauai Utility was sued over endangered night-flying seabirds. If you remember anything from this graph, remember the bird saying blue light confuses me. Here are two of our endangered species in Hawaii. And we have an opportunity here to do things right. Let me elaborate on this a little further. The US Justice Department notified Kauai that they were in violation of the Endangered Species Act and the Migratory Bird Treaty Act. Local officials on Kauai failed to install well shielded lights that shine down. A number of endangered species deaths occurred, and Kauai County will be fined now for every bird that dies during a football game. This is just a small part of the problem. I think this is an opportunity for us to show that Maui can be a leader in this technology and be environmentally sensitive. One of my favorites, 'cause I'm scuba diver, are the honu, the green sea turtles. These populations face a high risk of extinction because of several factors, but their numbers have dropped substantially. In the Mediterranean they're critically endangered. Out here in, in California they're threatened. In Mexico some populations are endangered. In Florida the population is endangered. And here's how it works. I, I took this picture, and this is a green sea turtle going up on the beach trying to lay eggs. And what happens is they lay the eggs and then at night the little babies hatch, and you see a little baby up on the right-hand corner so you can see how small and fragile they are. They hatch and because they evolved with the brightest light sources being the moon and stars and the reflectance of the seawater being higher, they naturally go towards light to go to the water. When they see light in the other direction, they go the wrong way and they get flattened by cars or...and they die. We can prevent this. Okay. Turtles, blue light confuses me too. Astronomy in Hawaii. We have the best observatory sites in the world. We have strong international partners and the world's leading telescope projects and technology, and on Maui, thanks to the State, we have a new advanced technology center. Astronomy is important not only to modern day scientists, but Hawaii's indigenous people were astronomers and navigators using the stars. Non-instrument navigation is, is a treasured skill that very few people still possess, and in fact in Oahu now you can barely see the stars at night. I'm not going to go into this too far, but I have a quote from King Kalakaua basically saying how pleased he was that we could invite people to do fantastic astronomy here. This is an example of an expedition of British scientists



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that came to Maui to do research. So we need the best...we have the best telescopes, we need the best sites. I won't go into the atmospheric conditions, but the main thing that we'll address today is we need low light pollution to do astronomy on our beautiful Haleakala. If you have more light, for every percent increase in white light pollution on Maui, it has the effect of reducing the effective size of our telescopes' collecting area by 1 percent. We have a project called PANSTARRS whose mission is to locate asteroids and comets that could potentially do damage to earth like what happened 65 million years ago that killed the dinosaurs. We need low light to do this job. If, if we have more light, will we miss the next dinosaur killer? I, I don't know. Something that happened about a week ago, this year's Nobel Prize in physics came from Hawaii's dark skies from measurements made on the Big Island. This is a fantastic honor for Hawaii. But even with any new technologies that come out, I'm going to point out that our spectral requirement we're suggesting is dictated by the laws of physics, not by a particular technology: by Rayleigh scattering where blue light's scattered more, by the energy distribution of the night sky, how bright it is, and by the sensitivity curves of the human eye. These things will not change. Here's a picture from the best observatories in the world on Mauna Kea and...let me get my laser pointer here. I'd like to point out from over 100 miles away the glow from Maui. These lights have been run through a spectrograph similar to the prism I showed you, and you can see lights from all of the light pollution even on the Big Island and certainly some from the island of Maui. You can even see it from Honolulu. Light pollution...we all know light travels fast. Light pollution also travels far. What we do here impacts the greatest observatories on the world as well as the wildlife here. So light pollution can affect our economy. From a tourism standpoint, I believe it's important to keep our skies dark as it is to keep our beaches and water clean. Over the next decade astronomy will bring in--and this is an underestimate--over 1.4 billion in jobs and infrastructure to Hawaii, to the State of Hawaii and, and even more jobs and therefore revenue over time. And let us not forget that green high tech jobs bring over \$100 million a year into the Maui economy right now. This is of concern to all of us. Okay. That's the background. I'm going to tell you what I think we should do with the spectrum. I'm going to just define some things here. I tried to use everyday language as much as possible. A relevant spectral range, that is what colors we care about, 380 to 700 nanometers. A spectral power distribution, this is essentially how much power there is at each color of light. Blue fraction, that is the amount of light emitted up to 500 nanometers in the spectral power distribution. A blue-green fraction, this is the amount of light in the blue-green area that also scatters a lot. Color correlated temperature, this is very important to understand. This is the temperature of something we call black body radiator which human color perception most closely matches the light of the lamp. The sun is around 6,000 degree Kelvin radiator. This is a measure also of scattered light and the amount of blue light. So it's, it's a sort of summary statistic. Color rendering index, now this is fundamental. There's been a discussion for 20 years about

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doing lighting LPS versus HPS, things like this. Solution that I'm presenting here is something that is respectful of the wishes of the Maui Police Department to be able to see colors and see them well. So color rendering index--and I'll demonstrate a light in a few minutes here--is a measure of the ability of a light source to reproduce colors of various objects faithfully. Here's a recommendation for a spectrum with the rules we are currently in the process of developing with Director Goode's office. And I've, I've broken up our light spectrum here into a range--and my laser pointer's dead again, here we go, okay, I've got it--of, of the rainbow basically. And here we're recommending a very small blue fraction, less than 3½ percent. These numbers may change slightly. A blue-green fraction, that is this entire area of less than 10 percent, so 6½ percent in the green here and most of the light where it does good for human vision and does not do the environmental damage. And so we, we suggest a requirement on the color-correlated temperature, that it be very low with...and I, I very much appreciated Fern Duvall's comments on what is environmentally necessary. And in fact I would, I would say that we don't want anything that's even as blue as the moon, because the animals will still be confused and, and it will impair--a laser pointer, thank you, thank you--because animals will still be confused, and, and it will also impair astronomy and potentially health. What I've developed is what we call a spectrum compliant LED, and I've shown you this graph here that shows how much of each color is in the LED. And you can see there's only very little in the blue and there's only a little bit here in the green, and so this is an environmentally sound solution that I believe is acceptable to the astronomy and wildlife community. It actually has better color rendition than the high pressure sodium lights used right now, so I'm hopeful and confident that the police will find this as a superior and acceptable solution as well. This is a compromise for all parties. This is something that we all need to get together on and make sure that the environment is treated right and the energy consumption is treated right, and that members of our community like peace officers are, are happy with as well. Good LEDs will put light where they're needed so less light needs to be generated. They will cut maintenance drastically. The studies done by Director Goode's office show that they will cut Maui County energy usage by a million dollars a year, and that's not just light pollution we're cutting, this is air pollution as well. They minimize green and blue emission, and as a byproduct less blue is less Rayleigh scattering and we have less light pollution per lumen. However again, I have to say this must be spectrum compliant. White LEDs emit a huge amount of blue light. We do not want white LEDs. White LEDs are very bad. Remember that, we must have something that is spectrally compliant. That's my opinion. Okay. So here's my last view graph and then I'm going to give you a demonstration. To paraphrase Hamlet, to LED or not to LED, that is the question. With careful, informed choices we can save a million dollars a year in Maui...on Maui in energy. We can save sea turtles and endangered birds. We can save astronomy and our dark skies. We can reduce light pollution and air pollution. And as we're all charged with this, myself as a citizen and you as Council

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members, we can be good public stewards of our island. We should have efficient LED streetlights but only with spectrum compliant lighting. Shown on the bottom here is a panel of typical light color testing, and I'm going to end my PowerPoint and do a color rendition demonstration with a light that I've brought along.

