

ENDANGERED SPECIES RECOVERY COMMITTEE (ESRC) MEETING

June 19, 2019 MEETING MINUTES

Meeting Location: Department of Land and Natural Resources, Division of Forestry and Wildlife,
1151 Punchbowl Street, Honolulu, Hawai'i 96707

MEMBERS: Scott Fretz (DLNR), Jim Jacobi (USGS), Lisa Spain (At-Large), Michelle Bogardus (USFWS), Kawika Winter (At-Large), Loyal Mehrhoff (At-Large)

STAFF: DOFAW: David Smith, James Cogswell, Glenn Metzler, Lauren Taylor, Lainie Berry, Afsheen Siddiqi
DLNR: Suzanne Case, Linda Chow

OTHERS: Darren LeBlanc, Alicia Oller, Matt Stelmach, Marilyn Teague, George Akau, Diana Crow, Marie VanZandt, Tiffany Agostini, Sean Moura

AGENDA

ITEM 1. Call to order.

FRETZ: Good morning. Let's come to order then. So on the agenda today is the Auwahi HCP. You guys have a copy of the agenda?

ITEM 2. Announcements.

FRETZ: Are there any announcements? None? Okay, we'll move right into item three.

ITEM 3. ESRC review of Auwahi Wind Farm Habitat Conservation Plan (HCP) Amendment dated May 14, 2019.

FRETZ: So I take it staff have a presentation?

DAVID SMITH: The applicant has a presentation. Okay. I can just make an intro if you're okay.

FRETZ: Why don't what we'll do is we'll have Dave's intro. We'll do the applicant's presentation. And we'll do public comments and then if the committee has any questions for the applicant or staff or anyone else and then the committee will deliberate. That work for you guys? Okay. Go ahead Dave.

DAVID SMITH: Yeah, so we're just bringing the plans we've gone back and forth with. I've been working on this for five years now and trying to get this plan approved so we can move forward with permitting and work on the ground and we talked to the committee a number of times. We've had other public meetings. So our focus is on the minimization, mitigation plan,

monitoring, and adaptive management. Of course the bats, you know, it's difficult—heavy lift—because of the high degree of uncertainty. We don't know that much about bats. We have a hard time counting bats and mitigating. So what we have to do is rely on the best available science and other information that we have and try to craft a plan going forward. So I think that by getting a permit out on the ground and starting to work that we are on this plan that we have a high likelihood of being successful on this. There's the new curtailment standards that they come up with which is the highest in the industry. I think that the mitigation plan is a reasonable approach and that adaptive management can kick in if we're not meeting the targets. I realized that monitoring is challenging with bats, but there's been a lot of effort in that regard. I also think we're going to learn a lot in the years going forward. So I think we're going to know a lot more about bats in five years than we know now. I think we've already learned a lot about that in the last five or so years.

We've got research ongoing so we're going to continue to learn more and I think our approach to managing bats generally is going to continue to evolve and I think that allows us the flexibility to be able to permit wind operations and also to help move forward on understanding and managing bats and leading to the recovery of bats. Ultimately that is the goal. So that's what we are carrying forward to the committee today. It's the State's policy from the governor's office and the legislature to support renewable energy. I think there's a lot of other benefits that come with renewable energy promotion; they'll help native species. Generally, it's hard to quantify those kinds of benefits, like if you can get off of coal and oil. How much is that going to benefit bats, you know those types of things aren't accounted for in the plan. So I just think that there's a lot of benefits to renewable energy as well and we need to try to keep a balance going forward in terms of what we're trying to accomplish here overall for the environment, and native species specifically and endangered species at the top of the list.

I will let the applicants give their presentation and if you have any questions, I'm available and the Chair's also available here.

FRETZ: Yeah, just one. So the staff sent us a little write up and it had something attached from you guys and so I just wanted to get a summary of the public hearings in the public comments from you guys. Or are you guys going to cover that? Because I'm I think additional public comments came in after those two.

MATT STELMACH: A summary of the public hearing?

FRETZ: Yes, the ESRC should get a report on the public comments that were received during the public comment period.

MATT STELMACH: Those were provided for DOFAW?

FRETZ: Which was written up. So my question to staff is you guys attached their write up. Does that represent all the comments? Are you good with that? More public comments came in

right? We have one more. Okay, you're going to give that to us now. We're going to give it to us then.

SMITH: Are you talking about public comments from the hearing on Maui?

FRETZ: Yes.

SMITH: And that comment period is still open?

FRETZ: Are they posted it anywhere? Is there somewhere they can be accessed?

MATT STELMACH: We provided a summary of all comments to DOFAW .

MARIE VANZANDT: And I believe those were posted to the ESRC website. When I went onto the website, I pulled up to comment matrix.

FRETZ: Yeah, the comment matrix where the applicants summarize what the comment was: I wondered where the rest of the comments were. They're posted on the website?

LAUREN TAYLOR: Each individual comments?

FRETZ: Yes, transcribed written comments.

LAUREN TAYLOR: Just the summary was posted.

FRETZ: Okay, so I'm okay because I was there so do the members want anything more on the comments? You have a summary written up if you want anything more or less.

MARIE VANZANDT: There was also a court reporter at the public comment meeting and that was all transcribed and given to Lauren so she can provide that to you guys as well. If you weren't at the public meeting.

FRETZ: So if the committee doesn't want anything more I just wanted to make sure the committee is aware of the comments that were received. There were over 30 of them and they can be accessed. Okay, applicant presentation then please.

MARIE VANZANDT: Thank you guys for being here today and I just wanted to introduce a couple people that are in the audience. First of all, we have Alicia Oller from Tetra Tech and Matt Stelmach that have been helping build a plan. We have Marilyn Teague from AEP. Sempra was purchased by AEP Renewables. So we're now AEP. Also, I have George Akau, the project biologist that will be implementing a lot of the mitigation that's going to be occurring associated with this plan. And Diana Crow is representing the ranch over at 'Ulupalakua, the landowner where a lot of the tier 4 mitigation will occur. So yeah, we're here to present the Auwahi Wind HCP amendment, the plan as David said represents four years of coordination

with the USFWS, DOFAW and input from the ESRC along the way. We're here today to request a recommendation for approval to BLNR. So in our presentation today we're going to review the timeline and give a brief overview of the amendment. But where we'd like to spend the majority of the time is walking through the comments we received from you in October and how those comments were addressed. In the end we'll briefly touch on how this plan relates to issuance criteria on the State side under 195D. So yeah, in terms of timeline this process began in February of 2015 and Auwahi reached out to the agencies after two years of operation. We had found four bat fatalities at the site during compliance monitoring and felt that we were definitely on a projection to exceed our take permit. And so subsequently we've continued close coordination with HCP staff on the USFWS and DOFAW sides and coordination with the ESRC. We presented and discussed the HCP in five separate meetings. And so here I outlined all those meetings in December of 2016.

We came to you to discuss the predicted project impact and the best use of what was you know, then a new tool, Evidence of Absence, and how it should be interpreted. And so we took those comments and feedback and sort of built-in what the projected impacts for the site would be. In August Matt and I came and discussed and updated tier 4 mitigation plan and incorporated your feedback into the monitoring and compliance associated with that plan. Shortly thereafter, in October, we presented the entire plan to you guys and solicited your input. We received a lot of comments in January. We came and gave you an update on where we were with incorporating your comments into that plan and then in February, we had our site visit where you got to come out to the tier four mitigation site and the facility and got to see where we were at. The public comment period has ended but it sounds like there was an additional comment that was received earlier. All of those comments from the ESRC and throughout the years from U.S. Fish and Wildlife and the staff have been incorporated into the amendment and the document dated May 14 that you guys have for review.

The next steps for moving the process forward on the State side is we're here to seek your recommendation and ultimately request approval from BLNR. So these things will be coming up in the next couple months. The BLNR approval, we're targeting an August date. So yeah, the plan that we present to you today. We definitely made this a research-driven plan and it has strong adaptive management as Matt is going to go through with actions and triggers. And so that's something that has been the focus throughout the plan with the uncertainty around bats. We do know a lot but we need to be able to adaptively manage over the next couple years as we gain more information. The plan as a target has always been built on the best available science today and with the benefit specifically for the bat.

MATT STELMACH: I'm going to cover the highlights of the plan and then go through ESRC comments and responses. So the minimization measures have been ongoing adaptive management since 2014. It's based on site-specific data. In 2015 the site voluntarily initiated low wind-speed curtailment cut in speeds of 5 meters per second and in August 2018 implemented 2.9 meters per second from August through October.

WINTER: Before the first one was there no low wind speed curtailment?

MATT STELMACH: It was manufacturer's cut in speed.

FRETZ: Which is what?

MARIE VANZANDT: 3 meters per second.

MATT STELMACH: So the goal is to provide a data driven plan with site-specific monitoring results and here you can see the distribution of fatalities across the months and the application of low wind speed curtailment. We use 5.5 m/s cut-in speed in the months with low risk and 6.9 m/s cut-in speed for the months of high-risk. 6.9 m/s is the highest operational cut-in speed in the Hawaiian Islands and the highest tested cut in speeds in the mainland and we have one year of data which is initially positive.

SPAIN: There's been some fatalities since this has been made. Can you point out where those fatalities would lay?

MATT STELMACH: We've had additional fatalities observed in May and June and August.

SPAIN: May and June would have one more each?

MATT STELMACH: May has two, June has two.

SPAIN: Each?

MATT STELMACH: Two total. I want to be cautious about applying the results because we've changed the conditions at the site. We can't necessarily compare before and after because we would expect the risk to be reduced in the months of August, September and October and so the risk is differentially separated now than it was prior to the implementation of 6.9 m/s.

FRETZ: Sorry, so what is the time frame of this take?

MATT STELMACH: This is through December 2017. That was the cutoff date used for all the data in the HCP amendment. There are two fatalities observed in May and two total observed in June. I believe one additional observed in August. And I think that's it.

WINTER: This table's not in the HCP? I cannot read that. Is that from 2017 data?

MATT STELMACH: This is data from the start of the project through December 2017, so 5 years of data. I believe this is in the HCP in Section 3. We've added to that table the application of low wind speed curtailment for the illustration of how curtailment is applied.

DAVID SMITH: Page 315.

BOGARDUS: And then remind me, last year was the first year that you did the 6.9 m/s for that August through October time period and there was one fatality observed?

MATT STELMACH: Previously there was 2.8 observed in the same period.

FRETZ: Wait 2.8 I don't get that. It says 6th and 7th and...

MATT STELMACH: 2.8 average per year.

FRETZ: Okay, and so in 2018 how many in the entire three month period?

MATT STELMACH: One

FRETZ: One? So it has gone way down.

MATT STELMACH: By a factor of 30%. Thirty percent of the previous rate. Approximately, for a 70% reduction.

BOGARDUS: This table was before it was implemented. That was August through October 2018.

FRETZ: I understand.

MATT STELMACH: So we'll review the potential for impacts and take requests. We've incorporated USFWS and DOFAW guidance on the use of Evidence of Absence and the calculation of indirect take. The take request does not reflect the total number of bats on the ground but incorporates bats that are not found, indirect effects, and likely overestimates impacts. We've based this on the best available science on the effectiveness of low wind speed curtailment as well as addressing uncertainty in the potential impacts. This is based on five years of site specific monitoring and accounts for the potential for inter-annual variation. We've also incorporated the USFWS guidance to set the tier trigger at 75% of the take within the current tier. So the triggers for initiating mitigation for the next year are outlined here. The important piece here is that there's sufficient time between the tier trigger and the tier threshold, which is likely greater than 2 years to provide adequate time for planning. So the mitigation is really based on the best available science related to the Hawaiian hoary bat and species that share the traits of being aerial hawking insectivorous species. It's built for the benefit of the bat and incorporates benefits to other species where possible. Auwahi has a track record of successfully designing and implementing mitigation as you saw with the site visit and the mitigation has benefited from input of the ESRC based on the prior three meetings. That tier 4 mitigation will protect over 1,700 acres with a conservation easement or approximately 30 acres per bat. It actually includes 500 acres that was previously unprotected. So the conservation management with additional encumbrances to existing area plus unprotected lands. The current habitat is grazed grasslands. And the goal is to create a mix of matrix habitat of forested hedgerows, water features, and open spaces for bat foraging. There's over 300 acres of trees will be planted with fast-growing over story and understory species the

installation of ponds, wildlife egress structures, and the remaining pastures will continue to be grazed.

SPAIN: Can I ask a question? Just clarifying the fast-growing species doesn't mean it's native.

MATT STELMACH: The goal is outplant koa and a'ali'i, those are most closely associated with the diet species for the bat.

SPAIN: But it could be non-native fast-growing species.

MATT STELMACH: It could be non-native. We have included restrictions on which species so no invasive species would be used.

SPAIN: Ok thank you.

FRETZ: So you haven't determined the mix yet. Like you had decided on koa.

MATT STELMACH: Koa is the preferred species.

FRETZ: So when would you go to a non-native?

MATT STELMACH: The USGS has suggested that macadamia nut and eucalyptus are strongly associated with bats. We think that there's a better benefit environmentally overall to use a native species mix. That's koa and a'ali'i. You can see the need to incorporate other species. And so we haven't limited the species but the goal is to use koa and a'ali'i.

DAVID SMITH: That would come in an adaptive management scenario, right?

MATT STELMACH: Yeah, we've included measures for adaptive management that could change the species composition.

DAVID SMITH: I think the plan is to lead with koa and a'ali'i. I mean adaptive management leaves a lot of things open possibilities.

FRETZ: But the way the HCP is written. The HCP doesn't require that it's natives you could plant all non-native stuff out there the way the HCP is written, is that correct? That's the way I read it.

SPAIN: Yeah, it says the hedgerows would be planted with fast growing native or non-native trees and understory species.

MATT STELMACH: With the intention to use koa and a'ali'i as the preferred species.

FRETZ: Okay. I just wanted to clarify I understand your intention. But the question was what is required under the HCP.

MATT STELMACH: I think Auwahi has demonstrated that they're able to fulfill the intentions.

MARIE VANZANDT: The concern has been raised about koa. Potentially it's only koa that's all planted subject to disease etc., and so in an adaptive management situation we needed to establish fast growing trees and the koa had died off, an agreement would be made at that time that a non invasive species non-native could be used. That was the intention in writing it that way.

WINTER: Would that be done in consultation with DOFAW or anybody or would that be an applicant exclusive decision?

MARIE VANZANDT: I believe as it's written, you know when the adaptive management takes place it's always in consultation with USFWS and DOFAW.

MATT STELMACH: So here we outline the management actions in the literature that we've identified to support those actions. So the creation of hedgerows is associated with increased insect abundance, increased bat foraging and increased bad activity. The establishment of ponds necessary for bat foraging reproduction and basic physiological requirements and the connection of those habitat features with open pastures, which are positively associated with bat foraging. So we have a good foundation of research and data for the Hawaiian Hoary Bat and where gaps occur we have surrogates with similar life history characteristics. That is arial hawking insectivorous bats and the goal is to create a matrix of foraging habitat built for the benefit of bats and incorporating benefits to other species where possible. This represents the optimal bat foraging habitat based on the available science. So we wanted to also address reasonable certainty. The following elements of the mitigation provide reasonable certainty that there will be a net benefit to the bat which can be difficult to quantify. But these have recognized benefits to the bat. The conservation easement in perpetuity adds encumbrances to the agricultural easement as well as protecting lands that were previously unprotected. The HCP commits to removing any barbed wire remaining within the mitigation area. Barbed wire is associated with the snagging risk to bats. It provides over 120,000 feet of additional edge habitat and edge habitat is a significant predictor of increased bad activity. It reduces the risk to bats from fire and drowning. It provides habitat to the bat for multiple generations. We have a robust monitoring plan that provides research quality monitoring and success criteria and exceeds that of similar research projects and the plan includes a robust adaptive management strategy to ensure the benefits of the bat is realized.

WINTER: I have a question. So for about the barbed wire, the mitigation area was 1,200 acres?

MATT STELMACH: That was 1,700 acres.

WINTER: So is ranching not going to be occurring in that area anymore?

MATT STELMACH: Ranching will continue to occur in the pastures adjacent to the hedgerows.

WINTER: I'm just curious if you guys can figure out a way to do ranching without barbed wire. I'm seeing nods in the back.

BOGARDUS: NRCS had done a couple of, I don't know if it was actual research or if it was just monitoring regimes using two strands of smooth wire in lieu of one strand barbed wire on top and had similar success and was fine for ranching of cattle. So while it's not preferred by many ranchers it is doable. At least from NRCS coordination of this.

FRETZ: So you're saying the ranch will remove the barbed wire from the 1700 acres?

MATT STELMACH: Auwahi will. It's a requirement of the HCP amendment. So for tiers 5 and 6 we've made several additions since the last ESRC meeting. The tier 5 and 6 mitigation is based on land restoration and management and Auwahi worked with DOFAW to identify Kamehame Nui as a potential site for tiers 5 and 6. The HCP amendment provides a commitment to immediately begin pre-trigger baseline monitoring on permit issuance. And then includes a level of detail similar to tier 4 included in a site-specific mitigation implementation plan that will take advantage of the best available science at the time and describe how the mitigation will address the deficiencies of the parcel at the time this year is triggered. So we've also incorporated adaptive management for minimization measures. There's a few key terms. The baseline fatality rate is calculated by Evidence of Absence, which is the expected number of fatalities per year. The threshold value is compared to the baseline fatality rate. And as a means of assessing whether adaptive management is triggered. For Auwahi Wind the threshold value is 6.45 and then the adaptive management plan identifies the specific measures to reduce risk to bats. There's several key components. We'll continue to conduct post-construction mortality monitoring to document the effectiveness of minimization measures and calculate the estimation of take using Evidence of Absence. There's a schedule for evaluation and clear triggers identified for evaluating if adaptive management is triggered. The adaptive management plan then provides actions to reduce the risk to bats. The adaptive management actions we've identified here are based on the best available science and include a redistribution of turbine curtailment nights, the potential for implementing bat deterrent technology, or smarter entailment or other avoidance technology, and it's important to see that the adaptive management plan is a living document that can continue to incorporate new information based on the site specific research.

FRETZ: The adaptive management plan is located where?

MATT STELMACH: There are specific actions identified in the HCP, but there's ongoing monitoring at the site and the goal is to incorporate the research that's ongoing at the site both thermal and acoustic monitoring to develop a site specific plan to identify the periods of higher risk should it be needed. Then modify the implementation of minimization measures.

BOGARDUS: Matt, can we go back to mitigation for a second. So that was the tier 4 mitigation plan. Can you quickly highlight what tiers 5 and 6 look like?

MATT STELMACH: Tiers 5 and 6, if triggered today would like to look like tier 4 because that is the optimal bat foraging habitat based on what we found from the literature. If we find something new the goal would be to incorporate the best available science at the time the tier is triggered.

BOGARDUS: But the HCP includes minimum acreage and all that other kind of stuff for those future projects if that tier was triggered.

MARIE VANZANDT: It also depends on where the management actions are on the State side within those parcels so it's difficult to pinpoint what would happen right now because the State is continuing to move forward with managing that parcel and acquiring and managing the parcel. So based on when the triggering would occur the management actions would reflect the site conditions at that time.

BOGARDUS: If I remember correctly it now highlights Kamehame Nui as the likely spot.

MATT STELMACH: Yes.

WINTER: Can you guys remind me where that is in relation to tier 4?

MATT STELMACH: That is north of the Kula Forest Reserve. It spans a wide elevational gradient. You can see if the Kula Forest Reserve is here, tier 4 would be down in this area.

WINTER: Thank you.

DAVID SMITH: And we are still in process of acquiring a Kamehame Nui. We do not own it yet. We're hopeful that we will close on that deal.

FRETZ: That might need some clarification because I think you guys attached a draft board submittal in your HCP, but that submittal did not go to the board. It was pulled back in order to finish some due diligence stuff. So that sort of doesn't have a board approval yet. But we do have every reason to expect that it will go through.

MATT STELMACH: Just to be clear the intent of including those documents was to make it clear that the intention of DOFAW aligns with the intention Auwahi in terms of what the targets are and that is essentially benefiting native species including bats. Not to highlight any specifics of that.

