

TAHOE SCIENCE ADVISORY COUNCIL

NOTES | MARCH EXECUTIVE COMMITTEE MEETING

Date: March 23, 2021

Time: 3:00 – 4:30 PM

Location: Zoom

Executive Committee Members: Brad Crowell (NDCNR, co-chair), Wade Crowfoot (CNRA, co-chair), Joanne Marchetta (TRPA), Paul Dodd (UCD), Helene Dillard (UCD) (not in attendance), Mridul Gautam (UNR), Kumud Acharya (DRI), Mark Sogge (USGS), Richard Barhydt (USFS-PSW), Elizabeth Williamson (CNRA), Jim Lawrence (NDCNR), Vic Etyemezian (DRI)

Other Attendees: Pat Manley (PSW-USFS), Laura Korman (LWB), Sudeep Chandra (UNR), Alan Heyvaert (DRI), Geoff Schladow (UCD), Paul Comba (NDEP), Eric Reichard (USGS), Darrin Palean (USGS), Vic Etyemezian (DRI), Laura Patten (LTSLT), Jack Landy (EPA), Alison Toy (UCD), Ahmad Itani (UNR), Julie Regan (TRPA), Ramon Naranjo (USGS), John Melack (UCSB), Ronald Tjeerdema (UCD)

Meeting Goals

1. Review Council work status
2. Discuss Council direction

TIME	AGENDA ITEM	LEAD(S)
3:00	<p>Welcome and Agenda Review</p> <p>Wade: TSAC a point of pride for both Nevada and California. TSAC will be features in the Secretary Speaker Series. Make sure we are letting TSAC evolve. Good discussion focused on moving forward how we can let science influence resource management.</p> <p>[Introductions]</p> <p>Brad: thank you for attending. Today we are looking making a inflection point, for new direction for Council and Executive Committee. Time is valuable, so it's important that there are outcomes and clear goals to make it worth everyone's time. Tahoe deserves our time. I'm optimistic that we'll all be able to come together in a shared vision and plan for moving forward so that we can make TSAC as efficient as possible in terms of protecting Tahoe.</p> <p>Bob: To reiterate our emphasis today is kind of unrevealing the council structure and looking at what type of Council we have, and the council we want, and how we can help the Council grow.</p> <p>Two science action plans really framed some of the council areas as it relates to the lake and then not following the development of the website's action plan in 2019, we, the council embarked on an upland Ecosystem Science to action plan. We traditionally focus first on Lake but it's been made clear that everything flows to the lake and so I think today we're going to start first with looking at the, the upland system. Looked at seasonal clarity assessment during 2019 last year, embarked on the upland Ecosystem Science to action and continued some of the priority work there for the clarity Model review. And then looking forward for the next year we're really looking to advance some more of the priorities, specifically the Lake Tahoe data synthesis and analysis project. Setting up a framework for having a conversation about clarity, and then we're talking about a couple different workshops really to really engage with our management partners and think about how we can better integrate their priorities into the science actions before we really make decisions, but we do want to initiate some of those priorities in the coming year.</p>	<p>Brad Crowell Wade Crowfoot</p>

TIME	AGENDA ITEM	LEAD(S)
3:15	Project Status Report Lake Tahoe Science to Action Upland Ecosystem Science to Action	Sudeep Chandra Pat Manley

Discussion

Brad: I like the direction it's going but Pat this is for you. The observation network sounds really cool. I like it a lot. I'm wondering, I think there's maybe someone listening in today from the league as well but, is this going to be coordinated all with the League's Eyes on the Lake program in terms of their observations and what they're seeing, just so we're not leveraging data and things like that.

Pat: This is an early idea how it gets implemented would be very much informed by these exchanges that we will be having with managers and other stakeholders and partners, this coming summer. So absolutely. What's interesting about the basin is there's a lot going on. Obviously a lot of efforts over, over a number of years, but we're thinking that this is an approach that is pretty novel, in terms of that combination of its objectives in terms of being both terrestrial and aquatic being really accessible to the public and also very scientifically informative, and so I think this will be a value added for sure but absolutely in terms of wanting to set this up in a way that is as complementary to the efforts as possible and yes they doable.