CHAIR COCHRAN: Thank you, thank you, Dr. Ritter. Members, we'll lift the screen now and then Dr. Ritter will continue his presentation, I believe.

COUNCILMEMBER CARROLL: This should be interesting.

CHAIR COCHRAN: Yeah.

MR. RITTER: Great. Thank you. And, and at the end I'll be happy to answer Council questions as well.

VICE-CHAIR VICTORINO: Chair? Chair? Chair? Chair?

MR. RITTER: And I, I also...

CHAIR COCHRAN: Oh wait, sorry.

VICE-CHAIR VICTORINO: He going need the microphone --

CHAIR COCHRAN: Microphone.

VICE-CHAIR VICTORINO: --for them to pick it up in *Akaku*.

CHAIR COCHRAN: Oh, oh, okay.

VICE-CHAIR VICTORINO: And we cannot barely hear him too.

CHAIR COCHRAN: Maybe...is it...

VICE-CHAIR VICTORINO: Can we have the handheld mic?

CHAIR COCHRAN: Is there...

VICE-CHAIR VICTORINO: Don't have one?

MR. RITTER: (Demonstration) Oh, I have to be down here, not in front of the light. Thank you. I had hoped to...great. I had hoped to demonstrate this up in person. Thank you, David, for your help. This is not a very scientific demonstration but hopefully an effective one. This is an example of an LED light that in color is

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nearly identical to high pressure sodium yet has far less blue light emission. As you can clearly see, there is excellent color rendition. In fact the flags are blue and you can see the rainbow and you can see our, our color test chart, and, and I invite you to look at this more closely later if you want. I'd also like to address the concerns...so basically we have a solution that is energy efficient, that is sensitive to our important environmental concerns, is sensitive to our police concerns, and, and I believe this is the way to go. What we have here is just a small example light and it uses about half the energy that is required for our current high pressure sodium lamp. So this technology is here. If this is indeed adopted, I have to again stress we can only support lights that have very low blue content for all of the reasons that I showed you before. I'll briefly address the radio frequency emission concerns. First of all, the Federal Communications Commission places regulations on RFI, radio frequency emission [*sic*], and EMI, electromagnetic radiation emission [*sic*] from devices. That's why you see these stickers 'cause they...you will also note it, it said follows an FCC requirement. You'll also notice this box is metal which we'd want something metal anyway so that's it sturdy and doesn't corrode, and it's a specially treated box. And we can...I've been working with Kal Kobayashi to determine specs that are, are...have good longevity. The radio emission from an open area of a device falls down by approximately one third every distance away you go from this device if you have an unshielded area. So first of all, you can shield these, second of all, it's simple to compute the amount of electromagnetic interference that is caused by these, and third, this is regulated by Federal law as well, is my understanding. Thank you for taking time to look at our, our concerns. We've looked at this problem for years. I think we have a solution that can work for everybody. And I'm, I'm happy to take any questions from the Council.

CHAIR COCHRAN: Thank you. I guess we'll bring up the lights and re-set up. So just a one minute recess. . . .(*gavel*). . .

RECESS: 10:20 a.m.  
RECONVENE: 10:22 a.m.

CHAIR COCHRAN: . . .(*gavel*). . . Infrastructure Management Committee meeting will now reconvene. And thank you, Dr. Ritter and Director Goode, for your presentations. So, Members, at this point I'll open the floor up for discussion and questions needed from Director and Dr. Reiley [*sic*].

COUNCILMEMBER HOKAMA: Chair?

CHAIR COCHRAN: Yes...oh, Mr. Hokama.

COUNCILMEMBER HOKAMA: Some quick questions for the Director. You have and for some of us on this Committee you know how our brain works. So you have

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your numbers ready to present to this Committee on what it's going to cost us to move in this direction if we choose so, how much resources you're going to ask me regarding money?

MR. GOODE: Mr. Hokama, we, we have some rough outlines on what it might cost. And I really have not pursued how that would be funded until we got some of these basic questions answered such as getting this ordinance...some amendment done. And...

COUNCILMEMBER HOKAMA: Well let's...for me that's one of the things I need to know before I'm going to make a decision, what is the financial . . . *(inaudible)* . . .

MR. GOODE: Well here's, here's a couple, I'll give you some basic information that, that I'm aware of. Like I mentioned earlier, we have between 6,000 and 7,000 streetlights, okay. We don't have to replace them all at one time. We can do some as we go or as they get burned out or something like that. The estimate on these fixtures, I've heard anywhere, maybe on the low end \$800 to \$1,000-\$1,200, so say \$1,000 per. So you're looking at a 6 to \$7 million project that could save a million dollars a year roughly, and then even that we need to, we'd need to pin down. So there's clearly...there's a return on investment for this investment. And then the next question is...that's if we fund it all, but the next question is well what if the private sector funds some of this? There are opportunities within the private sector to have them provide a cap...the capital or a portion of the capital and in turn they realize some of our savings. So there's a potentially...again I'm careful here to say potentially a strategy where we don't spend a penny, and we realize some of the savings and pass the majority of the savings on to someone else. So it's really it's somewhere in that spectrum of, of possibilities, but those are the, those are the big numbers for consideration.

MR. RITTER: Can I add to that? That a number of companies that, that make such devices finance these things, and, and so it's paid off over time and doesn't actually cost money, it saves money.

COUNCILMEMBER HOKAMA: So who pays for...

MR. RITTER: But, but I'm a, but I'm a scientist, not an economist.

COUNCILMEMBER HOKAMA: So who actually pays for it, Doctor?

MR. RITTER: I'm sorry.

COUNCILMEMBER HOKAMA: So in, in what you just shared with the Committee, who actually pays for it then?

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MR. RITTER: You'll have to ask Director and, and you gentlemen will have to decide for that. Ultimately though we all pay if we don't and it costs less to do this.

COUNCILMEMBER HOKAMA: No, but you, you mentioned that companies will pay for it? So . . .(inaudible) . . .