MEHRHOFF: In your definitions that you had on there I thought the definition for your threshold was different than what's in there. I thought you had two threshold values identifying the HCP. One you didn't actually provide that is this one. I thought you had something that was

talking about the best value for the amendment which is based on 50 years? Did I just imagine that?

MATT STELMACH: No that's not included. This is the threshold value that's included in the HCP amendment.

MEHRHOFF: And that's based upon using Evidence of Absence to come up with that.

MATT STELMACH: Yes.

MEHRHOFF: So it encompasses all the previous take as well as that.

MATT STELMACH: Yes.

MEHRHOFF: That's good, that better than with what I was concerned with.

MATT STELMACH: Yes the key is to keep the project on target to remain below the permitted value and that if there's an indication that that's not the case then implement measures to correct that.

MARIE VANZANDT: So last October, we came before you to get a series of comments written and verbal comments on the document in its entirety. And so now we just wanted to focus on how we address your comments in the plan and let you know that how they've been addressed specifically you have a highlighted version. We believe that the input that you gave made the plan better to ultimately where it's at today.

MATT STELMACH: So we're going to just touch on the responses in the same order that we've reviewed the HCP amendment overview. There were several suggestions from the ESRC about alternative minimization strategies including increased cut in speeds from November to July, the potential for installation of deterrents, and full nighttime shut down. So Auwahi has voluntarily implemented the most stringent low wind speed curtailment regime of any wind farm in Hawai'i with clear triggers and robust adaptive management. It's a data-driven strategy that identifies the period of highest risk and implements the highest tested cut-in speed. We understand that not all risk can be prevented but the goal is to target the peak periods of risk. Low end speed curtailment is a proven effective minimization measure for reducing risk of bats. There's no habituation and no impacts to other species and it will be verified using K9 and thermal monitoring to demonstrate its effectiveness. Deterrent systems are incorporated in the adaptive management strategy, and they're just being tested in Hawai'i, but we're anxious to hear what the results are. So there were a number of comments on the potential for impacts. We based this on the best available science and data from similar species. The first suggestion from the ESRC was reducing the total bat take request. The original take request was 197 and was reduced to 140 based on the stringent implementation of low wind-speed curtailment. We've worked with USFWS and DOFAW on take estimation and predictions including the calculation of indirect take; we came before the ESRC in December 2016 to present these

methods. This estimate of 140 is based on a 20-year project BPA, the 5 years project specific monitoring, a conservative assessment of the estimation of take at the 80% credible level, conservative assumptions about the impacts of indirect take and the peer-reviewed literature on the effectiveness of low wind speed curtailment. In reality take is most likely less than 130 even if estimated at 140. We were requested to also review the effects analysis. Some comments included whether there is sufficient information on bat ecology or population to assess impacts. And then in particular some of the life history parameters that were used in the modeling or assumptions about the core use area. So we've revised the analysis to incorporate a more thorough life history review and a quantitative analysis that includes a range of estimates. We do have many of the important life history characteristics that allow for an evaluation of risk and we've highlighted those here. The bat has a broad distribution relative to the potential area of impact. So broadly across Maui relative to the small area encompassed by the project. The Hawaiian Hoary Bat can fly long distances to utilize resources and that flight distance incorporates a wide elevational gradient for both foraging and roosting. The bat utilizes a variety of habitats is that generalist in terms of the roost species the foraging habitat and the diet. The Hawaiian Hoary Bats also have a high capacity for reproductive output. And if we look at the risk factors, we see that the bat is absent from many of the risk factors that we would associate with declining populations. And that would be low fecundity such that the population of young does not replace adults lost to mortality. We don't see significant loss of suitable habitat. Immigration, which is thought to be rare for Hawaiian Hoary Bats. No disease has been documented in Hawaiian Hoary Bats. We wouldn't predict a loss of food availability. They're prey generalists, and the bat has no known predators. So the life history parameters of the Hawaiian Hoary Bat suggest is resilient to change or negative impacts. Only a small proportion of bats on Maui have the potential to be impacted. We've also included a population estimate exercise that was developed to provide a range of estimates according to input from USFWS, DOWAW, and the ESRC. And given those parameters we think the project is unlikely to cause adverse impacts on a local, island-wide or statewide level or impact its recovery potential. We will touch on some comments for mitigation. So ESRC members provided feedback on the relative acreage of mitigation and suggested that the HCP amendment does not match with the ESRC guidance. We first wanted to highlight the ways in which the HCP amendment does coincide with the ESRC guidance. The location that was selected for mitigation avoids close proximity to the project and occurs on the island where take is occurring. Tier 4 preserves bat habitat in perpetuity through a conservation easement and includes substantial natural habitat restoration and enhancement. Over 300 acres of native tree and understory species create a matrix of foraging habitat that provide net environmental benefits and work in concert with other conservation efforts in the area. ESRC guidance documents suggest the benefit of mitigation impacts for one generation over 10 years and two generations over 20 years. The conservation easement will protect the land in perpetuity. The monitoring for mitigation includes acoustic, thermal, and insect monitoring at a scale beyond similar research projects as well as reporting on the statistical power with which a change in bat activity can be detected. The mitigation includes monitoring of baseline conditions in the first year for a comparison to subsequent years. Additionally, the ESRC guidance suggests an estimated cost of mitigating take for one bat is \$50,000 which matches closely the cost estimated for Auwahi Wind's mitigation. So ESRC comments pointed to the

difference between ESRC guidance document and the acreage proposed in the HCP amendment. The median core use area from Bonaccorso et al. is 20.3 acres per bat. The guidance document recommends doubling the median for 40 acres per bat. Doubling the median does not have a statistical basis. I've searched the literature for examples of this both in statistics and in compensatory mitigation, and I've been unable to find a similar example where a median has been doubled as a metric. The most likely size of the core use area was between 10 and 20 acres with a few outliers indicating that most bats use a very small area and a few bats use a much larger area. It's assumed that this doubling recommendation is to address uncertainty and I have a few that I'd like to go through before we have any discussion. There's a number of factors that are difficult to quantify but are also associated with benefits to the species and ensure that with reasonable certainty that the mitigation will provide a net benefit. We've provided a permanent conservation easement which prohibits the removal of trees, prohibits barbed wire, prohibits the use of insecticides and other benefits associated with bat use of the habitat. We have provided a requirement for the removal of barbed wire within the mitigation area, and we've included measures to reduce the risk to bats from fire and drowning. Duff and Morrell (2007), showed that edge is a strong predictor of bat occurrence and the mitigation will provide the maximum benefit that that research indicates. The habitat is provided for multiple generations of bats. Additionally, we're providing research quality monitoring and success criteria. One of the key pieces of information needed for the benefit of that is monitoring to the response of management actions. The plan has a strong adaptive management section with clear triggers and a scheduled for evaluations. These unquantified aspects of mitigation provide the assurances that the net benefit to the Hawaiian Hoary Bat will be realized.

WINTER: 20.3 acres is only thing I'm kind of stuck on. It's been a while since I read that 2015 paper. Can you remind us how they got that 20.3?

MATT STELMACH: Historically, the use of 40 acres per pair of bats was recommended. The core use area was used when there was a finding from Bonaccorso that male core use areas did not overlap. So it was assumed that applied to all bats. And so rather than 40 acres per pair of bats it would then require 40 acres per bat. They also use the median core use area based on a doubling of that median and came back to 40. I don't know if that's any more clear for you.

WINTER: You guys have anything? I'm still confused.

MEHRHOFF: Yeah, that's actually the 2015 document; if you find the right piece it goes through that nicely at least in from my perspective. But just as he said it started out as 40 for 2 then I guess there's some concern about that as to the size. I think the agencies actually got together and decided to go to 20 based upon using median rather than mean size of the core area. The Bonaccorso early draft preliminary research was used to put the original 40 acres together. If I remember correctly, it was based upon 80 something they merged it down to 40 thinking to get overlap. When they didn't overlap and there was a decision to kind of spread it back up again. So it is somewhat convoluted. I think that 2015 one goes through it pretty well if we can pull that up for you sometime.

MARIE VANZANDT: I've got it right here. If you want to read it like right after.

FRETZ: The 2015 guidance?

MEHRHOFF: Yeah, the guidance document went through the thought process on it. There's like three or four places in there where it talks about it. My concern is that I think that Bonaccorso et al. doesn't necessarily support the 20.3 acres. It uses mean not median. That's something that other people have done, not Bonaccorso, so I'm not sure that it's appropriate to say that Bonaccorso said 20.3 when they did not. Let's say, you know 25 hectares, which is the mean core use area size.

MATT STELMACH: There's two important points that you brought up. One is that 20.3 is the recommendation from the ESRC bat guidance based on the median core use area and the median is typically-

FRETZ: That's not correct. The bat guidance recommends 40 acres and then the interim bat guidance that followed that the bat task forces continued to work on held the 40 acres while it continues to work on this because I think there's new data.

MATT STELMACH: It's based on the doubling of the medium.

FRETZ: You can you can explain it as you wish but the 2015 bat guidance says 40 acres.

MATT STELMACH: What I'm saying is that the median is 20.3 and the recommendation is 40. Those are two different things.

MEHRHOFF: That's correct. You can go to the 2015 bat guidance and see it in there. They identified the core use area as 20.3 based upon the median but they didn't endorse it. That 2015 document from the ESRC, from DOFAW, did not endorse 20.3. So for both Bonaccorso 2015 and DOFAW 2015 neither of those two documents were supporting the use of 20.3. That's something other people have done, not them.

MATT STELMACH: The other point that you brought up was the Bonaccorso inclusion of the mean instead of median which gets back to the statistics of it. For a strongly skewed distribution the median is a more appropriate measure of central tendency than the mean and so typically when you have a strongly skewed distribution as you see with that data, you would use the median to evaluate.

MEHRHOFF: And I would agree that's what statisticians will tell you on that. But you also then have the researcher if I remember correctly from the 2015 document being credited with saying that he thinks that actually the 25 hectares is the appropriate number to use for the core areas.

SPAIN: So it says Hawaiian Hoary Bats have distinct core use area with mean size of about 63 acres, 25.5 hectares.

MEHRHOFF: I understand what you're saying because you're right, when you have a really skewed thing like that. A lot of times people will say go ahead and use the median rather than the mean on that. So I'm not going to disagree with you on that because that's the same thing I found. Google is great. But you've also got the lead researcher saying he thinks the appropriate measure is the 63 acres and the DOFAW guidance saying 40 acres.

MATT STELMACH: I don't think that Frank endorsed 63 as a mitigation offset, and I want to be clear on what we're saying that he reports 63 acres per bat in his paper, but did not provide input on the mitigation.

MEHRHOFF: So I believe towards the end of that paragraph discussing it and Lisa since you got that right in front of you, what does it say on what Frank said?

GLENN METZLER: Says Bonaccorso personal communication point around 65 acres. Bonaccorso noted during the April 2015 workshop that the mean core use area was approximately 65 and suggested that agencies should use this value as an acreage for bat mitigation (Bonaccorso personal communication 2015).

MEHRHOFF: So for those reasons, I would just say that that it is somewhat of a mischaracterization saying that those two documents were supporting the decision to go forward on that. Your other argument on the statistical aspects of it would be something you could say is support going to 20 rather than 63.

DAVID SMITH: Can I just say, so this is regarding the 20.3. Since the median represented half the bats in the data set. The acreage has doubled, assuming females are paired up with males. The agency guidance for mitigation acreage was determined to be 40 acres per pair of bats, which is 20.3 medium male core use area rounded to 20 and multiplied by 2.

FRETZ: What are you reading from on that?

MATT STELMACH: That's the bat guidance.

FRETZ: Did that answer your question?

WINTER: Kind of... I think you guys have done an absolutely great job of using best available science in almost all aspects of this. But it seems like you guys aren't really using all best available science. It seems like cherry picked science that came up with this number and it's not an accusation but help me understand because we've had a researcher to present on different ranges that seem bigger than this. And maybe I missed it, but I didn't see anything in here addressing that science. It seemed like you guys relied on peer-reviewed science only which

isn't the best available science, it's peer-reviewed science. I'm wondering how do you guys reconcile that discrepancy?

MATT STELMACH: I think that's an important distinction and USGS has always relied on peer review process as their standard and that has been the standard that we've used. Because we know that the peer review process can lead to changes and so preliminary results should be viewed with caution.

WINTER: Makes sense. So in the executive summary or whatever it was that you mentioned the correspondence with Linda where she confirmed that you guys should be using best available science. I'm wondering if there's a definition that the State uses for best available science—is it limited to peer-reviewed science?

FRETZ: Well, not that I know of and I wouldn't limit it to something that's published or peer reviewed. I think if there is raw data available that I would consider that best available science, assuming you are cautious about any inference or interpretations you might make with that data, but broad data is great for certain questions.

MEHRHOFF: Yeah, I agree. Just like we were talking about with the going from a 42 to 20 acre core area you making the decision to go with the median and that's not peer reviewed. For that particular case, but that doesn't mean you wouldn't be able to try to use as what you might consider to be the best available science. So I don't think every single step has to be peer reviewed.

MATT STELMACH: That is the peer reviewed data. So Frank provides his raw data, and the median comes out of the raw data.

MEHRHOFF: But your interpretation of that is not peer-reviewed.

MATT STELMACH: The 20.3 is actually the DOFAW interpretation.

MEHRHOFF: That's not peer reviewed.

MATT STELMACH: The publication of the data is to be reviewed and that's the basis for it.

MEHRHOFF: But it's not just the data that needs to be peer reviewed, it's key conclusions. That's what the peer review process. That's one of the things it does, is not just look at the raw data, is it accurate, but the interpretation of that as well, right? I'm saying is that it's okay to do that, just as an example when you would not necessarily need to be peer reviewed.

DAVID SMITH: Having so little known about bats you're just gonna have to get the best stuff you have and it's not all going to be peer reviewed.

MEHRHOFF: Yeah, exactly. So I don't think we should be restricted to just peer-reviewed stuff. That's not best available science.

FRETZ: Okay ready to move on?

MATT STELMACH: So there are a few other comments specific to the mitigation actions. Lisa, you brought up the fact that water troughs filled with water year-round may increase the risk of mosquitoes in the area and thus the risk to birds from avian malaria. And as a response, we've removed the requirement for troughs to be filled year-round. Jim had several specific comments about monitoring, he was concerned about the documentation of the existing habitat. Tier 4 includes baseline monitoring to demonstrate the existing three mitigation conditions that will be initiated on permit issuance.

Another comment from Jim was the concern using feeding buzzes as a monitoring success criteria would be insufficient. And so we've revised the acoustic monitoring to include the analysis of all calls rather than feeding buzzes alone. And there was a request to include a power analysis as a part of the success criteria. And so we've clarified both to add mitigation reporting requirements and reporting on the statistical power with which change in bat activity is detected.

MEHRHOFF: Actually question on that too. I was really glad to see that but concerned that it was pretty low power that you were setting up. It was like 50% likelihood of being able to detect a 50% change... that's pretty low to me.

MATT STELMACH: The power analysis is to look at the likelihood that we would be able to detect a change of a certain magnitude. So how likely is it we would be able to detect a change of 50%, 100%, 150%. It doesn't presume what power we would be able to find those with—that's why you have to wait until the monitoring results.

MEHRHOFF: You don't have any survey data you can use for that?

MATT STELMACH: There's no monitoring occurring in open pastures currently.

MEHRHOFF: All right, but then your decision to use the 50/50 for when you would scale back monitoring. Can you explain that?

MATT STELMACH: The goal is to be able to identify and detect a change and so we want the monitoring to be appropriate to be able to detect that change.

MEHRHOFF: I know a number of monitoring programs use like an 80% or 0.8 threshold for being able to detect a change and the HCP setup that they would use 0.5 or 50%, scale back until you got to that if you are over monitoring so to speak. I don't understand why it's so low on that.

MATT STELMACH: That's the minimum. We would we would at least be able to detect that level of change. The goal in the HCP is to outline the minimums.

MEHRHOFF: I'm missing the rationale for that. Most folks want to increase that or have something that's relatively high rather than something that's small.

MATT STELMACH: That's why we've included 30 regularly placed detectors, 5 rotating detectors, 5 exterior detectors and 2 detectors at each of the pods. I think that's more detectors than any other site of a similar quality. If you look at the Kahikinui study, I think there were 17 detectors.

MEHRHOFF: So why would you want to then drop that monitoring down to where it is. I think it would be really low like a coin flip between whether or not if there was a trend you are going to detect it. I don't understand why you might scale back that monitor to such a low level.

MATT STELMACH: The goal is to be able to identify a minimum threshold and it could be scaled up from there also.

MEHRHOFF: I just may not be understanding that section the way it was written.

MATT STELMACH: So comments on tiers 5 and 6 suggest incorporating a specific site. And so we worked with DOFAW to identify Kamehame Nui. We've incorporated the details of the site, the current features, monitoring, and restoration targets and we've included pre-trigger baseline monitoring. We've also built in flexibility to allow for the potential changes if or when tiers 5 and 6 are triggered. Lastly we'll touch on adaptive management. So there was concern from the ESRC that the reversion trigger may undermine minimization measures. And so the reversion trigger has been removed to ensure that the minimization measures maintain their effectiveness throughout the permit term. Lastly there is a comment that there was a lack of deterrence or lack of commitment for bat deterrents. So we've provided a commitment to incorporate acoustic deterrence as a potential measure in the adaptive management plan, which would be reviewed and approved by USFWS and DOFAW.

MARIE VANZANDT: So yeah in the past couple months we've worked closely with the State AG to build a list of state issuance criteria under 195D. And we use that list as sort of this roadmap and double-check going through our HCP document and confirming that the document meets 195D issuance criteria. We share that document with you guys as part of the supplemental material and if you have any questions on it, I think it's been a very helpful exercise for us. On the federal side we've gone through the same process and making sure that our document needs the federal issuance criteria, and on the State side as well with this 195D exercise.

BOGARDUS: Can I ask Linda, have you reviewed that document?

LINDA CHOW: Yes, I have.

BOGARDUS: Thank you.

MARIE VANZANDT: So yeah, I think overall we appreciate all the time and the input that you guys have put into this plan and reviewing the documents. Your input, you know is continuing to make the document better. And once we finalize the permitting process, we can proceed with immediate benefits to the species and that's our overall goal here. And so these immediate benefits would include finalizing the HILT conservation easement, which as we said earlier in our due diligence we found that 500 acres is previously unprotected land. Then immediately we begin this research quality monitoring both acoustic, thermal and insect. I know there's more discussion on the baseline monitoring. We would initiate the habitat improvements fencing, hedgerow out planting, pond creation. We would begin with the monitoring out at the tier 5 and 6 mitigation sites, even though those tiers have not been triggered, we want to establish baseline conditions in those areas. We would provide funding assurances associated with the mitigation for tier 4 and ultimately we're continuing with the bat behavior research that's at the turbines and that research would be completed and incorporated into future adaptive management if needed at the site. So I just want to open it up for more discussion.

WINTER: So in the case of catastrophic hedgerow failure, like a fire or disease, can you articulate a plan for that?

MARIE VANZANDT: There's two sections with unforeseen and changed circumstances such as catastrophic fire. So overall, we are committed to the success criteria of the plan and that is what we're held to. And so if there is a fire that would burn all the plants we are still committed to having hedgerows in that area and that's an obligation within the document. And I think that's why we put that flexibility in. Our intention is to plant koa and a'ali'i but in terms of you know catastrophic failure, we're reaching the end of our permit, what would we need to plant to make success criteria?

WINTER: Okay, so kind of back to the 20.3. I'm still not quite understanding. Maybe a different way I could ask the question is you mentioned appropriate mitigation acreage per bat, I think is the term you might've used. So help me understand how you guys view appropriate bat mitigation acreage in relation to their use area because you also said they fly long ranges and if they fly across all of Maui it's not practical to do mitigation all over Maui so help me understand how you ended up with that number.