Sudeep: You can think about the League's efforts and others being Eyes on the Lake, but really we need innovative eyes on the watershed if we're going to understand that we, everyone knows it from a management side that we need to manage the watershed and understand. We've done this with some implementation right constructed wetlands managing forests for what we're where we don't have a pulse on, I don't think, in a realistic way and I think that would agree is sort of it's real-time change that we could then understand understanding that the process in the watershed and these indicators and these watersheds. And so to answer your question directly, it could be linked with eyes on the lake, but more importantly to get to it can also be linked with the visualization aspect of trying to pull all of our data that we have together, not just pull it together for sciences sake but to visualize the change that's happening and Tahoe is the perfect watershed where you work globally or nationally. We have lots of data in the watershed. We have lots of monitoring going on in the lake, and having some location where we can pull high frequency new information in, while trying to visualize the data, not just for scientists but maybe for managers in near real-time, with new tools and technologies, or with the public, to share with the public through, for example what they're in pointed out a hydro mapper technique. I think that's, that's really a great vision to be shooting for, and then in my lifetime.

Wade: Likes the idea of sentinel watershed. I love the idea of both, you know, and past presentation this notion of Sentinel watersheds that can be measured in real-time so that we have some real-time dashboard of whole watershed health and he sent in a watersheds, both for the benefit of resource management within the basin, but also what a great public educational tool. And then Sudeep, thanks so much for the commitment of you and your colleagues to do this executive briefing on clarity this summer and continue to really help us understand how you can distill just the tremendous complexity of the clarity question into digestible information that maybe can inform our management. And then lastly, I love the idea of these kind of publicly available real time dashboards that was just geeking out on the website that Darren provided. So I can tell you that the temperature, water temperature of, like, eight different portions of the lake this afternoon thanks to the app that USGS created so, I think, I think we're onto something here. I think while I have the floor I would just say, you know, I'm hopeful that moving forward everything that we're doing at TSAC is really connected to agency investments are that really is consequential to management decisions that we have. I think that's really where TSAC can really take off in terms of impact so thanks for the short presentations I think these are great examples of really how science can guide, resource management.

Eric: I'm aware of, there was work last year, I guess, putting together a report on seasonal and long term, clarity and trend analysis and I just wondered how that fits in or if that fits in with the work that that you described.

Sudeep: Defer to lead author, Ramon Naranjo. As I see it fitting in is that this would really embark us on this journey with this 2017-18 sort of view of how climate might be influencing clarity and divergence and seasonal trends, just to remind everybody that, so that's what led to that seasonal trend. Now trend analysis with existing data, they're all working sort of in layers and in concert because the seasonal trend analysis is one way of looking at life, but now the other thing to think about are these interactions, the model, 3d model for example or a one dimensional model might allow us to get a little more process and mechanisms, not just statistical correlations, or perhaps other types of analyses as well. And then the data synthesis and analysis moves beyond a seasonal trend and clarity analysis where we had specific types of data in there and starts looking at other attributes of the environment that might be driving clarity. So to answer your question simply are there sort of one and the other are sort of building on each other, the most important attribute I think is that we're actually getting all of the data together for us to evaluate and look at and then think about new ways of understanding the environmental change in the lake. I'm going to turn it over to Ramon and Geoff, just to see if they'd like to add anything.

Geoff: The seasonal climate analysis was done with two investigations in mind. One is that over the years, there had been a divergence, an apparent divergence of winter clarity and summer clarity. And I think that was the core question but as Sudeep, said in 2017, there was this huge hydrologic meteorological, yeah, that that greatly impacted clarity so the idea was looking at a range of drivers. And in many ways, I think, the analysis of the differences between summer and winter, what's contributing to clarity and decline was in a way, what led to this data

synthesis analysis, so we now better understand differences summer and winter, but then how can we go forward, year to year, and see how that's playing out and which kinds of data we should be looking at very easy to focus on 2017 that may be unprecedented, but it's part of the continuum that we're trying to understand and provide agencies with the basis to plan. Knowing the range of things that are possible.