MR. RITTER: There are a number of companies, LED companies that actually will provide financing for this, and it's...that's paid out of the cost savings. I think the number generated by Director Goode's office was we spend 2 million a year in energy and these save half of that, they save a million a year.

MR. GOODE: So if, if I may. The...I think what happens...well my understanding of what could happen in the private sector is, is similar to someone coming in and doing an energy retrofit of an existing building. So if you don't have the capital, someone else will come in and spend the capital for you, but they want your, us...a good percentage of your savings. So they see that's the revenue stream. So if you're paying...say we're paying \$2 million a year and we were happy with someone else coming in and we lowered it to 1.7. Hey we saved \$300,000. The actual bill that we're saving is a million, but they're getting the 700,000. See and then they're getting the 700,000 over a number of years to help pay back their investment. So it's really a question of whose, whose investment do we want to have and do we have the money to invest? But the opportunity is there for a partnership.

COUNCILMEMBER HOKAMA: So I still putting out the same amount of money, I'm just paying it differently, right? I'm just dispersing the same amount of money differently, whether you call it savings or what, I'm still pumping out that \$2 million though, right?

MR. GOODE: Well or we're going to lower it. I mean we wouldn't do it unless we...there's an advantage to us somewhere. So we either garner some of the savings upfront or we say okay we won't save anything and then after seven years we get it all. So there's all types of arrangements that are a possibility there.

COUNCILMEMBER HOKAMA: Is it also part of your consideration for the County to do its own maintenance?

MR. GOODE: We, we've...

COUNCILMEMBER HOKAMA: What about contracting the utility to, to do it and pay them to do it, what not? You know we got Public Works on every island of the County, so is that something that you folks thought about whether or not your own employees in your Department would be able to do this type of work? I mean we control --

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MR. GOODE: We, we, we have thought about it.

COUNCILMEMBER HOKAMA: --the County signalization, we, we control that.

MR. GOODE: Correct. Yeah, we would have to gear up for it. We obviously need equipment and manpower, and we would need...we would also need to make sure that we replace those lights that are burned out within a specific timeframe. There's obviously liability concerns, any lights that are not maintained. Right now, we transfer all that liability to Maui Electric. So we'd have to really analyze and put pen to paper whether we use...whether it's Maui Electric and we pay them and their employees or we do it in house.

COUNCILMEMBER HOKAMA: Well maybe something we need to do besides potentially paving our own roads. Thank you, Chair.

CHAIR COCHRAN: Thank you, Mr. Hokama. Mr. Couch and then Mr. Victorino.

COUNCILMEMBER COUCH: Thank you, Madam Chair. I guess this is either to Dr. Ritter or Mr. Goode. In your presentation you mentioned that we wouldn't need as many fixtures. Would that mean that we would reduce the number of fixtures or just have a little bit of over lighting on either...if either one of you can answer.

MR. RITTER: I was not proposing changing the number of fixtures at all. I'm simply pointing out that you get better coverage with less light because of the light distribution of LEDs.

COUNCILMEMBER COUCH: Okay. So you can kind of power them down then?

MR. RITTER: You can select whatever is according to the County Code for these standards for light emission.

COUNCILMEMBER COUCH: Okay. And now you, you mentioned also...or I mean you didn't mention, but having seen that demonstration before, there's a number of LEDs in there, right? Is that how that works?

MR. RITTER: Correct.

COUNCILMEMBER COUCH: There's a bank of so many? What is the potential of a single LED going out or a bank of LEDs going out? And if there is that potential, how, how would we maintain that? Would we replace the whole thing or can we go in there and replace individual LEDs?

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MR. RITTER: That's an excellent question, Councilmember Couch. First of all, with...it depends on the design. With this design, one LED goes out, it doesn't matter. Second of all, it's very important that you select the right kinds of LEDs and that these are produced right. In fact, these lights--I worked with a company in Silicon Valley to develop them--not one of their lights has ever failed. And then it has several banks...never. And then it has several banks of lights in parallel. And so there is an industry standard called LM70, and what this...I'm sorry, there's LM79, there's LM80. And this relates to failure over time. Specifically...and this is actually part of doing careful purchasing, you want LEDs that have a low junction temperature. What that means is they fail faster when they're hotter, and so there are lot of designs that are very poor. This one that I show is, is a particularly excellent design, and so lifetimes of these are something like over 50,000 hours, and actually a lot of them are quite a bit longer. There's a lot of hype out there in the LED industry about how some of them are better and some of them are not, and, and a lot of it's true but a lot of people make amazing claims for these and they have to be fabricated correctly. That would fall under Public Works to actually understand what the variation is in these. But essentially if you're asking about failure rate, considerably lower than HPS which in the first few months can reduce down to a significant fraction of what it started with, and then you have maintenance changing a bulb every couple years.

COUNCILMEMBER COUCH: Okay. Thank you.

MR. RITTER: So considerably lower and, and no risk of a whole light going out compared to HPS. It's a considerably lower risk. It's a much better technology, and it saves a lot of manpower as well.

COUNCILMEMBER COUCH: All right. Thank you. Thank you.

CHAIR COCHRAN: Thank you, Mr. Couch. Yes, Mr. Victorino.

VICE-CHAIR VICTORINO: Yeah, thank you. And I guess this question may be for both of you, Mr. Ritter and Mr. Goode. For example, we decide that certain LEDs are what we really want, you know, what you've suggested. Fixtures, at home I have LED, I just put them in my little socket, it goes on. Do we need to change fixtures on existing lamps that are out there, streetlights? That's my first question.

MR. GOODE: Yes, yes --

VICE-CHAIR VICTORINO: Okay.

MR. GOODE: --we would change the whole.



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VICE-CHAIR VICTORINO: So you're changing the whole shebang?

MR. GOODE: Except I guess except for the pole and the arm.

MR. RITTER: Yeah. You, you would take off the, the lighting head, right, and, and replace the bulky heavy power supplies and the, the lights that are in there that are toxic that are...with mercury that are, are frequently require replacement. And you'd put on a new head that is a full cutoff shielding with the LEDs and power supply.

VICE-CHAIR VICTORINO: So the existing shielding that we have now that's out there, we'd have to replace that too?

MR. GOODE: Yes. I believe everything would come down.

VICE-CHAIR VICTORINO: So in other words it's a full replacement of the entire fixture itself?

MR. GOODE: The, the head portion --

VICE-CHAIR VICTORINO: Yeah, the head.

MR. GOODE: --not the arm . . . *(inaudible)* . . .

MR. RITTER: Just the head.

VICE-CHAIR VICTORINO: Yeah. I mean that's the fixture. The fixture itself is the head, you know --

MR. GOODE: Yeah.

VICE-CHAIR VICTORINO: --and I'm not counting the pole or anything of that nature.

MR. GOODE: Yeah. It would all be.