MATT STELMACH: I think that it's important to think about what is a core use area. Like why would a bat use very large core use area? Why would a bat use a very small core use area? In general, there is data from Bonaccorso, there's a slight increase in core use areas among juveniles, it's not a statistical difference, but in conversation with the USGS folks they have indicated that large core use areas are typical when foraging resources are not concentrated. We know that there is competition among individuals for foraging resources and there are documents of antagonistic interactions such as Bellwood and Fuller 1984 and so it's likely that certain bats are able to compete for foraging resources. Where there's a concentration of

foraging resources they're able to meet their needs in a small area. And so by providing an optimal matrix of foraging habitat we think it's likely that bats would be able to meet their needs within that core use area.

SPAIN: Can I ask a clarifying question about the hedgerows? So as I recall from the site visit the other mitigation sites have deer fence height. So what is the vision for how the establishment of the hedgerows are going to happen given cows, deer and pigs?

MATT STELMACH: So we've included over a million dollars in fencing for the project and we see that as an important management step. So the hedgerow would be contained within fenced areas as appropriate so that the plants could get established.

SPAIN: What kind of fencing is it going to be? Your budget looks like it's about five dollars a foot and I'm not familiar with deer fencing that can be built for five dollars a foot, but maybe there's something I don't know.

MATT STELMACH: The price estimate was developed in consultation with 'Ulupalakua and their understanding of what the requirements would be in that area.

SPAIN: Okay. DOFAW when you guys are out building deer fence what's your cost?

FRETZ: Over \$35 a foot.

MARIE VANZANDT: I think that the difference from where DOFAW is building fence is very extreme terrain versus on the ranch.

MATT STELMACH: Helicopter.

MARIE VANZANDT: The difference and establishment of like in-house contractors and the use of heavy machinery and the existing fence that's already out there. There's an elk proof fence that we would work off of and some existing fence that we would be able to use.

SPAIN: My impression was that terrain and is a bit challenging out there in terms of the slope and the kind of just the where sits as comparison to the other mitigation sites.

MARIE VANZANDT: Nā Pua Mākua was definitely a challenge; I would say if you could pick the hardest spot to plant trees it was up at Nā Pua Mākua. The area's down in the tier 4 area below Nā Pua Mākua. There's a lot more access and it's easier to work in those areas. There are still some difficult areas though within the area that is proposed.

MATT STELMACH: We've talked to Goodfellows about the development of ponds and to do development of the ponds there has to be some improvement to infrastructure and so it kind of coincides.

MEHRHOFF: Any other questions on this particular aspect?

FRETZ: If you're done with your presentation we will receive public comments and then turn back to the committee for any discussion you want to have which could include questions.

WINTER: The tier 4 was 17 thousand something acres?

MATT STELMACH: 1,752 acres.

WINTER: Tiers 5 and 6 were what?

MATT STELMACH: It's based on 20.3 acres per bat based on the size of the tier.

MEHRHOFF: Can we take a look back and look at the HCP on the threshold values. My confusion wasn't because you said the threshold value is based upon direct take. And it was for 20 years and that is 6.45 per year.

MATT STELMACH: Yes.

MEHRHOFF: And then you have something called a threshold value for this amendment which is based upon getting a result where you have a take estimate equal to the tier 6 maximum take, which is not direct take, it's the total take.

MATT STELMACH: That's the direct take for the tier 6 estimate. So 129 is the direct take estimate and 11 is the indirect take. Evidence of Absence is unable to account for indirect take because it's calculated outside.

MEHRHOFF: It just doesn't say direct take in the same part. So I thought you were switching to the 140 now and that's why I was confused on that. It's all the same value.

MATT STELMACH: Yeah.

FRETZ: Okay, committee, any other questions for the applicant?

WINTER: I have a question for you Scott. Just to clarify so we're not looking at pūeo, because it's only considered endangered on O'ahu.

FRETZ: Correct. So yeah, so when 195D covers the endangered species that are listed endangered by the State. Pūeo is not listed on Maui.

WINTER: There has been a substantial amount of pūeo kills by turbines though which is concerning. So the only point at which we would care as a committee when it would come under our purview is when it would get listed.

FRETZ: Well, so where they're protected take is unlawful. So there's that, but 195D does not provide for issuance of an incidental take license to those non-listed species. It's an issue that this committee has discussed and the staff deals with in regard to take of protected native species, but they can't apply for an incidental take license. There's simply no way to get a permit to take those.

WINTER: So sorry, wind projects on Maui can take pūeo and they don't need a permit for that?

FRETZ: So we might have to consult with AG or actually pull the law up to read it. But my recollection of the wildlife laws and so that's 183D and 195D, prohibit take of those species. They do allow for the issuance of permits for certain activities that are related to propagation for recovery and research. So there's not an allowable permit for incidental take like you would have with a wind farm for those species. There are criteria under which permits can be issued.

WINTER: So they can just take a pūeo and it's not allowed and nothing's happening.

FRETZ: I believe it is reasonable to conclude that. That's correct. There's take and nothing's happening. It's not permitted take. It is an issue and it's not restricted to the pūeo. There's other species, too.

WINTER: But that's not an HCP issue that just a different law. It's not 195D.

FRETZ: It's not an endangered species. So it's not an issue this committee usually deals with.

DAVID SMITH: But pūeo are protected by State law and by our rules and regulations.

FRETZ: So a few years ago the federal government was taking a look at creating a way permits can be issued for that under the Migratory Bird Treaty Act I think and I don't know what happened to that. The State would have to do the same thing.

DAVID SMITH: Probably isn't this process but it certainly should be addressed. I think under State rules.

FRETZ: It's a problem but for our purposes today, it does not fall into our realm of advice.

BOGARDUS: It would if it was O'ahu but for any other island it does not.

MEHRHOFF: And it would if you thought the take of pūeo from this project would push it towards being listed as endangered and it's under the 195D issuance criteria. We can't push the species into that. So in that case it would come under this.

FRETZ: Right. Good point.

GEORGE AKAU: There's been zero take of pūeo at the site for the years of monitoring.

MARIE VANZANDT: I've never seen any downed there in the project area. Potentially they could be down there, but I've never seen one and I spend a good amount of time there.

GEORGE AKAU: I've seen them around the turbines but they've never been taken. They occur at the project, are definitely at the restoration site throughout the ranchlands. But we have taken barn owls if you guys are concerned with the barn owls?

DAVID SMITH: We would be concerned definitely if pūeo were being taken. We don't think they're being taken at this particular project.

FRETZ: So are there any public comments on this item?

DIANA CROW: My name is Diana Crow. I'm from Ulupalakua. Pardee Erdman was unable to make this meeting today and he wanted to make sure there was a representative of him and his support for this project. So I do have copies of a letter of commitment that was provided to Auwahi Wind from the ranch. So the last paragraph reads we are pleased to inform you and other institutions and interested entities that Ulupalakua Ranch fully supports the Auwahi project and Auwahi's proposed tier 4 mitigation work on our land. 'Ulupalakua Ranch has a long and demonstrated history of proactive responsible land stewardship and conservation on the island of Maui. Our partnership with Auwahi Wind is in line with that history and vision and 'Ulupalakua Ranch is committed to working with you to implement the tier 4 mitigation as described in the proposed HCP amendment. So thank you very much.

BOGARDUS: You know why I like this? We've had a history on this committee about all types of weird things coming up with mitigation on different sets of land after we improved it. I just want to thank you for being here today and have someone so invested in understanding this proposal and understanding what that means for their land and working with applicants who really have solidified vision of what that might look like over the next... well in this case perpetuity. So I like this. This makes me happy and I want to see this for all of our mitigation projects. Thank you.

FRETZ: So if you're happy, we're happy. This is a comment that was sent to DOFAW to the committee. I want to make sure everyone got it.

DAVID SMITH: I'd like to submit this as well. I don't know if it was forwarded to the committee, this letter from Representative Yamane.

FRETZ: No the committee hasn't seen it. As far as I know.

DAVID SMITH: I can give you this as a copy and I can forward you the electronic if you want, but he generally talks about being concerned about various impacts of Hawai'i's flora and fauna. These threats to our terrestrial ecosystems come in the form of the biggest risk, climate change. He talks in support of Act 97 which reduce the CO2 emissions and says, "Wind, the biggest

renewable resource, is enormously important to our State's renewable portfolio. I therefore request of all agencies involved to proceed expeditiously in their regulatory views to avoid deterring investments and delays in the badly needed renewable energy sector which includes wind projects. I feel this can be done while maintaining proper regulatory oversight to ensure that the impacts are mitigated and all projects are effectively managed. In this context, I also appreciate the efforts of the wind industry to be good partners and striking a balance between our energy and conservation goals, funding additional conservation advancements, promoting more research and being proactive and innovative, and the protection of our special native species. So this is from Rep. Yamane as the Chair of the House Committee of Water, Land and Hawaiian Affairs. I'll get this to staff to distribute.

FRETZ: Okay members. So the item before you is a recommendation from this committee to approve, amend, or reject. So I'd like to hear from you whether you want to if you have additional questions or need additional information in the interest of time, they presented what they want you to vote on. So if the committee is prepared to use it as is by all means let's hear a motion on that. The logical next step would be if the committee's prepared to approve it. Then by all means we should prove it.

WINTER: I'd appreciate some discussion.

FRETZ: Yes, what would you like to discuss?

WINTER: Well, first of all, just thank you again. Good job in putting things together and I appreciate that. You were working towards best available science in Hawai'i as mentioned getting surrogates for that data since you couldn't find any for Hawai'i. I appreciate that. With that, I'm still... and this is not directed you guys just more for discussion for the committee. I'm still a little bit leery about that 20.3 acres and I'm just trying to reconcile that in my mind. So I would like to vote yes and get this off our plates, but I'm having a hard time reconciling how that represents the best available science.

MEHRHOFF: On the 20 acres?

WINTER: On the 20.3 acres as appropriate mitigation acreage per bat?

MEHRHOFF: I have problems with that one too.

SPAN: I do as well.

WINTER: Can you help me?

BOGARDUS: For me mitigation is package, and I'm worried because I'm going to go back and forth between federal processes and state processes so bear with me. Mitigation is a package overall. Do I have concerns about the acreage? Of course, we have a long history of going back and forth on acreages. We've got a lot more updated information now than we did in 2017

when we looked at this before. At the end of the day, I'm not sure if we have any acreage that guarantees us that we're going to be able to make a bat on it. We know that the ranges vary, we know that core use areas vary, it makes a huge difference if we're talking about median versus mean. I would need Diane here to run through the whole statistical variations on it. We seem to think that it varies by habitat and varies between resources within that. I'm not sure if I have enough to hang my hat on to say that even 40 acres definitively gets you the value that the mitigation is anticipated to have. I also don't know if I could do that for ten acres. For me because of that, it's not just about the acreage but all the pieces involved in the mitigation package. In this case, we're talking about a conservation easement. While some of that land is in conservation easement already this easement has additional protections. There's 500 acres of land that wasn't protected already. There are other pieces at play that go beyond just acreage level. If they were doing 40 acres per bat of strict forest, of just flat forest. I still don't know if we'd be able to get the value... you know what I'm saying? We don't have the data to hang our hat on it. So as a rule what I look at is the whole package, whether the whole package has reasonable expectations of being successful and then secondly because there is uncertainty. Do we have strong enough adaptive management triggers to ensure that the benefit would be realized even if they're not meeting their targets and in this case in looking at this package, I think that we do.

WINTER: To me I put an equal sign in as far as acreage per bat and I think what the applicant is saying is that's not the way you look at it right?

MARIE VANZANDT: We know that core use area has overlap. We've seen that specifically at our Nā Pua Mākua site where within a single pond we caught over ten bats so we know that we can create habitat. There will be overlapping in core use area. And so that's where we're not saying that core use area is only going to encompass the roosting; our focus for this work is on foraging. So that part of the core use area is what we are proposing.

MATT STELMACH: We know that foraging areas overlap.

MEHRHOFF: But you just said core use areas were overlapping and that's not what Frank found.

MATT STELMACH: He did find some core use areas overlap. He also only suggested that male core use areas do not overlap. We know that male and female core use areas must overlap at some point.

MEHRHOFF: Unless you're going in to the areas where they only spend 50% of their time.

MARIE VANZANDT: I think that we've learned a lot with the research that's being done at Nā Pua Mākua. We have found both male and females overlapped in areas and caught more than once at a particular ponds. So they're using it over multiple nights.

MEHRHOFF: You're assuming those are core use areas?

MARIE VANZANDT: Correct.

BOGARDUS: At the end of the day, what we've learned in the last few years is that it's not just an acreage total. That it may be water availability, food availability, resources within that site and all of those things are factors in bat occupancy and use in the site. I guess I'm at the point where I'm just uncomfortable equating any acreage total to a defined benefit.

MEHRHOFF: There's no science that says there's any benefit at all period. And there's no definitive science that says the bat is habitat limited. So, you know, you can argue the case that there's no likelihood that this would provide any benefit to the population as a whole.

MATT STELMACH: I'd like to object to that.

MEHRHOFF: Well, I would object to that too. But that's what you know, certainly I've heard mentioned from some people who know more about bats than I do, but I would disagree with that, but that's what people have said.

BOGARDUS: I think it seems likely that we're going to see an increase in occupancy at the site and whether that means that we produce more bats, I think it's always going to be a question.

MEHRHOFF: Yeah, right. I agree. So having said that, I think it's a problem but it will also have a mitigation plan that's based upon a determination of a core area as the fundamental building block, but if I question that determination of that particular building block then I don't necessarily have the good logic path going forward. So that's my concern when I got a paper that seems to be fairly strong and it's uncomfortable dropping that down outside that paper.

BOGARDUS: Does it make a difference to you? In the guidance document we say 40 acres per bat of restoration, or land purchase or land easement. Do you know what I'm saying? In this case they're essentially doing both and to me that did help with the equation in my head.

MEHRHOFF: No because I think it should be an easement anyway, so I don't think that's any added benefit. I think that should be a given. Rather than something that is considered a major factor on that so I would just be from that perspective. So yeah, I still have trouble with the 20 acres. I think there may be things you can do to kind of improve some of that by actually looking at the miles of fencing so to speak and seeing what kind of take you might be reducing by having removed that. I know there's a formula out there.

BOGARDUS: I have more certainty in the value of this mitigation project than I do in that formula.

MEHRHOFF: On the flip side, when you guys did your estimate on bats from Maui I think that was a good step forward in kind of guessing how many bats might be on Maui. So I think that there is a benefit of doing some of those exercises or refining those exercises.

DAVID SMITH: What's the formula you were referring to?

BOGARDUS: He's talking about the potential take from barbed wire.

MEHRHOFF: Which I think is suspect. But nonetheless it's something that could be used as well. I also have problems with the adaptive management strategy, your overall adaptive management plan for pretty much everything I thought needed a lot more specificity and a lot more what I would call hard triggers, which we talked about in some of our past ESRC meetings with you guys. Saying if something happens this is what our default is going to be and explain how you're then going to move forward from it, and I didn't really see that in here and I was left with the feeling that at the end of the day we're going to be the same boat we have been every other time an HCP gets to the point where it's getting ready to exceed its take or it has something come up. And that is you know, it ends up being whatever the HCP applicant wants to do without a lot of clear quick decisive reaction to a particular action. So I just thought that was missing. I thought that was a major flaw with that HCP. My two big concerns with the HCP was the 20 acres and adaptive management plan, which I thought was inadequate.

BOGARDUS: Just to clarify that's the adaptive management of minimization.

MEHRHOFF: For minimization but also for the mitigation as well, you know, so like if for example if the mitigation isn't working, you're not getting anything. So what are your options you're going to do? Well, it's pretty unclear to me what you're going to do and whether things are on the table, like you'd then try to find some way to enhance the minimization. If we can't create a bat then let's compensate for that by trying to further reduce additional take of bats.

MATT STELMACH: You have to be careful there because once you're in a tier that's the authorization, essentially.

MEHRHOFF: Actually the authorization would be for 140 regardless of whether you're in a tier or not.

MATT STELMACH: But the authorization is contingent on funding assurances and mitigation.

MEHRHOFF: But if mitigation is not working, you're not getting any bat activity in your sites, you're still taking bats. So, you know, are you even considering the concept of going back and trying to add minimization tools to that in order to reduce the number of bats you need to mitigate for? So there's just a whole package of adaptive management I found to be completely lacking.

MARIE VANZANDT: Well, I guess within tier 4 section we have a series of triggers that are laid out of here's what we would be monitoring within years. If things have not reached X, here are the actions that we would take also within the minimization strategy. We have a series of check-in points and a threshold value at which when this threshold value is reached here's the actions that we would take. I'm trying to see what more detail can we add.

MEHRHOFF: Check-in points are not necessarily actions, you know, so we've talked about having specificity and what happens if you exceed your take, for example, you look like you're going to exceed your 140 authorization. What can do? You work from that and say this is what we're going to do period. Then we will work with the agencies to come up with like my blank, blank, blank. That kind of a scenario is pretty much absent.

MATT STELMACH: Our approach to this was to first diagnose and then address. So the site has implemented acoustic monitoring and thermal monitoring to determine what risk looks like at the site when our bats present. What is it correlated with and how can we address that risk to inform minimization measures? And so we don't want to make a prescription. We have identified some risk factors given what we know today and the potential for alteration or optimization of minimization measures. We anticipate that once we have additional data, we can further refine those minimization measures. So we do have an outline of what would be done or could be done today and we have clear triggers for if adaptive management is warranted. What actions would that include?

MARIE VANZANDT: Those actions include redistribution of curtailment nights. So right now we have 3 months out of the year that are the focus of 6.9 but our bats potentially are only using the first six hours of the night and could we redistribute that 6.9 across six months when bat risk is highest. So I think our first step we're proposing at the trigger would occur and what's within the document is a redistribution of curtailment nights to address new information that's coming in from the thermal and acoustic monitoring that's ongoing right now at the site.

MEHRHOFF: You put out a lot of things that you could do. It doesn't say what you will do. I think that's a problem.

MATT STELMACH: It's a fine line with adaptive management because you have to be able to incorporate new information. We know that we will not know everything if we have written our adaptive management plan the five years ago. It would probably look much different than it looks today.

FRETZ: So let me ask to clarify your point. So are you saying there are amendments that you would like to see and can you envision what those amendments are that would get you to the place where you'd be satisfied with this?

MEHRHOFF: Are there things that could be put into place with respect to adaptive management to address my concerns? Yes.

FRETZ: And do you want to continue talking to them about what those may be or there's too many of them to go through right now?

DAVID SMITH: Okay. So it says you know modification of management actions, talks about additional ponds, additional hedgerows, reforestation of higher densities, alteration of canopy

species, alteration of understory species and you know, we're dealing with a large degree of uncertainty here. But there's also the potential that this could work, you know, we're talking about low wind speed curtailment at a very high level and it's entirely possible that it will be successful. And so it also talks about if we need to put in alternative management actions that those will be developed with USFWS and DOFAW to identify appropriate alternative action. I think we want to build some flexibility in there because we are going to learn things I think by the time anything would be triggered. You know, we're going to have learned things since then. I don't think that we want to box ourselves into the specific actions. We want to get enough in there where we have a level of certainty that we will be able to be successful if we have to modify what's going on. It's also possible that we'll be successful with our first try, you know, but we also have these alternative management actions. So it seems like they're in there to the extent that it is reasonable to move forward within a fairly wide range of uncertainty.

MEHRHOFF: I think, there are a number things in this HCP that I really like and I'm very happy about it. But there are two things that I think are quite problematic: one is the acreage and the other one is the adaptive management stuff. If you switch over to the minimization aspect of that, I think I'm more concerned with that than I am with the mitigation, but I have equal concerns on both of those functions. I have more concerns on the minimization than I do on mitigation. And I don't think it's where it needs to be as far as specificity goes on the adaptive management.

BOGARDUS: So we looked at it too. And I mean in a perfect world we would say if x occurs then you shall do this right? Our struggle with it is we don't necessarily know what that would be because there's so much research going on about whether or not x is, you know, which things are most effective right. So we could outline it but at the end of the day, I wouldn't feel comfortable saying they're going to do this because it's possible that not going to be as effective as something else. So what on the USFWS side, we're including language in the permit that requires them to do this. And then the fallback is they're constantly in coordination with the agencies to try and figure out that adaptive management response would be if a trigger is met.