Bob: I'll just repeat what Sudeep said, these projects really are layering on top of each other right I think this seasonal clarity analysis was kind of the first cut and really, I think, you know, gave the science committee an opportunity to dig into some of the details of what data are available and what they're telling us, and that, that in turn is informing the conversation about what our predictive modeling tools are and how those can be improved, which again is linked to this idea, then how do we communicate with management community about what we're learning and what we're finding and what's important so this this whole big picture of how we're looking into Lake water quality is. All these bits and pieces are fitting together.

I just want to add with respect to the sentinel watersheds and the wired watersheds one thing that I'm excited about this, is when we start thinking about these large landscape scale treatment projects like Lake Tahoe West, I know there's been some a great deal of modeling work to evaluate what might happen and what the impacts might be, and, you know, this idea of a wired watershed helps us I think from a management perspective, to really, provide the instrumentation and the data to then, then see how these watersheds are responding. Some of these treatment activities too so I think there's a lot of great opportunity to really figure out how these concepts can mesh with management needs and inform some of the decisions that we're making, and so really excited about the idea of these workshops and really trying to figure out how to get some of these off the ground in a way that that meets everybody's needs.

Wade: I think is really key because as I've said, I think it's of interest to Brad and I representing you know our agencies that really all the science that TSAC is championing is those truly informed, resource management and so going deeper with those departments within our agencies or those personnel within our agencies that are making investment decisions or management regulatory decisions obviously is a deeper conversation. So doing these workshops and getting the right people in the room, both hey what are questions that resource managers want to ask scientists to help unpack and then and then what information do scientists have that they can talk through with resource managers. I just think building a connective tissue is going to both inform TSAC, research agenda, but then also just really distill, what's the scientific information that can inform the management.

Bob: Probably late August that we have some information to share, and we can talk about kind of where the some of the outcomes of those conversations and how that that discussions going with respect to advancing that science management coordination. So more to come there.

Wade: On last point, I think we also have to really hold the resource managers accountable to, so it's not just scientists talking to the research managers, resource, you know, but it's also, you

know, sort of the government folks the resource managers identifying hey what are we, what are they doing and what questions do they have etc, you know, so it's bi-directional.

Bob: It's challenging sometimes on the resource management side to really figure out what are the right questions to ask and what are the, and how to ask it and how to how to make best use of the science information that's out there so I appreciate that. We need to hold both sides accountable on this, and you know that that fits into I think some of the conversations that we're going to be having later this afternoon about how we can do a better job of kind of having those discussions.

3:45	<p>Science/Management Partnerships – What works for others?</p> <p>Purpose</p> <p>Diversity</p> <p>Transparency/objectivity</p>	Robert Larsen
4:00	<p>Tahoe Science Advisory Council – Growth opportunities</p> <p>Separating advisory and project implementation roles</p> <p>Emphasize science/management coordination</p> <p>Membership</p>	

Discussion

Wade: Thank you Bob. Really proud of what TSAC has done. It's an inflection point as Brad said and I'm really excited about these recommendations as a way to build on what TSAC has done but also of all, and ensure that it actually can play that role, getting, sort of an agent, engaging or enabling the science that, that we really need from a resource management perspective. So I'm hopeful that the council members will consider this and think through how we can actually help TSAC evolve in the next chapter.