VICE-CHAIR VICTORINO: And, and would that still be relevant height wise and...because, you know, as we've gone through the years, for example, the new streetlights that go along Maui Lani are...the heights have been dropped.

MR. GOODE: Yeah, that was part of that change in 2000 --

VICE-CHAIR VICTORINO: Right.

MR. GOODE: --the rules.

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VICE-CHAIR VICTORINO: Right.

MR. GOODE: And so they went from the 30 foot I believe to 20 foot.

VICE-CHAIR VICTORINO: Right. So would we be looking at doing that also or leaving everything at 30 foot? Because height and change illumination down makes a difference in what the expenditure on the amount of lighting you need, isn't that correct? The longer...the farther the distance the more, more lighting you need, right? So if you went from 30 to 20 would that also reduce the amount of lighting that you needed?

MR. RITTER: That would be true whether you were looking at high pressure sodium or, or at LEDs --

VICE-CHAIR VICTORINO: Yeah.

MR. RITTER: --and, and the basic idea is taller lights are worse environmentally.

VICE-CHAIR VICTORINO: Right.

MR. RITTER: And one can design these with adequate coverage at any height, although I'm certainly an advocate of not having very tall lights.

VICE-CHAIR VICTORINO: Okay. Okay. So, so that's what I'm trying to get to, because if we take existing heads and we change the whole head area, but we're still not touching the poles. The poles still exist and the lighting pollution that exists even though we've gone to LEDs still to a point has not been...could be lessened if we went to what I call lower poles, to 20 footers.

MR. RITTER: It'd be less and considerably...oh, I'm sorry, I didn't understand the question.

VICE-CHAIR VICTORINO: The question I had is we went from 30 to 20 footers, right. In other words right now our light poles...our light...streetlights are 30 foot high, right? Now we go...now most of the new ones are going in are 20 foot high, right?

MR. GOODE: Right. Streetlights that were installed say before 2000 --

VICE-CHAIR VICTORINO: Yeah.

MR. GOODE: --were mostly 30 footers, and now they're mostly 20 footers. Now that doesn't include State highways --

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VICE-CHAIR VICTORINO: Yeah, no.

MR. GOODE: --but there are roadways.

VICE-CHAIR VICTORINO: Yeah.

MR. GOODE: Well our goals is really when we get to the point...we'd love to get to that point --

VICE-CHAIR VICTORINO: Yeah, right.

MR. GOODE: --where we're actually replacing these and coming out with the detailed specifications not only on the light but the light coverage. Because really what's important is how much light hits the, the roadway --

VICE-CHAIR VICTORINO: Right.

MR. GOODE: --in that particular location. And there's standards out there as to how much lumens per square foot, I mean how...what actually hits the roadway. And so you want to hit that number so that it lowers our liability and also lowers our cost by not throwing so much light on there, just the right amount of light. So whether it's at a 20-foot or a 30-foot pole or...bottom line is that we want the right amount of light at least from a traffic perspective and a liability perspective.

VICE-CHAIR VICTORINO: And pedestrians and all of that, right?

MR. GOODE: That's all, that's all --

VICE-CHAIR VICTORINO: Part of it.

MR. GOODE: --part of that, yeah.

VICE-CHAIR VICTORINO: Okay. And my last question is when we look at these changes, what are we talking about per unit? We haven't gotten to that fact...to that...

MR. GOODE: In dollar amount?

VICE-CHAIR VICTORINO: Yeah.

MR. GOODE: About...I mean roughly about \$1,000.

VICE-CHAIR VICTORINO: A unit?

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MR. GOODE: Correct.

VICE-CHAIR VICTORINO: And right now one new lamp would cost us what? And I'm just asking, one new lamp, one HPS.

MR. GOODE: I don't know. I'm, I'm guessing it's probably a little less than that. Maybe...but Kal doesn't have a number on that. But right now we don't pay for that, so even a new subdivision, it's paid for by the subdivider through Maui Electric. When one goes out or if a pole gets hit by a car, the whole pole, arm, everything is paid for by Maui Electric. It's part of our rate that we pay --

VICE-CHAIR VICTORINO: Pay Maui Electric.

MR. GOODE: --Maui Electric.

VICE-CHAIR VICTORINO: Okay. So part of that million dollar savings would be taking that responsibility away from Maui Electric? 'Cause that's what Mr. Hokama mentioned that . . . *(inaudible)* . . .

MR. GOODE: No, currently we haven't really fully investigated that.

VICE-CHAIR VICTORINO: Okay.

MR. GOODE: We have, we have an existing arrangement with Maui Electric. We've begun negotiations with them and discussions about well if we change this type of light, it's really from their perspective they're going to look at it, well how much is it going to cost us to maintain it, but how much is the electricity going to cost per light over the course of a year? You know, the streetlights run at different times during the course of year. So we're hoping that we can achieve those kind of savings, that's the goal.

VICE-CHAIR VICTORINO: Okay. Thank you. Thank you, Madam Chair.

CHAIR COCHRAN: Okay. Thank you, Mr. Victorino. Yes, mister...oh, sorry, I'll go with Chair Mateo and then Mr. Pontanilla.

COUNCILMEMBER MATEO: Thank, thank you, Madam Chair. Prior, prior to the...we reconvening, Doctor had indicated that he was ready to provide additional information regarding radio frequency interruptions. Could you briefly?

MR. RITTER: I believe I did that.

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COUNCILMEMBER MATEO: Pardon me?

MR. RITTER: I believe I did that, and specifically what I was saying was that I believe these devices are covered under Federal Communications...FCC regulations, and additionally, it's very easy to shield these devices. I am interested in seeing these studies, and in fact, any electrical device emits some RFI and some EMI. And if you have...so there's something called a Faraday cage. A Faraday cage is simply a metal enclosure and so radiation that comes out of it, electromagnetic radiation is limited by this enclosure. So if you have something like this and it has a hole this big, every time you get the same distance away from that hole, the amount of radiation will be reduced by 1 over 2.718, approximately one third. And so it's quite easy to shield these to take care of these concerns. I'm unaware of studies that, that show a real problem with this; however, I, I am very interested in hearing anything like this, I think we have to be sensitive to community needs. I do not know that this is a significant factor with a well shielded metal full cutoff box.

COUNCILMEMBER MATEO: Okay. Thank you. Thank you, Madam Chair.

CHAIR COCHRAN: Thank you, Mr. Mateo. Mr. Pontanilla.

COUNCILMEMBER PONTANILLA: Thank you. Maybe question for Mr. Goode. What, what you just told us during the presentation is that over 50 percent of the high pressure sodium lights that we have currently has been shielded. So now if we're talking about replacing high pressure sodium lights, shielded lights or unshielded with LED, how would you go about in, in trying to schedule something like this so that it doesn't...you know, we don't take a big hit on one given year but rather do it on maybe five years type program.