MEHRHOFF: That's a perfect example of why then there needs to be more specificity in this HCP. You have the incidental take permit that you're talking about to fix that stuff up. We're looking at recommendation for an approval or not approval on this without that, so, you know, I don't think that really is going to be easing to me knowing that you've got that in there; it is good, but it doesn't affect the deliberations on this particular HCP for us today.

BOGARDUS: I just didn't want us to be at the point where we were prescriptive about certain aspects if what we know is true. We're going to get a huge amount of information over the next three years.

MEHRHOFF: Well, we have gotten so much more information every year like what was going on with the bat work compared to what we knew ten years ago. You know, it's a huge almost fire hose of information. It's nowhere near what we need on the key things we need but it's a lot of

information that we have gotten. And I don't doubt that but I do think you can be more specific and talk about what are we going to do if we start killing a bunch of bats in April, May and June. You know, what are the things that are going to happen when we go forward with that; you're looking at we're going to redistribute, you know from the 6.9 curtailment to other time periods. Yeah, you know, well, is that really what you want to do? You know, I mean that may be okay some of the data that's come out of the mainland is that there's not much difference whether you run the turbines for half a night or a full night as far as the take goes.

I'm not sure whether that's the best thing to jump into immediately because of some of the work that's been done in the past. So I want to see a little bit more specificity on the how you're going to address things particularly, and there's just focus on adaptive management that's totally on the 140 for the total take aspect of it and we get in these discussions about the value of tiers. I hear from a lot of the wind farms. That tiers are great because we use it as an incentive to not exceed our tiers. This HCP is a perfect example where that's not the case, that's kind of a false expectation, because when you look at adaptive management it is totally focused on that final tier 6 number not on trying to keep from going from tier 4 to tier 5 or tier 5 to tier 6. So the whole process is geared only on one thing. Your adaptive management reviews are every five years?

MARIE VANZANDT: Every two years.

MEHRHOFF: It says five years in the HCP.

MATT STELMACH: There's an initial.

MEHRHOFF: If there's a problem then it's every 2 years but it starts off at every 5. That should be every year. You should look and say what can we do better to keep from going from tier 4 to tier 5. Not saying, oh we're fine, we can go ahead and use up the entire 140 bats because that's what we're authorized. You know, I mean the whole thing is geared towards not minimizing but instead meeting the total take so, you know, I just have huge problems with that whole aspect of the adaptive management process.

MARILYN TEAGUE: I just wanted to make sure that you did see in the document that we specify dates and then we're going to have that specific adaptive management plan, using the site specific research that Matt and Marie were talking about and that that plan will be provided to DOFAW and USFWS for review and approval by, you know second quarter next year so that we could take advantage of that site-specific information. And two, you know to speak to the point about timing. I mean, we're doing annual reports every year for these, you know for each HCP which is specified in there. So it's a constant evaluation and you know, I think that too that it's a reminder that it's in their best interest to minimize that take because they don't want to exceed the tiers, they don't want to have to go to that take. There's incentive for them.

MEHRHOFF: Then there should be a threshold value to not exceed tier 4 and tier 5.

MARILYN TEAGUE: There's a limit in there for each tier. From a business standpoint, we're incentivized simply because of those tiers to try to keep the take below that whether there's another mechanism from a performance standpoint, but that allows us to be incentivized.

MEHRHOFF: But the HCP says that the adaptive management process is not triggered unless that threshold value is exceeded.

MARILYN TEAGUE: Correct, that's on the adaptive management. I'm talking about an industry incentive.

MEHRHOFF: There may be an incentive there, but you monitor what's important. And if it's not important, you don't tend to monitor it and if you're not monitoring a threshold value for going between your tiers, it's not important and therefore you're not going to end up doing it.

MATT STELMACH: But threshold value is evaluated at each take occurrence quarterly and annually, it's not evaluated for triggering. The reason that it's not evaluated for triggering is that there needs to be sufficient time. Because fatalities are a rare event there needs to be sufficient time to determine if what we're seeing is based on inter-annual variation or if it's likely the result of minimization measures.

MEHRHOFF: But when you say you're triggering the adaptive management process, okay adaptive management is an ongoing thing in my mind that you should be doing much more frequently than every five years. And you're saying well you're doing it behind the scenes so to speak but that's not what the HCP is reading as.

BOGARDUS: I don't disagree with you, but I'm just trying to think about if they were only permitted for tier 4, let's just pretend it ends with a tier 4. And to think about all of our other permits for single projects that don't have tiers involved. There's adaptive management. There are triggers. They are working to stay under that amount but it's not any different than what we have for tier 4 right now. Do you know what I mean?

MEHRHOFF: No, sorry I'm not following.

MATT STELMACH: I think what you're saying is that if there were no tiers, the request would be 140 and threshold value would be the same.

MEHRHOFF: Correct. What I'm saying though is that I can hear from wind farms that tiers are great. That one of the reasons they're great is they're providing incentive to reduce take and I don't see that.

MARILYN TEAGUE: I certainly do from a business standpoint. I can assure you there's an incentive there.

MEHRHOFF: There might be, but I don't see it. When you look at this HCP. For example, I don't see it.

MARILYN TEAGUE: I understand where you're coming from. We don't discuss that from a business standpoint. But if you look at the funding assurances, you can see the financial incentives right there in the section for funding assurances.

MEHRHOFF: Maybe, where is the thrust in this HCP to keep take down to tier 4? I don't see it, I don't see where you've written in there where you're saying this is what we're going to do in order to adaptively manage to try to reduce the take. In fact, it started out with the reversion thing, which I'm really happy you took out, being more problematic. So the HCP just is not explaining how it wants to do additional minimization at all. It's like we think our guess is we're going to take 70% less, 50% less, 30% less, we're not going to change anything, it's just if it comes out to be 30% less, that's what it is. There's nothing in there where I see any sort of effort to minimize additional take now. I don't see it in there at all.

FRETZ: Hang on a second. I want to make sure we're being productive here. And I think that going point-counterpoint on one particular comment that Loyal has is a great thing and we may do that and set up a way to workshop that and other comments, but I'm not sure we're getting anywhere with this right at the moment. So before we continue down that road of talking about concerns and potential amendments, I just want to make sure I understand it clearly that the committee is not prepared to put forth an approval motion to recommend approval as this is written as is, is that correct? Are there members that are prepared to put this motion forward and approve that? I'm trying to gauge where we're at here so we can be productive.

BOGARDUS: At the end of the day are we evaluating this based on whether or not it meets the requirements of what 195D or whether or not we are comfortable with the plan as written.

FRETZ: Is that a question about the committee's role?

BOGARDUS: It's a question about the role that the requirements of 195D play in our decision on whether or not we approve or not.

FRETZ: Well, it's always been my understanding that this committee should be recommending approval based on compliance with 195D. That's my thought if you want to talk to the AG about that we might get more legal perspective.

LINDA CHOW: AG agrees.

BOGARDUS: I reviewed the supplement document that the applicant provided. My big question was whether or not Linda had reviewed or agreed with that document.

FRETZ: That sort of checklist thing?

BOGARDUS: The whether or not the project as written meets the requirements under 195D.

FRETZ: Oh, okay.

LINDA CHOW: I did review it. I believe it captures all of the criteria that need to be met. Whether or not it actually meets the criteria is a question for the committee to decide. But I think it does set out all of the criteria that's contained in the statute that needs to be met in order for an HCP to be approved. If the committee says that amendment meets those requirements then I don't think there's an option to not approve it.

FRETZ: I made my own checklist and I don't recall when we got that one or was that it? It was in the submittal that we got, right? So I didn't look over that one very closely because I made my own and I use my own checklist for that, in that way.

WINTER: For the one that she's mentioning.

FRETZ: It's in the submittal as an attachment.

LINDA CHOW: It's on page 29 on the submittal.

SPAIN: For me on 195D, my biggest challenge lies with checking the box on 4(g). 195D-4(g) which is net benefit which is different than the federal law. And I'm challenged in that, you know, perhaps the 20 acres would be this line of maintenance. But I feel that given our guidance document that states 40 acres per bat and restoration with native species. That's where I find the challenge and being able to push over to net benefit. Just in kind of given the resources that we have to analyze that piece of it. I feel like arguing with the acreage amount makes it really difficult for me as a committee member to say well if it was more acreage perhaps. So I don't know, this is like a 700-acre disparity. I don't know that adding 700 more acres to the existing project necessarily would be necessary or even feasible. But is there some other piece in the neighborhood of tier 4 that could kind of push that over into net benefit area. Or is there an additional 700 acres on the ranch that could fit into this regime?

MARIE VANZANDT: So at this point there is no additional land within the ranch based on the conversations that we've discussed with the ranch.

FRETZ: So four votes are needed among us to pass this on with a recommendation to approve. If you don't have that we're going to recommend to amend, but I think there's going to be a lot to go over and to talk about it in detail. So that's what I'm trying to do with you guys. Trying to get us to a conclusion on that because if our conclusion is that, we're going to start working on what we're recommending to amend. I want to know formally that's where we're at. And I don't want to go down that road if that's not where we're at. And I think I've seen the writing on the wall.

BOGARDUS: To be clear on the federal side were evaluating this version of the HCP. We're likely going to make a permitting decision one way or the other on this version just so all the committee members are aware of that.

FRETZ: Meaning that if this committee recommends amendments we might be talking about different HCPs because your process will conclude with a particular version and it could lead us to a different version.

BOGARDUS: That's not influencing committee members decisions. I'm just making sure that everyone is aware of that.

FRETZ: Yeah, it's been a point of discussion in the past. The committee has been aware that could happen and has been trying to avoid having two different versions.

DAVID SMITH: Yeah is one of our highest priorities to keep these HCPs together. If it splits it's not going to be beneficial.

WINTER: I had a quick question on Lisa's comment. You're talking about 195D what?

SPAIN: 4(g).

LINDA CHOW: HCP shall increase the likelihood that species will survive and recover. There's also a requirement in 195D-30 which says the HCP shall be designed to result in an overall net gain in the recovery of Hawai'i's threatened and endangered species.

WINTER: Is that in the checklist?

LINDA CHOW: Yup.

FRETZ: There's 21(b)(1)(B) that the plan will increase the likelihood of recovery of the endangered or threatened species that are the focus of the plan.

BOGARDUS: That's number 5?

WINTER: 5 in the second part.

MEHRHOFF: Are we still asking questions or are you closing that down?

FRETZ: No, you want to ask questions of the applicant?

MEHRHOFF: Yeah just two questions. Well two important ones. So are you actually doing bat activity monitoring away from the nacelles? To where you're trying to determine what the population might be doing on site at Auwahi?

MARIE VANZANDT: Right now at Auwahi we have acoustic monitoring at nacelles. We have thermal imagery pointed at the nacelles. In terms of acoustic monitoring outside of the wind farm or within the wind farm what was your question?

MEHRHOFF: Comparable to your pre-construction monitoring.

MARIE VANZANDT: So there was previously two acoustic monitors that operated for three years at ground level. And those results have been incorporated into that HCP document. USGS, part of the Nā Pua Mākua work that was done, had put a couple acoustic monitors. So there's not ongoing ground acoustic monitoring at the site.

MEHRHOFF: And then the other question is what takes priority is as far as operations goes? So like when you're looking at doing the low wind speed curtailment at 6.9 and 5.0, what is the priority doing that; is it based upon your take license? Or the power purchase agreement? So in other words the power purchase agreement says you're producing x delivering x number or ramp down the power no quicker than x.... what takes priority, complying with the 6.9 wind speed curtailment or complying with the power purchase agreement?

MARIE VANZANDT: The 6.9 takes priority.... 6.9 takes priority and then we are, you know consider it offline from the MECO side, self-curtailed. So we self-curtail if we're going to do maintenance and this is also an opportunity to self-curtail.

MEHRHOFF: Great. Thanks.

BOGARDUS: I guess for me it would be helpful that if we do recommend amending that we try and tie it back to 195D whether we use the supplemental document that the applicants provided or not. Again, I look at this as issuance criteria, right? Where is the current version of the draft HCP not meeting the 195D issuance criteria?

FRETZ: I agree.

BOGARDUS: We can tie it to that and specifically say in order to meet this criteria, this is what we need to see in the document. Yeah, I think that would help me and I think it would likely help not just Auwahi but probably all the applicants.

FRETZ: Yeah, I agree if the recommendation is going to be to amend I would like to make sure we take the rest of the day today to give the clearest guidance we can on what those are and work through that in a productive process. And I think the most productive way to work on it is by hitting those categories that you see in 195D. So thank you for that comment. I agree.

Any other questions or comments because if not, I'd like to know what we're doing through a motion. And then from there we'll take what is the appropriate next step?

ITEM 4. ESRC vote to recommend to the Department and Board of Land and Natural Resources to approve, amend, or reject the Auwahi Wind Farm HCP Draft Amendment.

SPAIN: There's three options on the table: approve, amend or disapprove. I've seen several times where you can approve with amendments.

FRETZ: Yes it is. There have been there have been times when the committee has been clear about what amendments it would like to see, the applicant has committed to make those amendments, and the recommendation to approve was contingent on those amendments being made and then that staff confirmed that they were made. If it's relatively simple we've done those.

BOGARDUS: Over the last couple years, we've done it if there's like one or two changes that need to be made and they're relatively minor in nature and the applicants could commit in person today that that is something that they will change.

FRETZ: Yeah, and there's also been times when it's been considered and it became the view of the committee there were too many amendments. They were too complicated and the committee did not want to do that.

WINTER: I think if we're going to go as you suggested, I haven't prepared my thoughts around this checklist. So I might need a recess to just go through these one by one and see what I think about them.

FRETZ: Yeah, and I think you know if that's what we're going to do we're going to do everything we can to be as productive as possible. It's hard to convene this group as a workshop and work through something that's really complicated like that. When we tried to do it before we ended up having written comments that were submitted so you know, I think we need to do our best to see if we can get through it. I guess is what I'm trying to say.

Okay, so if somebody's not going to put forth a motion to recommend approval then I'm going to put forth the motion to recommend that it be amended. And someone would need a second that.

WINTER: Me personally, I'd like a recess to go over these so I can structure my thoughts around that.

FRETZ: And your hesitation was?

MEHRHOFF: I was just tired. There was no real hesitation on whether or not to do that, but I'm happy to give other members an opportunity to go through the checklist and look before they decide on it.

WINTER: I might be yes. I don't know. But I might be able to amend. I don't know.

FRETZ: Okay, I'll withdraw the motion then. Why don't we take a 10 minute break and come back? Let's get started on this so that we can have a feel for where it's going to go and then we'll take lunch at some time after 12:00 then.

BREAK

FRETZ: Okay, let's come back to work, please. So given our questions about 195D I'd like to take some time to talk to the AG about some of these questions and checklists and that sort of thing related to requirements, issuance criteria, 195D, and that sort of thing. So for that reason, I'm going to put forth a motion to go into executive session so that the committee can consult with the AG. So with that all in favor, say aye.

ALL: AYE.

BREAK

FRETZ: I now realize that we're well over lunch hour, so it's take a break then. We'll come back at 1:00.

BREAK

FRETZ: Okay let's come to order. Alicia wanted to provide some comments or feedback.

ALICIA OLLER: Yeah our team. But I was going to let Marie take the lead. I just wanted to make sure we had some time for that.

MARIE VANZANDT: So yeah, I think I just wanted to make a couple clarifying points and I think the first one is related to Lisa, your concern about the commitment to native out planting for the hedgerows. I apologize it may not be clear in the document as it stands now that that is our commitment, but we are committed to that and if we need to make additional edits to make that point, you know, that's something that we're willing to do. Our intention from the beginning has always been to focus on native species, koa and a'ali'i in those areas. Just wanted to make sure we got that point. And then Loyal, around adaptive management. So adaptive management should be used to address uncertainty and it's a feedback loop. As more information becomes available, we incorporate that information into our adaptive management. In the case of minimization measures, what we proposed for minimization is based on our evaluation of risk and and our site-specific feasibility. 6.9 m/s is what minimization we believe will be the most effective and is the maximum extent practical of what we can do. We do understand that we need to adaptively manage again as more information comes in. And so that's why I just want to make sure there's clarification on what our adaptive management plan actually is. Within the document adaptive management starts with first what our minimization is and currently we need more information. We understand that we don't

know everything about our site and the site specific interactions with the bats. And so we currently have conducted thermal imagery and acoustic monitoring: that information is part of that feedback loop. So that information will feed into adaptive management and the specifics of how we can adjust what our maximum extent practicable is for the benefit of the bat. I know you want the specifics and I want the specifics as well, but we don't have the specifics today because we don't have all the information yet for that adaptive management plan. We do have a commitment within the HCP that the adaptive management plan would be submitted. I think it's April 2020 for review and improvement from USFWS and DOFAW. So it's something that's in the near future where we will have specifics and it's going to be constantly updated. So I just wanted to make sure I touch on that point for you Loyal.

And let's see here. Some of the other things that you know, I think the big one that we're all grappling with is this acres per bat and just as a reminder for tier 4 mitigation it is 30 acres per bat being proposed. I think just sort of piggybacking on what Michelle said. We don't know if it's 10 acres or 40 acres, but we know that some certainty and know that as a package we need to look at what value this project gives. In consultation with USFWS and with the DOFAW side they have used the median core use area as as appropriate mitigation in the past. And before the ESRC recently with the Kawaihoa project there was the use of 20.1 or the median as appropriate mitigation. So yeah, think I just wanted to share those points and if you guys had more questions, I wanted to be able to have some back and forth about it.

FRETZ: Okay thank you. Any other questions for the applicant you want to clarify?

WINTER: I do yeah, so we're looking at cumulative net benefit for species. Seems like there was a bulleted list on there of the factors that went into to calculate that benefit.

MARIE VANZANDT: Yeah, so I think what we were talking about is this criteria within 195D that you need to have reasonable certainty and what is reasonable certainty and we've gone back and forth with the AG and just sort of in discussion with staff. How do you create reasonable certainty? And so that's a little bit of that above and beyond. So to create that reasonable certainty we have these lists of items. The first one is that conservation easement. The reasonable certainty that this land will be protected in perpetuity. We have sort of like the above and beyond measures which we can't necessarily quantify exactly. So that's the removal of the barbed wire within the mitigation area and we've talked a lot about and with the Forest Service about how these ponds could potentially be used. If a fire up at Kula happened again, and so there's that benefit that we are protecting roosting habitat that we know is up in the Kula Forest Reserve. So it's not something necessarily that we can take credit for all of the Forest Reserve that we're going to protect but it is sort of like an additional safeguard that we have. Then we talked about, you know, trying to move away from the acreage and more on habitat, and so we know that edge habitat is something that is a benefit to the bat and multiple literature sources that we've seen is specifically for the Hawaiian Hoary Bat and then other similar species. So we've quantified that there will be an additional feet of edge habitat. Then a second piece of that is the multiple generations of bats. So we haven't calculated or quantified this mitigation is going to be in perpetuity. What does that look like how bats will use the area

beyond the life of the mitigation project. And so that's one of those things that we've just sort of not necessarily taking credit for but it is something that we know will happen as a result of the project and then I think this is something that we've sort of throughout this process with you guys since 2015 been all trying to work together of what do we want? We want \$50,000 a bat, we want mitigation that is actual actions, but we also want research and so the plan that we built has all of those components sort of like we've tried to meld all of our wishes together of how do we get to 50k per bat and how we get that research grade monitoring. This mitigation is sort of like a combination of all of our goals that we've been discussing throughout these four years. And then sort of that reasonable certainty, again, we know that we don't know things and so that's why we have adaptive management and the triggers. They aren't necessarily we will do x because we don't know what x is. We do have sort of proposals based on what we're doing right now what we would do. But we also have built-in flexibility because of the feedback that we have received from USFWS and DOFAW that they want that flexibility to incorporate more research and more information as it comes along. So I think that's sort of how we have got to that point of we believe that this package will benefit the bat and we have reasonable certainty that it will.

WINTER: That multi-generational benefits you speak of: that is born directly out of the conservation easement?

MARIE VANZANDT: Correct.

MEHRHOFF: State law can consider benefits after the permit period.

MARIE VANZANDT: We have we have looked at 195D and this question has come up multiple times and we haven't found anything within the 195D criteria that says it can't. We know that the goal is that we have it within the permit term but it is something that is not explicitly called out. I wish the AG was here too because we've had our outside counsel look at it as well and we've looked through and you've seen the criteria. I don't know. But in our investigation and outside counsel's investigation, we haven't seen anything specific that it needs to happen within the permit term. And again, we're not taking credit for anything that would be outside of the permit term. It's one of those additional certainties.

FRETZ: Thank you any other questions? I was just going to say in interest of moving this long. I think it'll be helpful to know what the committee's recommendation is going to be on this because that's going to I think affect what we do or not do for the rest of the day. So if you guys have no more questions or discussion for the moment, I would suggest that we put a motion on the table so we can get some clarity and where we're going.

MARIE VANZANDT: Oh, there was one more thing on my list and it was mostly for Loyal. Loyal earlier you asked about ongoing monitoring that's happening at the site and I think I was sort of confused because we were talking about the HCP and under the HCP the monitoring that's occurring at the site. So AEP recently acquired Sempra Renewables and AEP outside of the HCP amendment is conducting an occupancy study, which they're starting in July similar to what's

being done on all of O'ahu right now with WEST. We contracted WEST to do a similar design set up to look at occupancy all across the leeward side of Haleakalā. So it's not within the HCP, but it is sort of getting at what you are asking of general trends on the island.

MEHRHOFF: But not at the site.

MARIE VANZANDT: It is all across the leeward side of Haleakalā including the site.

MEHRHOFF: The reason I'm asking is we had this discussion on being able to compare what's going on in the mitigation area versus going on the patrolled wind farm site so that will provide that data.

MARIE VANZANDT: There will be acoustic monitors at the site on ground level.

MEHRHOFF: Not quite the same as my question, but okay, maybe.

MARIE VANZANDT: So are they gonna be doing the same kind of study that's going on at the mitigation site.

MATT STELMACH: They will be different studies.

MARIE VANZANDT: So at the mitigation site the intention is to look at how our mitigation actions affect the detections of bats while the other study is looking at occupancy over time across the leeward side of Haleakalā, which encompasses Auwahi Wind.

MEHRHOFF: That's a neat study but not same thing that I was asking about.

SPAIN: So I would put a motion on the table to consider amending the HCP and if we can look at the categories and focus on the areas that we're thinking about amending, I know of a list of them that I have. Do you want me to add that into the motion?

FRETZ: Let's come back to that. If that's where we go let's keep the motions simple. If I understand your motion is to recommend that the HCP be amended.

SPAIN: Yes.

FRETZ: Is there a second?

MEHRHOFF: Yes, second

FRETZ: Is there a discussion? Yeah, so I would assume if that's going to be the case that the applicant would like to know as much from this committee as possible and you guys can respond to that. I presume you would want to know what it is exactly the committee wants to have and not simply go on in the dark and bring back something differently. I would assume if

this is the motion that is going to pass that we'll have to work through to understand what these amendments are. I think all the members want to get to an HCP that they can approve based on things that all our members have said in other meetings dealing with this and other HCPs. So I think it may not be easy to work through it, but I think there is a resolution to be had.

SPAIN: So based on 195D-21 is this concept of native ecosystem improvement. I think with the conservation easement consideration there are going to be cattle on top of here. I think formalizing the commitment to the 311 acres that are being put into hedgerow as being native doesn't have to just be koa and a'ali'i, but being native and should there be you know additional bug trees that you want to bring in like macadamia nuts and everything that that happens outside of any of that hedgerow acreage count. So that would kind of be in the spirit of 195D, the improvement of native ecosystems, I think is a pretty critical piece there.

I think also considering 195-30 and 4 and 21 on net benefit. It's kind of the next region and acknowledging that the ESRC guidance document does say 40 acres at this point per bat but in recognition of the combination of package. That we don't want Auwahi to be refuting the claim that it's 40 acres but rather that there's an acknowledgement of that and then how do we add additional occupancy research or some sort of thing onto that that will help an equivalent benefit to help us reach that 40 acres. So we're recognizing you're at 30 acres per bat, but we want to make sure that it's clear that there's an equivalency of benefit that we're going to reach through other means. Which is sounding like this occupancy project you mentioned could kind of add to that. I'm not going to know the number on 195D on this but it was the minimization language as a priority and I think that's the point that Loyal brought up was that, you know, there's minimization built throughout but it's not listed as a priority of trying to stay within your tiers. And then also an amendment to include an adaptive management plan which as I understand is being developed.

MARIE VANZANDT: The amendment would have an adaptive management plan within there and there's a commitment within it that it would be submitted by April 30th based on the conclusion of the research that's going on at the site. It would be reviewed and approved by April 30th. The acoustic monitoring is later this fall. Thermal imagery data is not yet analyzed and USGS is working on that now and so that also is information that would be incorporated into that plan, but that information isn't yet available?

FRETZ: Is that a question or a piece of information?

MARIE VANZANDT: I guess it's a piece of information. I'm trying to understand what is the request with the adaptive management plan? Is it something that you want in addition or is there confusion that we didn't have the adaptive management plan?

FRETZ: Well, I think we should view her comments as among a list of potential amendments. She's considering and explaining the reasons for a motion she put forth. And come back to them if we are going to work through that. Right now is a motion on the table. So if you guys don't mind if that's okay with you, further discussion on the motion. The reason I say that is

because there might be a lot of different members might have a lot of ideas about amendments and I don't think that everyone is set to every single particular thing. There might be some give-and-take and some compromise on this if that's where we're going to go.

SPAIN: The last thing was kind of the refinement of the monitoring. So those were kind of the five key areas. Areas we would like to see amendments. Now we're going to try and work through the meeting with this.

MATT STELMACH: Can you clarify which monitoring you're referring to?

SPAIN: I think Loyal will probably be able to better respond to that.

MEHRHOFF: There are some things to look at on the monitoring for the mitigation site, but more importantly is the actual on-site monitoring. To get at the question of what the impacts of the project are on the local bat populations. So that's we talk about that more after this motion.

WINTER: Okay, so is the motion for those specific amendments?

FRETZ: No, the motion is just to recommend that the HCP be amended. That's it. I want to keep that separate from some set of specific amendments. They've asked for a recommendation one way or another we need to get to them. So any more discussion on this? Did we lose a person? All right. There's no more discussion. I'm going to call for a vote. All in favor of this amendment he say aye.

ALL: Aye.

FRETZ: So that's five in favor of recommended the amendment. So, like I said, I think that I know this committee wants to get this to approval. I believe that there is a set of amendments this committee can be good with, we don't know what those all are right now and every member probably has a different set of ideas. I'm presuming you guys want to know that. Right. Okay, so I would suggest that we work through them by the topic or that area. What we're trying to do is to come up with the set that works for folks. If every member puts out a whole list of amendments and we stuck to every single one of those it's going to be very difficult. What I'm envisioning more is is a process of give-and-take and compromising which we arrive at a set after consideration of the different suggestions that the members may have. Does that sound workable to get us down the road?

WINTER: Quickly I hope.

SMITH: But you're missing people, are we just going to do this again at the next meeting?

FRETZ: That's true, we're missing Jim and Kim. Are you suggesting that we need to do this?

DAVID SMITH: Perhaps. Otherwise, you're not going to have a complete set of recommendations from the committee and the next time people are going to show up to vote are they going to be like, well, no, we're not comfortable. Now we want to extend.

FRETZ: Yeah, that's a good point. So they both did have comments.

BOGARDUS: I don't know walk away from this meeting without a clear next step.

WINTER: That would be my preference.

MARIE VANZANDT: I would say the applicant's preference is to also be able to work through your recommendations and hear your comments so that we can also inform USFWS potentially what changes would be made as soon as possible.

FRETZ: So we can proceed even without them and we do have their comments in writing so we could look at those and bring those into the discussion.

MEHRHOFF: It'd be a good idea personally to try to bring them in; the comments may be redundant in which case is not a problem.

FRETZ: Yeah, well we do have them somewhere.

BOGARDUS: Not sure if Kim submitted comments.

FRETZ: She did, she had less than others, but she did have a couple.

LAUREN TAYLOR: It should be in the matrix. There's a sheet specific for those comments we received.

MEHRHOFF: Was that based on the old HCP or are you talking about new comments that recently?

FRETZ: Oh, no, this was the comments on the island. So they might be addressed already, too.

DAVID SMITH: And I think it should also consider the fact that you may be splitting the HCPs. They're going to end up different. There's also the possibility that you could make them contradictory to each other in terms of timelines and stuff. You need to be careful.

FRETZ: We'll have to keep that in mind. You're not going to want to do anything that contradicts the federal HCP. I'm imagining that these two are starting the same place as of today. So I'm hoping that we're not talking about differences that are so big that they become contradictory. I hope they're complementary even if they are different in some respects. I'll have to keep that in mind and take a look to be careful not to do something that's not going to work on the federal HCP.

BOGARDUS: Trust me I will let you know.

FRETZ: She will see that if it pops up. Okay. Alright any other comments, suggestions on moving ahead because what I'll do is I'll try to guide us through a process of consideration based on topic area or something that you guys suggest. Well, I don't know about you guys but I have 195D broken out into relevant areas that seem as good of a place to start as any and your comments today fall into these categories. Does anybody have any strong feelings? Let's try to start something that's it is maybe on the easier side?

BOGARDUS: You want me to write on the white board?

FRETZ: Yeah. So we've got up comments dealing with the acreage, the hedgerows, the native component and see if we can come up with a set of amendments that we all would agree to. So the native species was of them. So you guys said that you would amend that. I think the issue was there be a commitment that it could not be exclusively composed of non-native species or do you guys want to say it needs to be nearly predominantly native species? What is it that is going to work for you guys?

SPAIN: I mean, you know the 311 acres that are committed to plantings in the mitigation and based on how I read 195D and given that it's a conservation easement with cattle on it, I feel that it needs to be native a hundred percent for those hedgerows and that should they want to do additional plantings that may draw in other insects or something that it happens outside of that commitment to that acreage.

BOGARDUS: So in addition to that level of acreage.

MARIE VANZANDT: There's no 100% restoration anywhere. It's pasture so there's not much native out there.

SPAIN: So in terms of the plantings.

MARIE VANZANDT: Yeah, okay make that specific that it's plantings.

FRETZ: So the suggestion is that all of the out planted species are native, right?

GLENN METZLER: DOFAW to approve exceptions.

FRETZ: So process for exceptions?

MARIE VANZANDT: I think if otherwise to consult with DOFAW and USFWS to get their approval under adaptive management would be helpful on our end in sort of looking to the future of what's unforeseen that we might run into along the way.

WINTER: So that cover out planting what about maintenance because invasive species could come in and 30 years from now it could be all non-native.

FRETZ: Yeah, so you're monitoring criteria was based on the rows you planted surviving and persisting right. So saying if albizia comes in how do we know that doesn't count as it becoming a canopy species right? Is that worked into monitoring?

MATT STELMACH: I was just going to say as it's written, the forest cover is the target what we've said there is that out plantings are native.

SPAIN: You're going to count ash and wattle?

FRETZ: Yeah, I mean there's a real risk it's coming in.

DAVID SMITH: What if it was operating as design and you were getting your bat numbers. Are you going to go mess with the vegetation? If bats are going into Polipoli and that's not really a native forest, I'm just wondering if you had hedgerows that are tall and mature regardless of what they were and they were not native, but you're getting your bat numbers then are you going to go mess with those hedgerows?

MEHRHOFF: The question we had on that Dave was whether or not it was recommendation criteria as we read the particular section on native ecosystems restoration.

MARILYN TEAGUE: Are we interpreting it all the same way?

DAVID SMITH: Maybe you should read that statute.

SPAIN: So this is under 195D-21(b)(1)(A). The HCP will further the purposes of chapter 195D by protecting, maintaining, restoring or enhancing identified ecosystems, natural communities or habitat types upon which endangered, threatened, proposed or candidate species depend within the area covered by the HCP. This also aligns with the guidance document which states that native land cover is the preference for restoration.

FRETZ: Do you plan to keep those invasive species out of these areas?

MARIE VANZANDT: I think what I'm worried about right now is that we've opened up the entire HCP for amendment and negotiation that took four years to get to. I just want to make sure that we're not going down that wormhole where everything is open, and now we're rehashing four years of negotiation.

FRETZ: Well, I don't know what to say that the committee is recommending amendments and you want to know what those amendments are. I'll try to keep us on focus.

DAVID SMITH: It says to protect, maintain, restore, or enhance. It doesn't say that, you know, if you're going into a pasture that you have to restore native forest.

MARILYN TEAGUE: I mean it also says for the endangered species is the bat so we can't assume, well Matt is the one to answer that, but will only native species enhance the bat habitat. Or would they be happy in macadamia nuts? I'm not suggesting that, I'm just saying that if some model or something came in, we're happy to plant exclusively natives. Absolutely. But you asked about the maintenance of I think if we look at this there might be other ways to interpret it that has maybe a little bit of flexibility for maintenance.

MATT STELMACH: Yeah, echo what David said is that if we're getting bats, that's the concern the negative impact is to bats and if we're benefiting bats, we need to be proactive. I think monitoring for invasive species as a component like something like insect monitoring is telling us are their diet species available. And if not, and we don't see their numbers that gives us a clue something we need to fix. Really we want to come back to benefiting the species that's negatively impacted. It's my understanding of 195D. If we can do other things that's good. We should do that, but we need to make sure that we are having the beneficial impact of the species that's the target of the HCP. I mean are we going to ask about if forest birds start to use it. It's a native component of the ecosystem like this but it's kind of a slippery slope if we start to say if we're not meeting the bat numbers or if we are meeting our numbers, but the ancillary criteria are not met. Why are we still concerned about the ancillary criteria?

MEHRHOFF: I do think that the criteria when you look at them, look at the ecosystem as the environment as a whole too. You don't look at it specifically as narrow as I think that you're talking about it. So clearly you have to address the bat. If you have a conflict between native species and invasive species that make a case that you may have to go with the non-native species if you have a conflict in that. If you don't have a conflict, then I don't think that there's a problem taking out black wattle or anything like that unless it precludes the bat. So I guess I'm looking at it from the viewpoint of multi-species on that saying it's better for the environment as a whole if you've got native ecosystems in those areas. Particularly for all life.

BOGARDUS: 195D though requires ecosystem benefits. It totally does. And I think that commitment to out planting wholly native species is that if we want to them to go down the road of invasive species management and removal over the course of permit term that's a whole another action though.

FRETZ: But I don't agree and I don't understand how your process would work. The committee is making a recommendation to reforest with native elements for reasons that have been stated. Now in practice what happens is as they planted those things is that these new invasive things like wattle start coming in. Now their criteria for monitoring bats is an annual thing and wattle is gradually is taking over. Their criteria for the measure of success for those monitoring was just an increase. It didn't say by how much, was just that it increased. Now in practice what happens is you have these native things planted per this and so your bat numbers are whatever they may be—they're increasing or they're not. This wattle is invading and then taking over. I

mean, I don't see that you have a decision point where you're able to say wattle's good let's let it take over. It might have been that it was the native forest that was good and the wattle is coming in. I just don't see how that would actually work and I think that the advice to reforest with native elements is sound and that's the recommendation being made here. What is being proposed is that if something else comes and invades, we just let it and I don't think that that's appropriate.

BOGARDUS: So what's the commitment that you would want to see there's a commitment to ensuring the hedgerows are maintained as majority native species for the life of the permit?

DAVID SMITH: Can I make another comment? I mean, I'm all for native species. That's what I do. That's what I prefer. But you know, I just don't want to overcomplicate. I just want to get to issuance criteria not necessarily get to necessarily what I think is perfect and it does say the plan will for the purposes of chapter 195D enhance habitat types upon which the endangered, threatened, proposed, candidate species depend. It doesn't say anything about native. And those habitat types can be non native in the case of the bat. I know it's a preference. I'm just pointing it out. It's a preference. It's not required by law. As far as I can tell reading the law.

FRETZ: Okay point taken.

SPAIN: So I mean just from the perspective of any ranch out there as a conservation easement under it and we're going to be all good with eucalyptus being planted and that's their conservation plan.

DAVID SMITH: It depends on what the conservation easement is; they all are written differently.

BOGARDUS: What I'm trying to get at is if they make this commitment is that sufficient or are you also asking for another commitment of maintaining it as predominantly native?

FRETZ: I think we made great headway on getting that. But the committee is concerned that what could happen is that they've gone out and planted this predominantly native hedgerow that becomes taken over by something else which defeats the purpose of that. And so yes, the committee's asking for some kind of control over those other types of species that might come in.

SPAIN: How is wattle and ash being managed in the other sites?

MARIE VANZANDT: Oh it's just spreading out of the Kula Forest Reserve.

FRETZ: So how is it doing in your restoration site that you showed that you planted a couple of years ago?

GEORGE AKAU: We're meeting success criteria.

FRETZ: What do you do when you get wattle in or something?

GEORGE AKAU: We remove the species on the success criteria like tropical ash, wattle, begonia.

FRETZ: So you take those out?

GEORGE AKAU: Not during the pupping season. We maintain to a level of the success criteria. It's in the HCP.

FRETZ: The success criteria is predominantly a native canopy right?

GEORGE AKAU: Yes.

FRETZ: So I guess we'd be looking at something along the lines of cut and pasting that requirement over to this one. But you're trying to plant natives right?

GEORGE AKAU: Yes, to reach the success criteria of the native plant cover.

FRETZ: So I guess one option would be to just kind of consider that same treatment.

MARIE VANZANDT: So again, I feel like when built that plan the intention was native plants. And so that's why I'm willing to you know, again to commit to this right now. It's difficult to on the fly commit to things that will take additional time and energy that weren't incorporated yet into the plan.

FRETZ: Okay. Well, I'm sorry if we gave the impression that we're trying to get you to say yes to everything and that's not what we're trying to do. But when we hear you say I have a concern about that then maybe we're interpreting that wrong.

WINTER: So was the intention to outplant and walk away or was there an intention of some kind of maintenance on your part so we can understand how to align things as best you can.

MATT STELMACH: Yeah, so the plan specifies a minimum percent forest cover. And so Auwahi would be continued continually required to maintain that forest cover and replant if the out plantings were unsuccessful to maintain that forest cover. I assume many replanting would fall under this and that was within the intention of the plan.

BOGARDUS: So right now is the success criteria the percent forest cover for the acreage of the hedgerows?

MATT STELMACH: Yes.

FRETZ: Okay, so understanding that your concerns you're expressing are simply that this is something that I have to give some thought and deliberation to. The committee's putting out a set of criteria that provides guidance.

MARIE VANZANDT: So I guess this is also something that's new. Outside of the the times that we've brought this before you guys and so that's also where it you know, it's just sort of like I'm afraid that we've given the opportunity for the committee to look at the entire document and make comments and I don't want to open up. I want to be able to address the comments that you guys gave us as opposed to open up new comments.

FRETZ: I don't believe this is new. I think we have given you comments on multiple occasions.

SPAIN: I think it's the wording as it is now leaves the door wide open. I know your preference is koa and a'ali'i but it leaves the door wide open.

MARILYN TEAGUE: We still believe that the way it was originally written, and we're happy to change it to the natives, not the issuance criteria of 195D but it doesn't specifically say native and the bat would still benefit but we are happy to commit to the native species out plantings. We'll take the other recommendations back with us and see what we can do and take it to 195D and see where we end up.

FRETZ: So to conclude this part is that there would be some kind of control of invasive species to ensure that it remains predominantly native or something similar to the way the other site is being managed. Okay other comments on this section that came up concerning core use areas? How do you guys want to tackle that? There are different ways this can be done. Let me just throw into this the research project to my mind is the reason for them. Okay. So mitigation is clumped with net benefit there but to me research is also an important contribution to net benefit. The research project like what they described to me.

BOGARDUS: The leeward Haleakalā?