MR. GOODE: Yeah, I think that would come back to how we're going to finance this. Like I've mentioned, we've done about 60 percent of the lights, that's, that's my understanding. So we've met that portion of the Code that within 5 years you do 50 percent, but the Code also says all of them within 10 years. So I mean if we're able to make progress here within a year or so, have, you know, the rate from Maui Electric and be able to look at financing this, I would suggest let's, let's go after the ones we haven't shielded yet.

COUNCILMEMBER PONTANILLA: The 40 percent.

MR. GOODE: Right. Yeah. Those 40 percent or whatever, and in fact we were looking at maybe in our FY '13 Budget and having to come back to Council to get money for that. So maybe we'd start with the ones we haven't shielded and then migrate to the ones we have shielded. And then as ones go out I suppose burnout then we

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can get those replaced. So we gotta look at all those, all those factors, but off the top of my head that seems the most cost effective way.

COUNCILMEMBER PONTANILLA: Okay. And, and as far as the location of the pole, I think there are some regulations in regards to the height of telephone wires, cable TV, as well as secondary electrical wires and primary and transmission. So maybe the 20 foot is the standard for any poles that, that is jointly owned by different companies. But the ones in like say subdivisions like that, they can go even lower, you know, depending on your ordinance. So thank you.

CHAIR COCHRAN: Thank you, Mr. Pontanilla. Mr. Carroll.

COUNCILMEMBER CARROLL: Thank you, Chair. Do you know of any other cities that have either fully converted or partially converted to LEDs?

MR. RITTER: It's happened across the whole country. Unfortunately a lot of those LEDs are the very white LEDs with a...that emit a lot of blue light. In some places people don't mind. In places where you have endangered wildlife and you're near the ocean, and where we have important things like astronomy, I would hope that this kind of solution would be implemented there. But there are LEDs being replaced all over the country. There are a number of bids, public bids that are out there for many cities, and this has been happening for a couple of years.

COUNCILMEMBER CARROLL: One of the testifiers indicated that he could get possibly reports from other places that have converted to LEDs, and I was hoping that, Chair, perhaps that the Chair and her staff could see if we could get any reports from any of these other places that have converted. That the Committee could look at that and see what kind of problems they had and how they were addressed, and hopefully from areas similar to ours where you have lower sea level and higher sea level, astronomy, and the other problems that we might face. Thank you.

CHAIR COCHRAN: Yes. Thank you, Mr. Carroll.

COUNCILMEMBER PONTANILLA: Chair?

COUNCILMEMBER COUCH: Chair?

CHAIR COCHRAN: Yes, Mr. Pontanilla and then Mr. Couch.

COUNCILMEMBER PONTANILLA: Thank you. Yeah, we did have somebody testify this morning, Dr. Reiley. You know, having a short conversation in regards to the possibility of...you don't intend to pass this today? I hope not. Okay. Maybe

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have a site visit so that we can take a look at that the LED that he had, you know, demonstrated on, so at least we can see the difference.

CHAIR COCHRAN: Sure, yeah. I'll take into consideration, Mr. Pontanilla. Thank you.

COUNCILMEMBER PONTANILLA: We did that, you know, many years ago with low pressure sodium lights, so.

CHAIR COCHRAN: Okay.

MR. RITTER: I'd also like to invite the Council to come up to our laboratories as well as to the top of the mountain so you can see the degree of light pollution that we have.

CHAIR COCHRAN: Great.

MR. RITTER: I would be very happy to host a small trip up there to show you guys.

CHAIR COCHRAN: Thank you, Dr. Ritter. Yes, Mr. Couch.

COUNCILMEMBER COUCH: Thank you, Madam Chair. Dr. Ritter and, and Director Goode, both, I notice we talked about the color rendition in...color rendition index did you say?

MR. RITTER: Yes.

COUNCILMEMBER COUCH: And that the...something that would be good for the Police Department. Have you...I notice they're not here today, so have you been working with them and are they okay with...have they seen this demonstration and they're okay with the color rendition?

MR. RITTER: I have asked Director Goode's office to eventually set up a meeting like that. The fact is that the color rendition index for this kind of light is superior to the high pressure sodiums that they now accept. I certainly won't speak for the Police Department, but I have to say we have been very seriously taking into account what we feel their requirements might be and trying to be sensitive to this.

CHAIR COCHRAN: Good.

COUNCILMEMBER COUCH: Thank you.

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CHAIR COCHRAN: Thank you. Thank you, Mr. Couch. Members, any need for further discussion on the subject matter here today? Yeah.

COUNCILMEMBER HOKAMA: I got a question, Chair.

CHAIR COCHRAN: Yeah, Mr. Hokama and then Mr. Couch.

COUNCILMEMBER HOKAMA: My, my question would be maybe the Director or, or the Doctor. You mentioned Big Island's efforts and, you know, they have their observatory sites on, on their volcanoes, and then you mentioned Oahu's situation. Have those two entities, their counties have decided to make any effort to deal with this same issue in their jurisdictions?

MR. RITTER: I don't serve on the State committee, but my understanding is there has been proposed legislation to help with this.

MR. GOODE: I'm aware of...

COUNCILMEMBER HOKAMA: Director, you have a comment?

MR. GOODE: If I could add. Actually we met with IFA. The Big Island has passed an ordinance, and they have evidently started to do some retrofits. I don't know the full extent, but they did pass an ordinance. I see head nodding out there, is that correct? Yeah. They passed an ordinance. And...

MR. RITTER: Which limited the blue light.

MR. GOODE: It's limited blue light. It may not be as specific as some of the information you saw here today or some of the testimony that was provided, but they've started in that direction. I think for exactly the same reasons we're here today. You know, significant cost savings and also if you can meet all these objectives then we've, we've made a huge improvement.

COUNCILMEMBER HOKAMA: Can you tell us today by...Director, if this moves forward how you would address implementation? You would look at Kahului-Wailuku as the first region to move into the transitioning? You see Lahaina or South Maui being the first regions of transitioning?

MR. GOODE: Quite honestly I haven't...I'm focused right now on just trying to get the ordinance done and to understand the...help understand the science. We can either put it in rules or ordinance to get it to the right...so that we can meet all these objectives, and, and with Maui Electric. If the Council has...if you've got some suggestions, I would actually probably like to work with the IFA guys and ask them which areas are hardest for them, and I would imagine probably Central.



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I don't know, but...if that what it takes. But it really depends, we want to go by area, is that more cost effective? Or we go by the, say, the ones we haven't shielded yet, so we don't spend money on shielding on those.