FRETZ: Yeah, so it's, in a case you guys are not familiar with this, what Marie mentioned a little while ago is it's a research project similar to that one that WEST is doing on O'ahu. Same grid size, comparable in the methods so that it can be compared, and it lays out this grid from Kaupō more or less to 'Ulupalakua Ranch across that region and then creates this grid and then same methodology puts these. That's an important research project that if we were going to look at research would be at least on the top of my list. I think that contributes to net benefit. If I was this applicant, I would have put that in the HCP for the State even knowing that the feds would not count it and explained its net benefits to facilitate recovery. So I put that out there for your consideration under the net benefit category.

BOGARDUS: I don't want to put you on the spot but we talked about this yesterday and it seemed like it was not possible to do that. Right?

MARIE VANZANDT: So this is outside. This is a commitment that we've made outside of the HCP amendment to do this work. I understand that you would like to see something of similar scale within the HCP.

WINTER: I think you can just put it in there and count it.

FRETZ: I'm saying when I review the HCP to try to find the net benefit from the mitigation and I have concerns, if you put in a research project that is desired research like this one that would help to contribute to that benefit.

WINTER: That makes sense.

MEHRHOFF: I would agree. And if you're looking for other things this group has been doing some drone work to look at real population numbers.

MARIE VANZANDT: And that is part of our discussion with WEST. I know you guys are working through like the drone concerns so it's not you a commitment that we want to make at this time until everything is worked out.

MEHRHOFF: I understand but the concept of using something you're already doing or just for some reason to put into here seem to be potentially appropriate.

FRETZ: Yeah, tried to say this before but I'll try to say it again. My intention is not that we just have this list and and we mean go do all this stuff. This is everything is needed. I think the different members might have different things on their list and for the members it's a whole package. So if this thing and that thing and that thing got done is not necessarily everything on their list. They might be good with it. So I just want to try to explain that I'm not trying to make a list here. And that's everything that the committee is asking you to do necessarily.

DAVID SMITH: I don't understand comment. Does that mean you're going to come back later with more stuff? He said it's going to be a list but it's not necessarily going to be everything.

FRETZ: No, I don't think no, that's not what I meant.

SPAIN: He said we're coming with a list right now. It doesn't mean everything on this list and every member's items need to be met. In these areas committee members have concerns, net benefit being one of them. So, how can we find a piece or some combination of pieces to help us get through that net benefit concern?

FRETZ: So Dave, I think that you actually talked about looking at things as a package, right, you're comfortable with the existing package. It may not be perfect but if you're comfortable with that we just had different levels of discomfort with some of those and we're just trying to put up a suite of things that get us over that hump.

SPAIN: And that's you know, the big difference between the federal and state laws that net benefit piece and it's above and beyond replacement of the bats being taken but how does that look?

BOGARDUS: Yeah, and to be clear we're only looking benefits to the bat. It's not just the replacement piece. I mean, obviously you don't want any invasive plants but for us it's a question of we can they meet their success criteria for bats and bats only. So the environmental benefits associated with 195D are different than what the federal law requires us to consider.

FRETZ: I'm trying to just get a sense of the different potential amendments that the members have so that we can come to a refined set that will work for everyone.

WINTER: Fretz, you're not expecting to do another vote today right?

FRETZ: It doesn't look like we're going to get through at this rate.

WINTER: I think mine's pretty easy because what I was going to say is the way I thought of solving my issues was actually easier than the way these are suggested. I continuously have not felt that the 20.3 was a good mitigation number and express that in multiple meetings and instead of doing it, one way with what Lisa suggested is to not focus on the 20.3. Let's just say you guys are going to go by the guidance document and we understand there's only certain amount of land that you have but instead of back calculating and finding a number that fits within that just acknowledge 40 and figure out okay well you got 30 so what can make up for that other 10, that's where this other research comes in. We can create a package on top of that to make it all work relatively easily. So I just think that kind of back calculation seems kind of contrived and doesn't use all the best available science and it kind of cherry-picks science in my opinion. So instead of trying to make that square pig fit in a round hole let's look at it from another way would actually be easier and more well rounded in the end.

FRETZ: Okay and so that gap you just identified. What do you suggest would work for you to fill the gap, that research will fill it or move to another area?

WINTER: Yes for me it takes a big step towards filling it and maybe whatever other things we use to get us there.

FRETZ: Okay, the overall approach that you're suggesting is leave the 1754 acre project in place with certain modifications. Count it as 30 acres per bat. Find something that makes up for the other 10 in some way. Yeah, either another site or research or something.

WINTER: There are a combination of things that can just get us across the line, right?

FRETZ: Okay.

WINTER: I also don't think it's a good precedence for us to approve something that is in conflict with our guidance document. So I'm not really comfortable voting for anything.

BOGARDUS: I want to challenge you a little bit because I get that but remember the guidance isn't the permit issuance; the guidance is a picture of what we have at the time to meet permit issuance.

WINTER: I understand, I just haven't seen anything that makes me think otherwise. Or at least make it go in the opposite direction.

BOGARDUS: I want to be careful about the language that we use. Just because it doesn't need the guidance shouldn't mean that it doesn't meet the permit issuance criteria.

WINTER: Agreed and at the last meeting both Loyal and I said if you're going to do it otherwise justify it and I don't think he and I feel that the justifications given are sufficient.

BOGARDUS: Yeah.

FRETZ: Is there some reason that research project cannot go in the HCP?

MARIE VANZANDT: This is something that AEP is committed to do but they didn't commit to it on a permit level at this point, you know, and so I think that's where I can't speak to that today on whether they'd be willing to commit on a permit level for that occupancy study.

FRETZ: For additional mitigation to help net benefit does that research project work or some other similar research project?

MEHRHOFF: It works for me, it would not be my first choice, but it works for me.

FRETZ: What would be your first choice?

MEHRHOFF: The drone study. Something that gets you some sort of a population or density estimate. But I'm okay with that. This is a great project of your own.

MARIE VANZANDT: Yeah. No, I would say with the drone work, we do have some funding for them to do some research and development along the drone lines, but they haven't perfected the methodology. So they're going to come to Maui and investigate whether the drone work is possible, but it's not part of the study.

I guess what we had hoped for with the level of monitoring that we're doing right now proposed in tier 4. So there's over 35 acoustic monitors that are being put within that 1,700 acres and that is sort of like one of those pieces that we thought had that research value that is above and beyond what you would consider compliance monitoring. And so I'm wondering if it would be acceptable to reduce the level of compliance, you know reduce the level of

monitoring within the mitigation site to a compliance standard not a research standard. Then redistribute that acoustic monitoring maybe to expand on occupancy study that we've proposed. Something along those lines where we're not discrediting the value that is being proposed with that mitigation monitoring currently like 35 acoustic monitors across a very small area. That is a research project. That's what we want. We want more information on how mitigation actions equate to bat activity.

MEHRHOFF: That is kind of compliance monitoring with the HCP and making sure that you are validating your commitments in the HCP to getting a response and determine whether there is or is not a response. So I think it's very valuable. I don't think anybody has said that it's not. We're just trying to figure out if we can find some way to reasonably and from a scientific perspective be good to get you up to the point where you're getting a net benefit that we feel there's going to be a benefit or something along that line. So we're just trying to get to that point. We're not saying that monitoring is not valuable. It's very valuable and it's really important and I think it's one of the good things.

MARIE VANZANDT: So I guess the level of monitoring there would be above and beyond what you would consider for compliance monitoring. Any of the sites like in the past even research projects that are done to look at that occupancy don't have that level of monitoring. It's a research project in itself.

MEHRHOFF: That is fine, but we'll get into this stuff later if you want to get into the weeds, but one of my concerns I had with careful looking at how much you are willing to scale that back based upon the power levels and what you were going to get to. That was quite concerning actually it was going to get to the point where you weren't going to be able to get an answer and that would be a wasted effort, but I wouldn't necessarily suggest you scale back that. This was just trying to get you to the point where we were thinking that you are going to meet issuance criteria.

FRETZ: I don't see what changes. What you're doing is highly experimental. Of course, it needs that level of monitoring. I don't see why this consideration will then prompt us to not do that.

MARIE VANZANDT: Well, I guess I was just I wanted to check in that there was still value with what was being proposed with the level of monitoring at the mitigation site, you know, it sounds like you know, the focus was on the occupancy study. I'm trying to do that work. And so I was I was just doing a check in.

MEHRHOFF: If I had to choose between the two it would be your research project and you currently are doing if you want to call it research but I'm going to call it really more compliance validation.

MARIE VANZANDT: At the tier 4 site?

FRETZ: So we're working on this from this perspective because we're assuming this is the best way that for you guys to amend; remember the guidance has been predominantly native forest restoration. I'd rather see the guidance followed in which the mitigation was restoration or predominantly native forest somewhere and there's corridors and not hedgerows. So when I think you can do that here in your 1754 acres because I don't think that's a land use that it's going to work there. So we're working within that context, but this is really experimental and it's different than the guidance. So we really want that kind of intensive monitoring to see what happens.

MATT STELMACH: I'd like to speak to the dozen papers here that describe in Europe, in the mainland, in South America, hedgerows are associated with benefit to the bats. Data from Hawai'i has shown that the bats are associated with mature forest, but not native forest. And in general bats use the open space and not the forest. And so I guess the assumption in the guidance document that native forest is the restoration target I think it's the artifact of a lot of good work that has gone on to restore forests in Hawai'i. There's a lot of good work that has gone on to do native forest restoration, forest bird restoration, but I'm concerned that if we apply those targets to bats that we're going to end up missing the maximum benefit that we could have for bats.

FRETZ: You're starting a conversation that I think is not productive right now. We're not asking you to change that 1754 acres, we're making recommendations so you can stick with it. I get that you want to talk about the guidance and you want to inform that. It's great. But we're going with what you have here. So should we save that conversation for later time?

BOGARDUS: Scott's trying to get at the fact because it is something different that we've done before with the onus on monitoring is conceivably higher. He was not suggesting that we switch gears.

MARIE VANZANDT: You always make my heart jump when you say so.

SPAIN: And to that point you go to places like Laupāhoehoe, huge stand of native forest and highest density of bats ever found and it's a road through native forest. We're all being I think very open-minded to this being highly successful. I mean we're dealing like I'm accepting cow shit as being a benefit to bats and I think what we want to do here is we're in a zone of being open to this project and we're trying to get over that hump of the State law net benefit. So that means to us, I think sitting around this table, we want to see some assurances associated with that and I think you know all of our guidance documents basically say that 40 acres per bat native forest. So I think that's kind of where we're coming from. I don't know that it's, you know, refuting acreage and refuting native versus non-native. I think this is a really interesting project and it's great to be working with this partner. There's a lot of opportunity should it work that other ranches might be able to implement these kinds of things.

MEHRHOFF: The ESRC has done kind of different things too when we've looked at the wetland restoration for example with bats here on O'ahu. That was very controversial. We went through

lots of you know, what are we going to have for a back-up plan? If it didn't work? You know, where are we going to get the acreage in order to plant new forest and do that restoration. But we haven't gotten the data from that project that has indicated the level of success as to how successful it was.

BOGARDUS: You're talking about 'Uko'a?

MEHRHOFF: Yes. So I don't think we have the data yet on that. I don't want that to be repeated with you guys. I want the data. So that's why I like your project for the heavy monitoring and I am less than enamored with the power aspects in the decision on whether to downscale the monitoring. Which I get. I may not understand so we can do that offline. But you know because I don't think we have the ability to say that was successful or not. I don't want to be in the same boat in ten years with your project.

MARIE VANZANDT: I appreciate your guys' open minds. It's a new idea and I appreciate you guys working with us and spending three hours more than what you expected to come to some resolution.

MEHRHOFF: I'm with Scott, I'd rather see it all native. No pastures, no cows there period but apparently, I'm willing to say you know that this is something that's worth trying, but if we can make it to where its native species friendly for those areas then that's great. That's the right thing to do for Hawai'i. It may not seem like we're being flexible and working with you, but as we're trying to be anyway.

BOGARDUS: So before we went down that road. We were at the point where we were trying to say develop the package in a way that compensates for that piece of the puzzle, which is I think by the way what they had tried to do by doing the land restoration or the hedgerows in addition to the conservation easement because our guidance is one or the other right? So they were trying to do both and then additional research on top. It sounds like that package isn't adding up to the benefit that would meet 195D in your opinion. So the question is, how do you create a package that would?

FRETZ: She's got the purple pen.

BOGARDUS: I really like whiteboards.

FRETZ: Okay. So do we have the bones of tier 4. Do you think this is a framework here?

WINTER: So just to clarify. We're not saying get rid of hedgerows, right? For what it's worth I like them.

FRETZ: Okay, anything else you want to add to this because I think this gives guidance.

WINTER: I agree with that I'm going to excuse myself. Is there anything you need from me?

FRETZ: We're barely at quorum after that.

WINTER: Oh, no. I was just asking permission from the Chair to be excused.

BOGARDUS: Do you have anything on minimization and take monitoring?

WINTER: No, I just had an issue with the 20 acres.

BOGARDUS: You have an issue with tiers 5 and 6?

WINTER: I have an issue with that regardless of what tier it is, it is still an issue for me.

BOGARDUS: The minimum acreage?

WINTER: Yes.

MEHRHOFF: I just kind of assumed that we're talking all the same thing 4, 5 and 6.

FRETZ: Yeah, so we should be clear about that. Because it says tier 4 up there and there's a research project that goes with that. So did you mean that particular research project will meet net benefit for all of those or you talking about a different research project?

WINTER: I think we're closer than you guys might think we are. I don't see us being all that far apart. My issue is what seemed like a contrived back calculating and making this particular number work and finding science for this exact setup. Whereas I don't think that's a great way to go. I'd rather go about it another way and say this is what we got. This is how far it got us. How do we get us over here? It doesn't matter what tier that is. I think that's a formula that I think that's how it should all be structured.

FRETZ: So you're saying look there's 30 acres and so there's 10 acres missing from the net benefit equation. So there's something that substitutes for that 10 acres and that's the research.

WINTER: But no matter what tier that's still, I think I agree to what you said.

FRETZ: So those acres are bats right? First, they're 60, and then they're tier 5 is and what tier 6 is. This is the amendment. Does that get you good for all tiers?

BOGARDUS: Well tiers 5 and 6 are a totally different site right?

FRETZ: Okay. We'll do tiers 5 and 6 separately then.

BOGARDUS: And then I mean it's not set and it's not defined as of yet as whether or not it would be sort of this style of mitigation projects.

FRETZ: I thought it was?

BOGARDUS: It would look similar.

MARIE VANZANDT: So at the time of triggering we would evaluate and build a site specific plan. What do we know right now? What is needed for the management of that area and then build a plan with DOFAW and USFWS?

BOGARDUS: Anything else on mitigation that we want to cover?

FRETZ: Tiers 5 and 6.

WINTER: Okay. Good luck everybody.

FRETZ: You know the scale of this project more than anybody. What do you think? Do you think it's adequate to get us over the hump in tiers 5 and 6? You think so?

BOGARDUS: Does this capture the one thing we want them to go back and take a look at?

FRETZ: Our discussion was that their write up was not compelling. That we were at the point that this would get us there by adding those things to it. And that's as far as I think we need to really say. Some people wanted to try to have that part re-written but the main thing is that coupled with what we've been suggesting that research project seems to get us over the hump.

BOGARDUS: Do want to take a picture of this array then switch to minimization and adaptive management?

FRETZ: We should probably take more than one picture.

BOGARDUS: Sorry as much as I love white boards my handwriting is not exactly beautiful.

MEHRHOFF: I got real concerns about tiers 5 and 6. Well, I just don't know, you know. Let me just say this is not my preference for tiers 5 and 6, but I'll go along with it.

BOGARDUS: What part? The site or the style?

MEHRHOFF: Yeah, so Kamehame Nui, DOFAW's plan is to reforest native forest there and what this mitigation would do is it would put 80-foot hedgerows of native plants into the area DOFAW is going to restore. It's going to be a real tricky to work with them on how the complete restoration works with hedgerows. So I just don't know how it's going to happen. I'll

agree to this and go along with it to make it work somehow about think it's far from ideal and far from consistent with the guidance.

BOGARDUS: Well it's not written in stone, right? Like it's not at the time a tier is triggered they're going to sit down with you and decide based on this site and based on research on bats this is what the restoration project will look like.

FRETZ: It's still going to have to meet his master plan for the site. Otherwise it's just going to go to another site. Or it could be modified. But the acreage would be the same x number of acres.

BOGARDUS: I mean ultimately, it's gonna have to meet the master plan and it's going to have to meet success criteria for bats.

DAVID SMITH: Well Kamehame Nui is State land we have to agree wherever it is proposed and they have to work with us and we have to approve.

MEHRHOFF: Okay, I think you're going to be okay Scott. And if not we will come back from the grave to help you.

BOGARDUS: Or we'll just never hit the tier.

FRETZ: All right. What do you want move on to? Where would you like to start with minimization?

MEHRHOFF: While I didn't necessarily agree with all of the calculations, I think you kind of got to the right place on most of the minimization stuff and I'm okay with where you ended up on pretty much everything you're doing on that. My concerns are the adaptive management aspects of minimization. I think you've done calculations where they're in the ballpark of those and the probable take is somewhere near 140. So I'm pretty comfortable with where you ended up on that. So I'm okay there but I do think that the adaptive management plan associated with the minimization is where I had most of my concerns with that. The two big pieces to that are a lack of triggers at the different tiers to kind of help reduce minimization and the lack of specific actions associated with those tiers that left it very open. So it's not like you cut off any option. That's okay for what you want to do, but it also didn't necessarily require that specific actions were really going to take place. So from my perspective it needed to have specific sets of triggers along the way and adaptive management more often than by your intervals that we talked about before. To try to really sit down and think about what we can do to do the minimization stuff better. So more thresholds and triggers at the tiers and then specific interim steps that will be taken based on your best understanding of things now to reduce take and we're leaving it open for a consultation with the agencies, not ESRC, to then deviate and do what as a group they think is appropriate.

BOGARDUS: Because I'm familiar with some more of the inner workings of the day-to-day management of these than what most of the committee members are. I will say that this is

happening quarterly and many times with every take. That process is not maybe as represented in the HCP than what is actually in practice.

MEHRHOFF: This is what's written down. I know ten years from now if someone comes back in and everybody here in the room is gone. You're going to say no we're not gonna do adaptive management till 2025.

BOGARDUS: I agree, what I'm suggesting though, is that it might not take any new action. It's just better representing what we're already doing in the HCP. I think we're already doing, it's just maybe not in there.

MEHRHOFF: It's not written in there. So yes, and that's fine. You know, you're doing that stuff already then that's great.

BOGARDUS: Is that what you guys would think as well?

MARIE VANZANDT: Well, I agree. We are constantly trying to adaptively manage our minimization and in coordination with you with every take that we have. I would say I guess I need a little more clarity on the lack of specific triggers and ultimately the specific adaptive management actions. We were doing what is deemed the best and so we don't have any new information on what could be adaptively managed. Like that's where I think I'm having a hard time if I come back in a month. What can I bring to the table that would be different?

MARILYN TEAGUE: Do you have an example of what you're thinking? Understanding right now we are looking routinely as well so when we count take if we change something every month or every quarter it would undermine the process of evaluating how the 6.9 is working and evaluating risk, so we gotta look at it as almost like a research study to some point since they are rare events. We need a certain amount of time to evaluate. If we change things too frequently we won't learn what's controlling. But if you have some suggestions and ideas?

MEHRHOFF: So first of all the adaptive management doesn't necessarily mean that you have to change something. I will make this specific request that you get together and you talk about what's going on and you decide whether or not you have to do something. When there's an action or event that has occurred that you have information on that you think you should change the way you're doing things. So it's a part of that, you're monitoring the data and your take data, whatever. Then you say okay, what new literature has come out and what could we be doing better and different? There is that continual effort. But in the HCP there is a five-year interval and that's too long of an interval to do that. If you had that when you first did the original HCP you might not have done anything, you know until year five or six, but you took action earlier than that. And so what I'm asking you to at least do what you have done and not codify that you're not going to do adaptive management. You say that you know, for example, one of the triggers is if you're going to exceed the 126 bats. If you're not going to exceed that the adaptive management process is not triggered. That management process needs to be ongoing and not tied only to that one trigger. You should be saying what could we be doing

differently? What data is out there? I brought up several times there's a bunch of different options out there to do for minimization. Some of those you don't want to do because you don't think that they have been statistically shown as being significant, which I do disagree with. Other things have been shown to be statistically significant and you have chosen not to do those as well. And that's your prerogative to make a decision, what to choose or not to choose, but there are things that you could be looking at when your take is not where you want it to be even in these lower tiers. You can say okay, well maybe we will look at that or try it or really look at the feasibility. Kawailoa has put in the deterrents. So a year from now even if you haven't triggered, you know, the threshold level for 126 take, if that's been successful then you may want to look at whether or not that's appropriate to be implementing as an adaptive management response to stay within tier 4 and not exceed tier 4. So those are things that should be ongoing and routine and we should be able to go through and check and see whether something is changed or not.

MARILYN TEAGUE: That's helpful. So I'm getting the idea more of doing check-in, other than triggering events, say on an annual basis or when we have take or something like that and not necessarily threshold level.

MEHRHOFF: I think it's a mix of both. You should do them annually for sure. And then I think that there are threshold ones. So if you look like you're going to be exceeding your tier 4 take, which is what your proposed action is—what you're expecting to happen. So tier 4 is what you're expecting to happen with this HCP. That's a 70% reduction. Right? That's what you're expecting to happen. If it doesn't then your expectations are wrong and you're going to end up with a 50% or only a 30% decline. So you should be focusing on what you expect and what you designed your HCP to do as one of your thresholds realizing it may not happen. But that's what you think will happen. So you should be having thresholds for that.

MATT STELMACH: Can I try to reiterate to make sure I'm understanding what your recommendation is? So you're suggesting that we add annual reporting and review with the agencies of the current best available science on minimization measures: that's one piece. You're suggesting that we also have a regular evaluation of take relative to the threshold value on an annual or more frequent basis, not necessarily for triggering, and additional minimization measures, but to inform the conversation that we're having with the agencies. Those are the two primary things. But in addition it also sounds like if there are additional minimization measures that the project or agencies feel is necessary that those annual reviews would be a time for considering implementing them or considering additional requirements that the project would implement. Are those the three things that I'm hearing?

MEHRHOFF: Well, I think you missed the tier 4 part of it right? Every 6.5 is your trigger. And so I'm saying that your annual review should be looking to see if you're heading over tier 4 and that should trigger something.

FRETZ: And that's the one that you said is what you expect to happen if you design it. So you should at least be monitoring for that.

MARIE VANZANDT: I think what we expect to happen. We are asking for the full permit amount of a 140, you know, it might not happen. There's different levels of effectiveness of curtailment as we propose, we don't know specifically for Hawai'i, but we feel comfortable that at a minimum it'll be a 30 percent decrease in the expected fatalities. That's why we're coming to you with a permit for a 140 versus 80. So we're asking for the full amount because we don't know that.

FRETZ: Okay, so you have a disagreement on the trigger.

MEHRHOFF: What are the remedies that you have? I couldn't tell what the remedies were. There's I guess the two big ones, low wind speed curtailment and deterrents, we might be missing some but those are the two major minimization measures that are available to projects that are operating now. What would trigger you to deploy deterrents? What would trigger you to add low wind speed curtailment to other months? How would that work? I didn't even see that. I thought there was a cap on the low wind speed curtailment and I couldn't tell when deterrents would be used, if at all.

MATT STELMACH: So there's scheduled evaluations in 2020, 2025 and 2030 to determine if adaptive management actions or refinements to minimization measures are triggered if the baseline fatality rate exceeds the threshold value. At those occurrences it would require something to be modified about the minimization measures and what exactly is triggered would be dependent on the best available science at the time. What's going on in Kawaiiloa, I'm optimistic about the benefit, but we don't know.

BOGARDUS: Because the low windspeed curtailment continues to be more beneficial than the deterrents are.

MARIE VANZANDT: Our hope is that the minimizations that we propose today will be the thing that works.

MATT STELMACH: So we want to incorporate both what we know today and what we know is coming down the pipeline and the ability to bring in new information. Things that we don't know in the future. Given what we know today low wind speed curtailment seems to be the best option and so a redistribution of the curtailment nights to address better the risk would be the preferred option. But the reason to have a plan is to be able to identify specific measures and continue to work with the agencies as new measures come available, whether that's deterrents, smart curtailment, or other measures. We know Marcos is talking about UV deterrents as well. There are other things and it seems like somebody is always working on a new angle, a new means. So we want to be flexible. By definition adaptive management has to be flexible. And so we can identify measures today with the expectation that they are going to change over time.

MEHRHOFF: One thing I'm confused about is we're kind of arguing about what kind of things you might do here. But just a few minutes ago we were talking about tiers and value of those as an incentive to stay within a tier. So we've kind of been arguing that you can't do that or you won't do that. So I'm confused. Because I thought you had wanted to stay in tier 4. So that means that you can't just wish that you stay within a tier, you need to take action to necessarily stay within tier. So what will you do to stay within a tier?

MATT STELMACH: It will depend on the results of the ongoing monitoring. So the two studies that are ongoing now will conclude the end of the year. We should have results early 2020 that would inform the best actions that we can take.

MEHRHOFF: What actions would you take now without that data?

MATT STELMACH: The redistribution of curtailment nights appears to be the most promising. There's a spatial distribution of fatalities at the site that is obvious from the ground based acoustic detections that the majority of detections occur within the first six hours of the night. So those are the periods the turbines must be operating when the bats are present. Seems to be that the majority of risk occurs when you have some acoustic activity or at least more often you have fatalities correlated with acoustic activity than not. And so aligning your curtailment—not smart curtailment, but informed curtailment—to identify the periods where it's more likely that bats are present. So you could redistribute those existing curtailment nights away from the early morning hours and towards the early evening to mid evening hours in order to capture more bat activity.

MEHRHOFF: But what if that's not what's observed. What if what's observed is that you still have high take in those months where you've got those curtailment nights in and you start to detect high take in other months like May? If you're going to redistribute you're just taking away from what is probably still as high risk nights and put them on the other nights. Why won't you add a minimization in that case?

MATT STELMACH: That would be an instance where implementation of deterrents would probably be a preferred alternative.

MARIE VANZANDT: If we could add curtailment nights that would that would be what we would be proposing right now. So what we propose is the maximum extent that we can that we can do in terms of minimization.

BOGARDUS: We had to do it that way because we recommended the removal of the reversion clause.

MARIE VANZANDT: So we're starting at the best as opposed to starting sort of low and ramping up.

MEHRHOFF: So you answered my question. Is that trigger and that response in the HCP? I didn't see anywhere in the HCP where a trigger like that would have gotten that response. I didn't see the commitment it was some action would be taken. Did I not get that right? I went through here and wondered if okay seems to me like there's some triggers where if low-wind speed curtailment is maxed out on maximum practicable, some other trigger might require some action. And if you don't have that option deterrents is the only one left. I didn't see any commitment to deploy deterrents.

FRETZ: Was it practical and available and that kind of stuff.

MEHRHOFF: Said it wasn't available now so we couldn't commit to it.

MATT STELMACH: We've updated it since the last version.

MARIE VANZANDT: It says should low wind speed curtailment adaptive management strategies not be effective in minimizing impacts, deterrents or similar technologies will be a priority. Deterrent technology will be incorporated in the adaptive management measures described within the proposed measures provided to USFWS and DOFAW for review and approval. This is how we've written in deterrents and when they would be available.

MEHRHOFF: What section is that in?

MATT STELMACH: So that's Section 7.4.1.6 Future Technology.

MEHRHOFF: Mine says a means of incorporating new information. Mine doesn't say new technology.

DAVID SMITH: Do you have the May 14 version?

MARIE VANZANDT: Should be page 104.

MATT STELMACH: It's a bullet in the timeline for if adaptive management has triggered.

MEHRHOFF: So this a good example of when we were talking about triggers and stuff like that. So if you get a trigger and say, okay, this is not been effective just say we will implement deterrent with the approval of the DOFAW and USFWS. So that's kind of a hard trigger. It says you will do that if that happens.

MARIE VANZANDT: I guess we don't know whether we would want to do that based on we don't know what the results of Kawaihoa are yet, we don't know the effectiveness of deterrents yet.

MEHRHOFF: Well actually you've already stated that right here. You said deterrent technology will be incorporated.

MATT STELMACH: Be incorporated into the adaptive management plan.

MEHRHOFF: In the measures. The adaptive management plan in the measures. I would read this to mean you would employ deterrents.

MARIE VANZANDT: Or similar technology. It says if low wind speed curtailment adaptive management strategies are not effective in minimizing to bats, deterrents or similar technologies will be priority.

MEHRHOFF: Right, the very last sentence says deterrence technology will be incorporated in the adaptive management measures provided to USFWS for review and approval.

MARIE VANZANDT: It seems like we're in the same place.

MEHRHOFF: Right, but you can say when you do the target should we trigger? We can't meet something with the current suite of things. We will go to deterrence. In consultation with USFWS and DOFAW that may change to something else that's more appropriate but we will commit to doing deterrents which is what this would do. But leave yourself the caveat that working with USFWS and DOFAW you may change that based upon what you know that month and that day. So with those hard things help us understand if the low wind speed curtailment doesn't work. You're coming up against your threshold. Whichever threshold it is that you're applying this to. Then we know what the action is going to be so we know what you're going to do as a minimum, and it may be at something better based on working out with the agencies. We can say, okay now we understand what you're going to do. We know that it's not going to go five years with nothing happening because you've committed to do this realizing that you may modify that with the agencies. So those are the kind of triggers throughout these things that I have been looking for because the past, for the HCPs that we've been dealing with we haven't seen that. And there's been kind of like well whatever the applicant's willing to do is more along what happens, not necessarily what needs to be done. My opinion. But that's what I'll be looking for for, that sort of thing, and the same with the rest of the HCP as far as thinking of where there should be triggers that then tie into minimum commitments.

MARILYN TEAGUE: I'm a little confused on how this will line up with the plan to create an adaptive management plan at the end of the year when we have the results of our research.

MEHRHOFF: Some of these things don't make any difference as far as your research stuff goes. In that, go with what you've got now and what you know now and that paints a picture because the adaptive management plan that you're talking about really should have been a part of this plan. It shouldn't have been an outcome of this; it should be a part of this plan so that you can look at whether or not the HCP is truly going to meet issuance criteria. It should have been a part of this plan. I believe that level of detail should have been in here. And it's not. So I mean you can try to take some of the key things and get the big items into the text. To make sure that

there's enough information there for the reader to understand whether or not that the HCP is going to likely meet issuance criteria and meet its goal.

MARILYN TEAGUE: So you want some of this in the text and then to revise it. Because obviously when our research reports come out at the end of the year/early next year we would then have a standalone plan. How are you envisioning that?

MEHRHOFF: I think it's kind of up to you how you want to handle that. I mean you're going to end up having to handle that regardless down the road as you get more and more information to getting the adaptive management program. I'm not sure how you're going to update preferences.

MARILYN TEAGUE: Okay so you didn't have a preference there.

MEHRHOFF: No I didn't have a preference on how you do that but there needs to be enough information in the plan to be able to assess the likelihood of meeting issuance criteria. And it's, in my mind, missing. Too many things vague and to be determined. I'm trying to clean that up so that there's more specificity. So when you read it you go, okay, yeah, this is what we're going to do is a minimum and how we're going to move forward.

BOGARDUS: Does that capture it Scott?

FRETZ: Can we read over that? What was the outcome of the frequency of review from five years? Did we get that in there for that to be more frequent?

BOGARDUS: So I heard I heard more frequent adaptive management thresholds and triggers more often than five years.

FRETZ: Does that mean 4.9 years?

MEHRHOFF: I would say annually, personally.

FRETZ: Can we be more specific than that?

BOGARDUS: And again, I think some of this is just documenting what already happens. We're already doing it annually and we already to some extent doing it with each take that occurs, but formalizing that in the text is important, but then I also heard at certain times. So two types: one at specific timing intervals and the other at thresholds.

MEHRHOFF: Yes. For example for your threshold going to tier 5, I would be appropriate to have a secondary threshold value for that so that you know if you look like you're going to be exceeding that and if you are what is it that you might want to do to avoid that. Whether it's moving stuff around or whatever.

BOGARDUS: And the rates of take?

MEHRHOFF: Think of the Makua Implementation Plan, you know, there's two days which admittedly is huge right, but they go through everything and they look at everything that they've done. What worked, what didn't work, what they're going to have to do in order to meet their Section 7 compliance requirements. So I don't think that's out of line to be doing this when you're talking 140 bats.

BOGARDUS: And essentially, we do that as part of the annual review with the ESRC as well, but it may be more in depth than what we can possibly do for them.

MEHRHOFF: Yeah, you're going to be able to replicate that. But that's not unreasonable to be doing that sort of stuff.

FRETZ: So is 720 nights going to be a minimum? Is 720 nights always going to be applied or is there a provision to reduce it?

MARIE VANZANDT: We removed the reversion trigger.

FRETZ: So 720: no more, no less.

BOGARDUS: Not without some sort of modification that we somehow decide to approve.

MARILYN TEAGUE: Those 720 nights might equate to 900 calendar nights. If we're only curtailing the first say four hours a night that would give us additional hours to curtail on another calendar night.

FRETZ: Yeah, I did read that it was a maximum but I couldn't remember if it's a minimum.

BOGARDUS: It's the maximum number of hours, but maybe not necessarily the maximum number of nights.

FRETZ: I got it.

MEHRHOFF: I'm just showing that it's for part of nights; it's still that number of nights.

FRETZ: Yeah, so I think I'm good with the deterrents. I think based on what you showed me that it means the deterrents will be deployed if there's a trigger so I think it's down to just getting these triggers. So there's the annual thing and then there's the tier 4. I guess I still don't understand why you wouldn't set up triggers for tier 4. It's not going to change anything you have to do it's just more frequently trying to better be better at it. So why wouldn't do employ that?

BOGARDUS: So triggers for rate of take within the tier?

FRETZ: Yeah, so the trigger is 6.5 right. What triggers adaptive management? Maybe I'm not understanding. I thought it was at 5 years you check and see if the average take was more than 6.5. And then if it is, that triggers some adaptive management. Why wouldn't you be looking for triggers that are showing you're going to exceed tier 4?

MEHRHOFF: That's what I'm arguing for.

FRETZ: Yeah, so because you have a maximum of 720 nights and you are or are not going to deploy deterrents, why wouldn't you want to be more diligent about those triggers?

MATT STELMACH: There's a mitigation trigger for the tier threshold. When we reach 66 bats, then we start planning for mitigation for tier 5.

MEHRHOFF: But that's not minimization. It's a mitigation trigger.

FRETZ: How about a minimization strategy so that you do everything you can to stay within tier 4 which you guys said you're highly motivated to do.

MARIE VANZANDT: At this point what we proposed is to do everything that we can with the minimization. We would like to say within tier 4.

FRETZ: If you're only looking for 6.5 at 5 year intervals will never see it.

BOGARDUS: Well remember that their tier 4 is assuming a certain level of efficacy of the minimization. So they're going to see pretty quickly if it's not. If their minimization is not as effective as it was intending on there they're going to be seeing that they would go into the next tier. What you want is specific trigger that would result in minimization if that rate of take exceeds that which was anticipated to have under their tier 4 plan.

MEHRHOFF: Exactly, and since you've said there's motivation to stay within a tier and not exceed the tier then we should look at that to see whether or not they're going to potentially be exceeding the tier and going to the next tier. And then doing what you said that you'd be trying to minimize for that so you should have that in the plan. Otherwise, it's not going to happen. Scott's right: if you're only looking at one value, you're just going to be hoping that it works.

BOGARDUS: While we're on break can people think about whether or not they had anything here like specifically on minimization or it's all just how we adaptively deal with if the minimization isn't working as anticipated.

FRETZ: Well it'll capture my concerns if those triggers are tighter. So something more likely to keep the tier down that's minimizing to the maximum extent practicable to me because it's not

going to change the maximum and knowing that deterrents will be brought in a timely manner, if and when determined to be effective. That'll help.

DAVID SMITH: Can you say it would help? It seems like we've talked this to death, but can you just say like, what would those triggers be? How often do you want it? What would it encompass?

BOGARDUS: Tell me what you want to include.

FRETZ: Annual was out there somewhere. Then using the tier 4 as a trigger you'd have to come up with that; if you did it the same way you'd figure out 81 divided by the number of years.

MEHRHOFF: And you'd do that for the transition to tier 5 and the transition to tier 6.

FRETZ: And if you need to remove the 20 because it will throw the average off maybe just take the 60 from 2017 onwards.

MEHRHOFF: So when you decide to shift days and nights around, like curtailment nights, do you check with DOFAW for approval on that?

MARIE VANZANDT: It's written in the adaptive management plan would be measures are provided to USFWS for review and approval. One thing with this triggering and the timelines associated with it. I know Diane isn't here to speak right now. But the reason why we pick this two and then five-year interval is because of the low sample size that we have of bats. So the ability to determine if the minimization measures are effective and to be able to actually quantify that. We initially had a triggering time frame but there's concern that you're not gathering enough information to capture that inner-annual variability and to see if the minimizations are actually having an effect.

BOGARDUS: I was going to call her. But that is my recollection. But unless it's something crazy we wouldn't necessarily recommend a large scale revision on something based on just one year's data because we're not talking about sample size that actually tells us what's going on in the system.

MEHRHOFF: I'm not suggesting that you do. I'm suggesting that you have to schedule the meeting, talk about it, and say yep we have this trend we'll see next year if it works.

MARIE VANZANDT: So this is more the idea of not an obligation to do action within those triggers, but an obligation to check in and discuss adaptive management.

BOGARDUS: It's a regular review of take, regular review of minimization efforts and advocacy of minimization tools and the regular review of mitigation efficacy.

MARIE VANZANDT: Because when I think of a trigger, I think of something is triggered and there's an action now that must take place.

MEHRHOFF: We're going to get to that. So that adaptive management process when you talk about the triggers. If you're in tier 4 and if you have a threshold level for that for going into tier 5 you'd want to know whether or not you look like you've done to exceed that while you're in tier 4. You've said before that you'd be taking measures to reduce the chances to try to not go to tier 5 and that's what you guys have said today. So to do that you have to look at having a trigger helps you get there. We're going to exceed tier 4 so what minimization do we want to take?

MARIE VANZANDT: We can't commit to additional minimization though.

MEHRHOFF: If you can't commit to additional minimization, then tiers are not influencing and are not an incentive for reducing take. So that's contrary to what I've been hearing that the benefit is that they don't have to do the next tier mitigation. Wishing, a dream, is not a plan.

MATT STELMACH: We have to have data first to diagnose and then treat. Does that make sense?

MEHRHOFF: You're saying that there's nothing more you can do than what you've already done. You're already at that threshold of maximum minimization, can't do anymore. You might rearrange the chairs, but you are not going to do anymore.

DAVID SMITH: Well rearranging the chairs might make it more effective.

MEHRHOFF: Oh that's a minimization action that you can take. Okay. So if you're using the transition to tier 5 you may say I haven't exceeded and I'm probably not going to exceed my tier 6 take but I'm in tier 4 and maybe if I make this change now rather than waiting until 5 years from now, maybe I will keep myself from going into tier 5 or maybe I'll keep myself from going into tier 6. So I have to make a decision on whether or not you're going to do anything additional; you already said that you may rearrange this stuff. That's fine but you do that during tier 4 not necessarily when you break the threshold in tier 5.

MARIE VANZANDT: That's from a timing standpoint. I am having a hard time visualizing it just because if you are projected to go above tier 4 right then the minimization measures that you would have to propose would be today.

MEHRHOFF: Potentially correct.

MARIE VANZANDT: And what we've proposed today is the maximum extent that we can do. We don't have enough information on necessarily how we should rearrange.

MEHRHOFF: So for today you may not have any option but you may down the road. So you can tell us that because right now I don't see where you're going to do anything because I just hear that we want to stay within a tier but then when we go further and talk about it, there's nothing more we can do.