COUNCILMEMBER HOKAMA: 'Cause, you know, for Lanai some of my, my concerns of the community that, you know, we've come to this...your Committee before has been we're too dark as a community, we don't have enough light at night for safety and other concerns. So it's an interesting regional thing, Chair, you know, 'cause if anything we've added lights on Lanai for community concerns. So I, I just, you know, would hope that if we move this forward, the Department can give us some kind of prospective plan on how they would like to proceed if, if they can get the support regarding financial requirements and as far as what type of potential implementation. I think it's good to let the community know. If we're going to make changes and we're going to make them potentially pay additional short-term financing needs, you know, the sooner they know the benefits and, and the cost of what it takes to make it happen, I think we have a better informed community. Thank you.

CHAIR COCHRAN: Yes. Excellent points, Mr. Hokama. And, Mr. Couch, you had further . . .(*inaudible*) . . .

COUNCILMEMBER COUCH: Yeah. Not, not so much for the Doctor but more on crafting this. Is there...and maybe I can ask the Chair as well, but, you know, we're talking about technically specific type of lights. And I'm just wondering if we can go with Dr. Altenberg's suggestion and go with spectrum compliant lights. That way if the technology changes in a month or a year then we don't have to rewrite the Code again. So is the Director okay with doing something like that and the Chair as well? And I guess Dr. Ritter, this language that he suggested appears to have come from you guys anyway, the whole nanometers 380 to 700 and 550 and 500 kinda thing. So is that...I mean I'm trying to be proactive here so that if a new technology comes on like it does every other week.

MR. GOODE: Well I, I think...I mean I like this, I like the flexibility. We don't know what's going to come up next time --

COUNCILMEMBER COUCH: Right.

MR. GOODE: --and really question is, if something else comes up next time, do you folks want to hear it?

COUNCILMEMBER COUCH: Right.

MR. GOODE: Or do you just want to say look, we set the major guidelines, we set the policy direction, if there's new technologies that come out, I mean implement 'em

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as, as it makes sense. What I'd like to do is...I'm kind of making myself a to-do list, and one of the to-do list here is to understand better Dr. Altenberg's suggestions on these Code changes. Sit down with Corp. Counsel, sit down with everybody. But in general, yes, it's better to have the flexibility for new technologies that's being developed in a lab somewhere right now that we may not see for five or ten years. It makes --

COUNCILMEMBER COUCH: Right.

MR. GOODE: --makes a lot of sense to me. He has other suggestions here, going into Class II lighting, I believe --

COUNCILMEMBER COUCH: Right.

MR. GOODE: --Class III lighting. I, I, I don't...it's up to the Committee, and actually I'd appreciate maybe some feedback from the Committee, Chair, if that's appropriate?

CHAIR COCHRAN: Fine.

MR. GOODE: I mean do you folks even want to start looking at that or should we stick with the Class IV street lighting? And then finally the other...I think the other key question here is, is how comfortable...I think the major disagreement we'll have today is whether these technical requirements should be in ordinance or should be in rules, or some half-half situation. But I think we saw today is that there could be a significant amount of technical specifications, some of which we would actually do in a procurement process, like what type of metal coating is used on, on the fixtures, 'cause it sounds like these fixtures are going...the lights are going to last longer than the housing. But does Council want to set direction as it relates to this frequency environment or leave it to the rulemaking process? And that, that's where I need your guidance. I suggested one way. There's been suggestions on other ways. We need guidance.

COUNCILMEMBER COUCH: And, Madam Chair --

CHAIR COCHRAN: Yes, Mr. Couch.

COUNCILMEMBER COUCH: --that would be my question to you. I certainly think it would be better to try and do a...our, our concern is what the light looks like. So the police are okay with it, the environment is okay with it, the astronomy, everybody's okay with it, and it seems that this definition would fit that. Then we don't care about what the technology is, and we may care about other adverse impacts. But at least the biggest concern right now is the spectrum. So I certainly would like to push for doing spectrum compliant versus technology requirements.

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And then, then we don't have to add, I mean, "others" to Class IV. I mean the biggest...the quickest way to be "others" to Class IV and you deal with it in rules, but the more we can get it in Code in the ordinance, I think the more specific we can be. And then the next question would be what about parking lot lights, too? That, that is affected in, in the Code but not in our changes, is that right?

MR. GOODE: The proposed changes don't deal with parking lot lights. Correct.

COUNCILMEMBER COUCH: Okay. So if we do the spectrum --

MR. GOODE: It doesn't mean we can't...

COUNCILMEMBER COUCH: --if we do spectrum compliant wording then that can affect parking lot lights as well.

CHAIR COCHRAN: Thank you, Mr. Couch. And thank you, Director and everyone. So any further discussion, comments we need to make at this point? I'm going to recommend that we defer this for continued further discussion, and have Department, Director and everyone address the questions, concerns that we have at this point, and, you know, before moving forward. So we as this Committee can decide how detailed or more broad do we want to go or just hone in on what Director wants us to sort of focus on. So that's in our purview, I believe. So we shall defer this matter to a further date. And at this point, I'll thank, everyone involved with their, you know, education and, and discussion. Dr. Ritter, is there a way to get your presentation to us, what you had presented to us?

MR. RITTER: I would be happy to provide a copy of that, absolutely.

CHAIR COCHRAN: Yeah. Please. Yeah. That would be helpful I believe in our deliberations, so.

MR. RITTER: It would be my pleasure.

CHAIR COCHRAN: Thank you. Okay. Great. Thank you. So, Members, at this point we need to take a brief recess, a break, our midmorning break, almost heading into the afternoon, but only a quick ten-minute one. And, and thank you. We are now in recess for ten minutes. . . .(gavel). . .

**ACTION: DEFER pending further discussion.**

RECESS: 10:53 a.m.  
RECONVENE: 11:07 a.m.

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**ITEM NO. 32: GRANT G2607-3, RELATING TO THE LANAI RECYCLING CENTER (SOLID WASTE DIVISION, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT)**

CHAIR COCHRAN: ...*(gavel)*... Infrastructure Management Committee meeting, Monday, October 31<sup>st</sup>, will now reconvene. Welcome back, Members. We are now onto item IM-32. The second item is about a Grant G2607-3, which relates to Lanai Recycling Center. The Grant is managed by the Solid Waste Division of the Department of Environmental Management. And it looks like I have Mike Miyamoto here from the Department. The grantee is Tri-Isle Resource Conservation and Development Council, Inc. The original amount of the grant was \$241,850. Subsequent amendments totaled \$279,246. This third amendment adds on additional \$30,262 to the grant amount. On August 23, 2011, Council Vice-Chair Pontanilla requested that this grant be referred to this Committee for further discussion. So today I have again, I mentioned Mr. Miyamoto with us from Environmental Management to present background on this matter and also respond to questions that the Members may have. And before we begin, please, Mr. Miyamoto, a overview about this grant and update us on any information. So Mr. Miyamoto.

MR. MIYAMOTO: Thank you, Madam Chair.

CHAIR COCHRAN: Thank you.

MR. MIYAMOTO: This item has been before this body before. We had spoken to you about when we were trying to get the agreement with the...for the HI5 with the State and I think RRR, the new vendor for the HI5 services. So the site is continuing to be developed. The initial grant and follow-up amendments started off with first trying to secure the land with Castle & Cooke and getting the proper land entitlements, and then we've started on getting a design, we've done the design. And then now we're into the implementation of the improvement portions of that, that design. The outstanding elements that we have currently are the water connection, electrical connection, and the access road to the site. We're in...this...funds for this grant will be utilized to help get the water and electrical connections to the site. As far as the access roadway, we're working with the Department of Public Works to get...to come to some kind of agreement that in their next visit to the island of Lanai, to go ahead and include the, the improvement of the access roadway as part of their resurfacing project, and that we would request from Council our share of that funds to help pay for that improvement. That was a condition in the Special Use Permit that we got a letter from Department of Public Works to agree to put off the requirement of the access road improvement until they can get back on the island in the next series. They're currently on the island for this year's resurfacing project, so in...they said in two years, they'll be back on Lanai to do further resurfacing, so we agreed to

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ask the Council for the money to pay our fair share. And that's where we currently stand, Madam Chair.

CHAIR COCHRAN: Thank you, Mr. Miyamoto. Members...yes, Mr. Pontanilla, you have questions.

COUNCILMEMBER PONTANILLA: Thank you. Since I requested that they be here. So the budget amendments would take care of the total cost for this recycling program?

MR. MIYAMOTO: The additional funds we're requesting is for the infrastructure improvements for the onsite. Our projection is that we'll be probably coming in for FY '13 for funding to start full operations of the site.

COUNCILMEMBER PONTANILLA: Do we have any recycling program that's currently going on, on Lanai?

MR. MIYAMOTO: We do what we consider special event type recycling with the assistance of Community Work Day. What we'll do is like we're doing on the island of Molokai, we have announcements, we put out public announcements and we do collection of materials at that point. The only one that's currently really ongoing is the HI5 program that currently is operated by the State.

COUNCILMEMBER PONTANILLA: Okay. So there's no County employees that are involved in the, the things that we do on Lanai for recycling then at this time?

MR. MIYAMOTO: Not at this point, yes.

COUNCILMEMBER PONTANILLA: Okay. Thank you.

CHAIR COCHRAN: Thank you, Mr. Pontanilla. And, Mr. Hokama.

COUNCILMEMBER HOKAMA: Thank you very much, Chair Cochran. And I thank you being here, Director. You know, when I talked to Chairman Pontanilla, Budget and Finance regarding this grant, Director, you know, part of the concern and I guess for Lanai was the, I guess, lack of understanding. Because the contract before us is with Tri-Isle Conservation and Development Council, but the actual provider is another entity on the island, correct?

MR. MIYAMOTO: For the HI5 recycling program which is the State program, yes, it is another entity.

COUNCILMEMBER HOKAMA: Okay. That HI5 has anything to do with this grant?

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MR. MIYAMOTO: No, no it doesn't. This grant is primarily for Tri-Isle to develop the existing site, the site that we're trying to get ready for next year's implementation.

COUNCILMEMBER HOKAMA: Okay. So my understanding was this grant was hiring I believe what, two or three Lanai residents, whether it be part-time work or whatnot, but they were hired under this program. And while this grant is still ongoing, we've terminated those employees, so who does the work they were previously doing? Is, is that under the HI5 component, Director?

MR. MIYAMOTO: Yes, that was under the HI5 component that Tri-Isle had. For their HI5 contract, they had hired two local Lanai residents.

COUNCILMEMBER HOKAMA: So that HI5 contract, so we're clear, to do the...with Tri-Isle is another contract and has nothing tied to this current grant? Is, is that our understanding?

MR. MIYAMOTO: Yes.

COUNCILMEMBER HOKAMA: Okay. And then as far as the County of Maui and your Department's concerned, anything to do with HI5 is non-County funds, it's totally State procured by the State, or are we the agent for procurement for the State on this?

MR. MIYAMOTO: No. The State did an independent, their own procurement, and we do have some equipment that are...that is there, that was previously used by the previous vendor that has been made available, because it was purchased with HI5 funds.

COUNCILMEMBER HOKAMA: Okay. So this requirement of this road that you're telling me I gotta wait two more years now, is that a condition to the HI5 requirements or is that a condition to the County and Tri-Isle to do the center, the recycling center component versus the HI5 redemption program? Can you give us some comment, please?

MR. MIYAMOTO: Yeah. In developing the site, we got Special Use Permit. As part of that Special Use Permit when I was in Public Works, I helped put the condition on. And, you know, it was a condition of the Special Use Permit for the recycling center, and the HI5 is just someone that's renting the space out from us at this point.

COUNCILMEMBER HOKAMA: So they're not required to contribute or pay a share to, to get this road squared away as far as the resurfacing requirements?

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MR. MIYAMOTO: Not directly. They are paying us \$100 a month to be there onsite to do the HI5 redemption.

COUNCILMEMBER HOKAMA: How did we get \$100? How, how did you come to that figure to be a fair number for State use of our facilities?

MR. MIYAMOTO: That was something that we had worked with Corporation Counsel. The exact details I'd have to check back with staff, but I think that was the amount that I think previously the prior contractor wasn't, wasn't being charged. And when we went to renew the contract it was determined that we are supposed to do a fair market amount, and we worked with Corporation Counsel in coming up with something.

COUNCILMEMBER HOKAMA: So that was --

MR. MIYAMOTO: I'd have to check with staff to more details.

COUNCILMEMBER HOKAMA: --that was based on an appraisal, more than likely, Director?

MR. MIYAMOTO: I would assume so, yeah.

COUNCILMEMBER HOKAMA: Would you, would you be kind of enough to verify that for the Committee's information, please?

MR. MIYAMOTO: I can.

COUNCILMEMBER HOKAMA: That would be appreciated. And again, you know, I appreciate your, your patience, Director. You know, for Lanai I still get questions about what happened, and again, you know, we're a small community, people wonder what happened to their friend or neighbor that was working there previously. I do know we have some Lanai people currently working for the new vendor for the State HI5, but there's still questions in, in the community. So I appreciate the, the information you've shared to hopefully answer those questions we have in our community. And I thank the...Mr. Pontanilla for requesting this consideration before your Committee, Chair. Thank you very much.

CHAIR COCHRAN: Thank you, Mr. Hokama. Members, any further need...oh, yes, Mr. Mateo.

COUNCILMEMBER MATEO: Yeah, thank you, Madam Chair. Mr. Director, could Tri-Isle not do the, the recycling...the, the HI5 component?

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MR. MIYAMOTO: It was put out to bid, and because it is a State function, the State was the one that put it out to bid.