DAVID SMITH: So that gets you to where you want to be if one, two, and three are met?

FRETZ: I would say there's a fourth one that says to implement appropriate actions upon consultation with the agencies. That's the plan here. So in a situation you're describing where it's not possible to set a hard trigger and at this tight of a time frame it'll be informed later in your adaptive management plan, hopefully. But we are expecting the appropriate action to be taken if such action is identified upon that consultation so you should commit to that.

MEHRHOFF: And you should say in here that when you get the adaptive management plan that you will put in hard triggers there as to what you will do and then obviously monitor from that.

FRETZ: So the main advice we're trying to get is more frequent checking for narrow tiers to prompt action sooner when that action can be determined to be helpful. And to make sure there's a process for that to get you through that consulting with the agencies. If you get there and the agencies say we don't know what to do either then maybe there's nothing to be done at that point.

MEHRHOFF: And ideally, you know, you should have a hard reaction to those triggers. You should have that as a starting point, an interim one, and then modify from it.

MARILYN TEAGUE: So Michelle does that contradict at all?

BOGARDUS: No.

DAVID SMITH: So you good with those four? If you did those four it'd be good. We're gonna review efficacy. Right? It's an annual check and review the take, the minimization effort.

FRETZ: So particularly for the transition into tier 5 and the transition into tier 6. Not the transition sorry for the overall take one that you already have in there. You should put in the deterrence language that already have and make that more prominent that that's your initial response is the deterrents. So for the lower tiers that makes sense, that's appropriate but for the overall hard trigger for the 126 take that needs to be deterrence in there as modified with discussions at the time.

MEHRHOFF: That's what I was getting at with that question is what would trigger you to deploy deterrents? It seems like there needs to be a trigger. I understand certain qualifying language because what if deterrents don't work or what if there's something better? I get that. It just seems too vague. So suppose the take next year hits 7.0 what would that trigger?

MARIE VANZANDT: Well that would trigger adaptive management.

MEHRHOFF: And that adaptive management is you would rearrange the low wind speed curtailment. Why wouldn't you go to deploy deterrents at that point?

MARIE VANZANDT: Because in January of this year, we won't know what effectiveness deterrents would have on Hawaiian Hoary Bats. It would be a guess what the effectiveness is of deterrents.

MEHRHOFF: A lot of things are guesses in this.

MARIE VANZANDT: But I feel like there's a lot of literature to support the effectiveness of low wind speed curtailment, especially at the level that we proposed. There's not a lot of literature to support the effectiveness of deterrent technology above what we proposed for low wind speed curtailment.

MEHRHOFF: Well there's enough for me.

SPAIN: This is kind of getting back to that argument of what is peer reviewed science or the best science available. So if we start getting preliminary data say from USGS and Kawaihoa or whatever that deterrents turn out to be highly effective?

BOGARDUS: I mean in a perfect world by January Kawaihoa might've had, you know, 9 bats on average any given year and all of a sudden after they used deterrents they had zero. But it's probably not going to be that clean cut and so the question is going to be do we have enough data to support the fact that it would be more beneficial than the low wind speed curtailment of 6.9 m/s that they're already doing.

FRETZ: But I presented a scenario in which you're monitoring and detected take was going to set you over to tier 6. And I'm saying that seems like you should be trying new things that have an unknown probability of effectiveness somewhere in the range of more than zero. I just don't understand why that would not be required.

BOGARDUS: I mean it's a timing component. If that happened this coming year and they hit 7 bats then it obviously would be an adaptive management conversation. But if they hit 7 bats three years in a row then three years from now maybe we have better data. It's a different conversation depending on the timing of the conversation.

MARILYN TEAGUE: It's that, as well as looking at just deterrents at Auwahi. Would you likewise if another wind plant was proposing 5.5 m/s, then deterrents, and wasn't getting results. Would you ask them to go to 6.9? So you're focusing on just one technology and one approach. We're already at 6.9 so we have to look at the above and beyond. Are they being tested on a Hawaiian Hoary Bat risk wind plant that's already curtailing at 6.9? Are they practicable? That kind of

stuff. What I'm saying is you want everybody to be 6.9 and you want everybody to go to deterrents to look at it on a case-by-case basis.

MEHRHOFF: I want everybody to employ minimization to the maximum extent practicable.

MARILYN TEAGUE: That's what we're doing right now.

MEHRHOFF: Then we disagree on what is practicable.

BOGARDUS: At the end of the day they're not making this decision in a vacuum. It's part of their review with us.

FRETZ: Seems like it should be possible to commit to doing the curtailment night modifications and changes in order to try to stay with any tier. And to try to do the same thing for trying to stay within the overall permitted take. But that for the permitted take as stated earlier deterrents will be employed if it looks like you're going to go over that. But you may not necessarily want to deploy deterrents to stay within a tier. I may think that they should but that not be practicable for them to do that.

MEHRHOFF: That's the way I present at the most extreme scenario I could think of in which take was going to be beyond the permit right? I'm not too stuck on this. I really just don't understand why it wouldn't be triggered somewhere in there. I can let it go. I really just want to take a break.

FRETZ: Maybe we should just let that go and take a break. 5 minutes.

[BREAK]

FRETZ: So we got another 20 minutes. We'll just wrap this up. I'm still a little confused on the deterrents, but I'm hearing yes deterrents would be used in some circumstance, but I'm not sure I'm reading that.

MEHRHOFF: So it would just be made to say will be employed and leave it at that.

FRETZ: So if we leave it at that could you guys please go into the deterrent thing you already have and please be more specific of the commitment and when it would be used? I'm not going to get stuck on this but I really think that deterrence should be used when ready to be used. So anything you guys can do to help with that language consistent with the rest of this. Okay want to summarize any of these? In brief you guys are all good?

MEHRHOFF: One thing I was going to say on minimization. One big thing out there was we have a different interpretation or misinterpretation or reinterpretation of data, and I'm happy to sit down with you guys and do the misinterpretations together and see if we can come to an agreement on some of those so I'm not fighting with you on them in the future.

MATT STELMACH: Regarding your comments?

MEHRHOFF: For example, large rotors. Look at the data and I see that large rotors are not as effective when you put them into a low wind speed curtailment as a small rotor. So just working with you guys to see whether you agree with that, what part you don't agree with, and then we both look at the data together. We can then not be arguing about it every other meeting. That kind of stuff. Because 6.9 is great, but it doesn't get us the 70-80%.

MARILYN TEAGUE: So it's the 70-80 percent.

MEHRHOFF: It gets you less than that, but we can talk about that and it might be commensurable. I like what you did on minimization, but I just have the couple caveats that I just don't think it's going to be some quite as effective as you think.

MARILYN TEAGUE: You're not suggesting changing the take number.

MEHRHOFF: No I think it's pretty close.

MARILYN TEAGUE: So it's just language.

MEHRHOFF: It's not just language, it's something that you may be using as an additional tool for minimization as you go down the road that may or may not necessarily cost you any more. Some of the things don't cost you more, others would. So that gives you an increased toolbox. If we both agree then they're good. If we don't and we just disagree I'm happy to sit down and do that.

BOGARDUS: Everyone okay with this.

FRETZ: Alright, what else you guys want to talk about?

SPAIN: I think that covered almost everything on the five bullet point list.

MEHRHOFF: If we end up doing the low wind speed curtailment with the minimization discussion, did you want to add in the discussion on your monitoring power analysis and that kind of stuff? You might be able to explain it better than me trying to rehash it again. Because again, I like the way you're doing it. I just can pick questions on that.

FRETZ: On the fifty percent?

MATT STELMACH: That raises a procedural question for me. I don't know to what degree we can or cannot coordinate outside of this. It seems like it would be valuable to some degree to have discussions outside of these meetings.

MARIE VANZANDT: I did check out with Linda and she said as long as there's no more than two of you at one time then we are allowed to engage in back and forth discussion. And I think that's you know, we will take you up on your offer to meet outside of the ESRC with no more than two of the members to discuss the specifics. Talk about the power analysis and the low wind speed curtailment analysis that you were discussing. So I think you know, we'll be reaching out sort of as next steps to get into some of these with some of the items and questions that you have.

FRETZ: I'm concerned about that issue too and I just haven't brought it up because I really don't have a comment on that. I don't know what to do about it but it's related to the detection and what the measures of success are and net benefit. To me the hardest thing about this whole thing is being able to conclude there's a net benefit. And so that's why that initial conversation about the research is important to me. The monitoring that you're doing, whether it's 50% power or something else. If I read it correct that the measure of success was an increase in detection I presume at some level of confidence. I have a hard time with understanding how that gets us to a net benefit. It just said an increase; that could be an increase of barely more than nothing right there.

BOGARDUS: You're trying to get at how much of an increase?

FRETZ: Yeah, and I don't know how to do that. And so I'm asking you guys how you feel you are getting a net benefit when you know, you're supposed to be mitigating for 60 or 80 bats or whatever that tier is. All you got was an increase in detections and you've determined that now you have a benefit. I don't connect those dots.

MATT STELMACH: This is one of the questions that we brought before the ESRC in August because we were similarly concerned about this.

MARIE VANZANDT: So I think what Jim at the time said when we had the back and forth discussion about monitoring, there's a lot of discussion around the tools that we have, but we need to use them the best that we can and we need to use as many tools as we can. So the idea was that we didn't just rely on the acoustic monitoring but we also had thermal monitoring and insect diet analysis and that was sort of how we rectified the fact that it's difficult to measure that but we want to use the best tools that we have. So that feedback was brought into the plan in terms of using the tools that are available today.

MATT STELMACH: And then adding the requirement to report on the power with which we can detect a change which is good to try.

MARILYN TEAGUE: You might get more insight from those meeting minutes where Jim was very actively making recommendations on it.

MEHRHOFF: What meeting was it?

MARIE VANZANDT: August 20th.

BOGARDUS: You guys talked to Jim after that right? Or maybe Diane talked to Jim and after that as you were solidifying how to make that happen.

MATT STELMACH: We've been actively engaged with Diane for sure.

MARIE VANZANDT: I understand your concerns Scott and that was sort of where that conversation with tier 4 revolved around monitoring and using the tools that we have today to be able to do that. We can't say for certain that we created 60 bats, but we built in other items around that to sort of give that certainty and we're working towards potentially building more to create the package.

MEHRHOFF: Kind of seemed like a 50% increase was kind of like the minimum that you were looking at.

MATT STELMACH: It really depends on what the baseline monitoring shows because your ability to detect change depends on what the baseline conditions are. So it could be really easy to detect a change and it could be very difficult to detect a change. We don't know right now.

MARIE VANZANDT: So Jim stressed the baseline monitoring as an important factor in there and then being able to calculate a power associated with that. I think we're going to continue the power conversation.

SPAIN: Can I ask a question? So just pure timelines. If this gets approved how quickly will you be able to start implementing say baseline monitoring?

MATT STELMACH: We have a timeline in Table 6.2 in Section 6.2.4.8 of the mitigation. So we've identified in year 0, we're doing some infrastructure improvements and installation of ponds, baseline acoustic monitoring and then you know, we continue through the permit term.

MARIE VANZANDT: I think we are chomping at the bit and you know in conversation with contractors how to get this work started, getting price quotes etc., going out to the site so a lot of work is being done in anticipation that we can come to agreement on work towards finalizing an approval for the plan. Acoustic monitoring, the intention is to have that established on permit issuance and get those monitors out there.

MEHRHOFF: So somewhat related to this discussion one of my concerns with the issuance criteria is to have a more vigorous bat activity monitoring at your site so that it can be compared to the mitigation site and then hopefully a control site—we have those on some islands. That was a really big thing Jim and talk about a lot. I don't know if he had any comments for you guys on that or not, but I know we had that discussion a lot. I know I've had that discussion I think with Diane. So that is something to consider because one of the things that we do want to be able to do is kind of track population activity, if you will, at the site to see

whether there's a local effect of the take at the wind farms. That's not something that necessarily will be a deal killer for the HCP. But it's something to look at. I don't know how Jim looked at that. I know it was something we talked about and felt was really important.

FRETZ: Yeah we've required it for others. So what is your plan for monitoring on site right now? I don't remember anything in here on it. Did I read it too fast?

MEHRHOFF: I asked that question earlier. I think you said that there were two ground monitors. And that was it?

MARIE VANZANDT: So there is no longer any commitment to monitoring at the site post construction acoustically. We have four acoustic monitors at nacelle level, but there are no longer acoustic monitors on the ground.

BOGARDUS: I can't remember what it is? I think Kawaihoa it's once every five years or something like that? Pakini Nui, I don't know if it's in there at all. And for KWP II they do it voluntarily.

FRETZ: It's an issue and it's been inconsistent. We were going to revise that recommendation in the bat guidance and so we've been discussing it. It seems like it should have been in this one, but if it's not and staff hasn't put that in I'm not going to get stuck on it. We're going to go back to that guidance and take a look at it.

MEHRHOFF: Yeah, I know that we had talked about the guidance. That was one of the key things we're looking at was trying to standardize the on-site activity monitoring so that we were able to compare and use that as a tool to help understand why some wind farms are having higher rates and some are have lower rates of take. It'd be interesting if we could tie that into activity levels because on the mainland they have tied bat fatality rates to activity rates. We haven't been able to do that as consistently in Hawai'i. So we're trying to see if we could find a way to do that. And so having your wind farm in particular part of that made sense to us and with the all these amendments coming in, the hope was that we get more of those into this round of amendments, but it's not in there right now and that was one that I flagged because I don't know how we determine the impact on local population without that.

MATT STELMACH: There is ongoing commitment to permit long mortality monitoring.

MEHRHOFF: Right. Not I'm just talking about activity, to bats or whatever.

FRETZ: Okay. If there's nothing more—anything else Michelle?

BOGARDUS: No, Sir.

MARIE VANZANDT: One comment. I wanted to make a request we could be put on the July agenda to come back before you guys taking into account these edits.

FRETZ: Yeah why don't we do that. And we didn't get a chance to go look at Jim and Kim's comments; we gotta figure how to do that. But we have a July meeting already set.

BOGARDUS: Is it worthwhile to allow the applicant to reach out to Jim specifically about any comments that he has on this current draft? To ensure that they are addressed to the extent practicable before July?

MARIE VANZANDT: I think our intention would be to reach out to a few of you guys individually and if that's all right, you know, it sounds like from AG side as long as there's not more than two of you. We'll definitely be reaching out to Jim.

FRETZ: Yeah, I think I better call Jim and give him the context and summary so he knows where we're at and I'll look at his comments too just to see if he has comments that play out in this.

BOGARDUS: They're mostly related to, I just I skimmed them while we were talking, monitoring for mitigation efficacy, monitoring for minimization, monitoring at the site.

FRETZ: You're welcome to give him a call. It'd be a good idea to wait until I talk to him to give him a meeting overview and what has transpired so he understands the context.

MEHRHOFF: So Jim will go into more detail on some particular adaptive management triggers at the mitigation sites. We didn't really get to talk about that today.

BOGARDUS: I think all of his comments have already been incorporated, but that's my assessment of it, you know.

ITEM 5. Adjournment

FRETZ: Is there anything else? All right, seeing none. We are adjourned. Thank you.



Ulupalakua Ranch

June 12, 2019

Marilyn Teague, Director of Renewable Services
Marie VanZandt, Environmental and Safety Manager
Auwahi Wind Energy, LLC/AEP Renewables
655 West Broadway, Suite 950
San Diego, CA 92101

Letter of Commitment for Tier 4 Mitigation - Auwahi Wind HCP Amendment

Dear Ms. Teague and Ms. VanZandt:

Ulupalakua Ranch has been proud to partner with Auwahi Wind Energy, LLC in its development of the Auwahi Wind Farm project on our land, and its implementation of the Habitat Conservation Plan associated with the project. The original HCP included Tier 1 mitigation consisting of the preservation of a portion of our Pu'u Makua parcel through the granting of a Conservation Easement to the Hawaii Island Land Trust in 2012, construction of an ungulate proof fence and removal of ungulates, removal of invasive plants, and outplanting of native trees. These efforts have been very successful, and we understand that Auwahi has met the HCP interim success criteria for the Tier 1 mitigation.

We have now reviewed Auwahi's proposed Amendment to its HCP, including its proposed Tier 4 mitigation which would also occur on Ulupalakua Ranch property. Under Tier 4, Auwahi would fund the permanent protection of 1,752 acres of the Ranch through the granting of another Conservation Easement to HILT, the management of water features including construction of new large ponds, and reforestation of hedgerows, all to benefit and mitigate project impacts on the Hawaiian hoary bat.

We are pleased to inform you and other interested entities that Ulupalakua Ranch fully supports the Auwahi project, and Auwahi's proposed Tier 4 mitigation work on our land. Ulupalakua Ranch has a long and demonstrated history of proactive, responsible land stewardship and conservation on the island of Maui. Our partnership with Auwahi Wind is in line with that history and vision. Ulupalakua Ranch is committed to working with you to implement the Tier 4 mitigation as described in the proposed HCP Amendment.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Sumner Erdman
Ulupalakua Ranch

Aloha,

I respectfully request that this letter be included as part of the public record for consideration by the Endangered Species Recovery Committee when determining a recommendation of the Auwahi Wind Habitat Conservation Plan Amendment, to the Board of Land and Natural Resources.

This is a comment of support for the HCP amendment proposed by Auwahi Wind for an expansion of their mitigation efforts. The scope and breadth of their already-established reforestation project has been impressive, and is already having an impact on Maui's landscape and environment.

As a disclosure, I am currently working on a masters' thesis regarding the relationship between *Acacia koa* and *Pennisetum clandestinum* at their Pu'u Makua site. I am aware of sites of reforestation within formerly denuded ranchlands in Costa Rica that have served as "corridors" and havens for rare and endangered wildlife. The same success seen in Central America could easily be replicated in Hawaii. For that reason, I support this amendment.

Thank You,
Torey Jenkins

June 10, 2019

Mr. Glenn Metzler, Habitat Conservation Planner
Division of Forestry and Wildlife
Hawai'i State Department of Land and Natural Resources
Kalanimoku Building, 1151 Punchbowl St., Room 325
Honolulu, HI 96813

Email: glenn.m.metzler@hawaii.gov

Aloha Mr. Metzler:

As Chairman of the House Committee on Water, Land, and Hawaiian Affairs, I am concerned about various impacts affecting Hawaii's flora and fauna that inhabit both our aina and kai. These threats to our terrestrial and marine ecosystems come in many forms, but the single biggest risk is climate change. For this reason, I am strongly supportive of Act 97, SLH 2015, which reduces CO2 emissions by mandating that our island grids be powered by 100 percent renewable energy by 2045.

Reaching this lofty goal will require maximizing the use of all forms of clean, renewable energy available to us. We are fortunate that nature provides Hawai'i a variety of such resources, including wind and sun, but also the potential for wave energy. We owe it to the people of Hawai'i to make every effort to maximize each one of these renewable technologies. Only by using the full array of clean energy sources can we increase our renewable portfolio diversity and improve our environmental sustainability and resiliency.

Wind, the biggest renewable resource, is enormously important to our state's renewable portfolio. I therefore request that all agencies involved proceed expeditiously in their regulatory reviews to avoid deterring investments and delays in badly needed renewable energy sector, which includes wind projects. I feel that this can be done while maintaining proper regulatory oversight to ensure that the impacts are mitigated and all projects are effectively managed.

In this context, I also appreciate the efforts of the wind industry to be good partners in striking a balance between our energy and conservation goals, funding additional conservation advancements, promote more research and being proactive and innovative in the protection of our special native species.

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ensuring the protections to our aina and our people.

Thank you for your appreciation of the importance of the State of Hawai'i's 100 percent renewable energy goal and your ongoing efforts in protecting the environment and native ecosystem.

Mahalo Nui Loa,



Representative Ryan I. Yamane
Chair, House Committee on Water, Land, and Hawaiian Affairs

c: Suzanne D. Case, Chairperson, Board of Land and Natural Resources
David Smith, Administrator, Division of Forestry and Wildlife, Hawai'i State Department of
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