COUNCILMEMBER MATEO: Okay. And the, the...can you once again try cover the infrastructure improvement needs for this area --

MR. MIYAMOTO: Originally we had not...

COUNCILMEMBER MATEO: --whether or not it was just the road, the roadway?

MR. MIYAMOTO: Oh. We had the roadway, water, and electricity to the site. Those were the three elements that we have left.

COUNCILMEMBER MATEO: And the site is at the landfill? Where, where is this site?

MR. MIYAMOTO: As, as you towards...as you...it's on...I guess as you head towards the Public Works Baseyard it's right before...right at the very beginning where it leaves the paved roadway. There's a two-acre site that we worked with Castle & Cooke to utilize for this recycling center. We wanted something close to the, the town so that it would be convenient for the people.

COUNCILMEMBER MATEO: And the, the road improvement then, is, is that one of the last components that, that needs to be completed?

MR. MIYAMOTO: Yes. That'll be one of the, the last major component to be completed.

COUNCILMEMBER MATEO: And you say it'll be done in two years?

MR. MIYAMOTO: We're actually trying to work with Public Works this year to see if they have any extra asphalt on their, their current resurfacing project. Fortunately our Assistant Division Chief for Solid Waste went to Public Works to take their Assistant Division Chief's position. And so he, he understands our issues, so we've asked him to if he could check with his staff to see if the contracts might have excess asphalt that we could go ahead and pave this section, this short section that goes to the recycling center. But beyond the recycling center on the same access road is the Public Works Baseyard, and also the, the Lanai Sewage Treatment Plant, so there is multiple County services. So we're looking to try and do some kind of cost sharing.

COUNCILMEMBER MATEO: Okay. Thank you. Thank you, Madam Chair.

CHAIR COCHRAN: Thank you, Mr. Mateo. Yeah, Mr. Hokama.



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COUNCILMEMBER HOKAMA: Thank you. And, and again I think, well maybe a good follow-up to Mr. Mateo's question is at this time, can you tell the Committee how much money it's going to take to get this condition complied with regarding the road? What are you looking at in, in ballpark, because you need another, what, \$300,000?

MR. MIYAMOTO: Actually we've asked...that's what we've asked Public Works to provide us at this point, 'cause in speaking with our former Assistant Division Chief, we asked him if they could give us an estimate so that then we could propose to this body the additional funds that we would need to finish that roadway off.

COUNCILMEMBER HOKAMA: Okay. Well I would ask you to, you know, see if concrete is just as affordable or cheaper than the asphalt, and I just share that 'cause while we're doing some work on the island, the State is going to start cranking up their need for material and construction of a new school building for the Lanai campus. They're doing their huge airport improvements on the island, so they're using asphalt and other needs. So there might be opportunities, Director, for, for your Department to comply with this sooner than later. And, you know, if...you need to let me know what it takes to get this thing done for Lanai, so I can ask my colleagues for some consideration in the...I mean I would like to do it sooner than later. Two years, you know, this program has been running for years on the island. You know, it's not something that's just started, so to wait for two more years, you know, I don't think it's fair to the Public Works, Highways Division or, or Environmental Management sewage program areas for those employees. I think we gotta take care this sooner than later, Director. Thank you.

MR. MIYAMOTO: Thank you.

CHAIR COCHRAN: Thank you, Mr. Hokama.

COUNCILMEMBER PONTANILLA: Chairman?

CHAIR COCHRAN: Yes, Mr. Pontanilla.

COUNCILMEMBER PONTANILLA: Thank you. So, Mr. Miyamoto, when you come in for the operational costs, is that going to be a grant of some kind or operations would be utilizing County employees?

MR. MIYAMOTO: Initially we, we looked at like all our other recycling centers and it's not going to be a grant, it's going to be some kind of a bid process we're going to go through for someone to operate.

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COUNCILMEMBER PONTANILLA: Okay. And do you know an estimated cost of some kind?

MR. MIYAMOTO: To be honest, no, not at this point. We'll look at our other facilities and see what kind of similar cost we're gonna probably have on the...except for the...one challenge will be probably the trucking part of it, getting it to the processor.

COUNCILMEMBER PONTANILLA: Okay, fine. Thank you, Chairman.

CHAIR COCHRAN: Thank you, Mr. Pontanilla. Members, further questions, comments for Department here? So, Mr. Miyamoto, is this right in back of the Lanai High? Is that where...is Lanai High School above it?

MR. MIYAMOTO: No. I think Lanai High School is sort of...which direction? It's sort of on the side. It's...

CHAIR COCHRAN: Oh, okay.

MR. MIYAMOTO: Yeah, it's sort. . .it's closer towards the fire station in the back, back area.

CHAIR COCHRAN: Oh, back there. Okay. Yeah, I definitely would like to. . .I concur with Mr. Hokama and move this, you know, forward as quicker than . . .(*chuckle*) . . . later. And I guess no further discussion, Members? Or comments, concerns? So I'll entertain a motion then to recommend filing of this item.

COUNCILMEMBER HOKAMA: So move

VICE-CHAIR VICTORINO: Second.

CHAIR COCHRAN: Thank you. So it's been moved by Mr. Hokama, seconded by Mr. Victorino. All those in favor, say aye.

COUNCIL MEMBERS: Aye.

CHAIR COCHRAN: Any opposed, say no. Seeing none, looks like we have seven. Motion carries. Seven ayes, zero noes.

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**VOTE:**      **AYES:**      **Chair Cochran, Vice-Chair Victorino, and Councilmembers Carroll, Couch, Hokama, Mateo and Pontanilla.**

**NOES:**      **None.**

**ABSTAIN:**      **None.**

**ABSENT:**      **None.**

**EXC.:**      **None.**

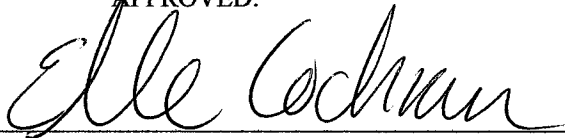
**MOTION CARRIED.**

**ACTION:**      **FILING of communication by C.R.**

**CHAIR COCHRAN:** Members, any further discussion, matters to be considered, anything of the nature? I thank Mr. Miyamoto for being here from the Department and of course Michael Hopper for hanging in there with us, and Staff and all of you for showing up today. Thank you. And with that I shall adjourn this meeting. Meeting adjourned. . . .(*gavel*). . .

**ADJOURN:** 11:22 a.m.

APPROVED:



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ELLE COCHRAN, Chair  
Infrastructure Management Committee

im:min:111031:ds

Transcribed by: Daniel Schoenbeck

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**CERTIFICATE**

I, Daniel Schoenbeck, 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 22<sup>nd</sup> day of November, 2011, in Haiku, Hawaii

  
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Daniel Schoenbeck