Joanne: Thanks from the approach to some of the sticking points that we've been having that you outlined here in these recommendations is I think, extremely useful. I know that while we're facing daily at TRPA we've got, got all these new pressures. So we're about to unroll some, some major new transportation changes to our system, and it was very important to us to be able to go to the council and say we have a growing need in transportation, how do we engage that need with scientists. And so, these changes that you've outlined here, where we would increase diversity of access to some different expertise is becoming increasingly important, so I appreciate that recommendation here, frankly, I'm supportive of each of the

recommendations here but I thought I would give just a small example of how it is actually coming up for us so we have growing needs right now and sustainable recreation and in transportation. We struggled initially, to know, how we engage those sets of expertise through the council so I think it's extremely important because TRPA is going to be continually looking to the Council for what science is needed and how can the council help guidance in adding to a management decision, so supportive of what you've outlined here today. Thank you.

Bob: The transportation project is a great example, honestly, that has been a learning experience for the council as you said, how do we how do we tap into that, and I'm hopeful that that some of the discussion we're having today will help us do a better job and help kind of build on that success and to try to figure out how we can do more of that, moving forward.

Eric: When you describe the working group roles. It seems like maybe in some ways they might overlap with the current roles of the advisory council members per se I was just curious kind of how you were thinking in terms of differentiating the different activities of these working groups, versus, current way things are currently set up.

Bob: we've had a lot of great conversations with folks about how this works, I think your, your question kind of gets to that heart as well, I think, most fundamentally, my vision is that the folks that are serving the advisory role will recuse themselves, then they're not folks who are going to be proposing on a specific activity or a specific project. And so I think that to me is the you know the primary split. The science team might be made up of council members, it might be a combination of council members and folks from outside the council but really just having a split of the folks who want to do the work or helping or expecting or hoping to, uh to engage into the actual projects, and then having a group of folks that conservative advisory function that that don't have that burden write that, and then have the more objective conversation with some of our partners and help, rather than foreign like I said the RFP, the selection, and how the information is being digested because that's the challenge right now I think is those roles are overlapping.

Paul D: A couple of points I wanted to make. So when you [Bob] and I had a chance to talk a couple of weeks back, we talked about sort of two extremes. One extreme is where you go for full international global peer review of projects where there's a complete and total separation between the people that are helping you assess the selection of a potential solution, responding to an RFP that has perhaps has been defined earlier, versus the sort of more intimate interactions that have happened in this council up until now. Where from what I can see at least there's a lot of interactions back and forth between the resource agencies, and the scientific expertise in the different institutions. So all I would say on that is trying to get some sort of medium grand I think is important here because you don't want to lose the advantage of having that intimate knowledge that is represented by people that have spent a lot of time working locally around Lake Tahoe, and the relationships that have been built up over decades, with between the resource agencies, and some of those groups. At the same time, trying to bring in diversity in all the various connotations but particularly, let's say research or scientific diversity here, I totally agree with that. And the fact that we've had our super Transportation

Studies, through Susan Kennedy and I'm sure others directly plugged into some of the recent conversations is great. There's a ton of other people in areas like air quality and in other areas that I can think of just from our education and I'm sure there's many others beyond that as well. But to go back to your list of three key aspects, and one that I just wonder if it should be called that you're implicitly have measurable impact from TSAC activities in terms of actually defining what you're trying to achieve through these joints activities where science is impacting and advising the resources management agencies, and ultimately, what are the outcomes that the resource management agencies are hoping to achieve. I think focusing on what those endgame goals actually are upfront understanding them real clearly will help keep everyone kind of marketing, I think, in tune with each other and going in the same direction and again it's not that it's not happening but I would like to see a bit of a higher emphasis that would make it easier to determine that collectively we're actually making progress, not just a series of different kinds of projects.

Bob: I think, to some degree what you're alluding to, I think is a strategic planning process, right, like what is the council trying to achieve and how do we track that and, you know, in my role it's something I've resisted simply because of the magnitude of that I've been involved in a couple different strategic planning processes and realizing just how challenging it can be, but I do think that we're moving in that direction with the council, I think circling back to membership. I just know that there are, there are folks in each of your institutions that know UC Davis, DRI and UNR, there are folks that do a lot more of that do a lot more of this type of coordination this type of programmatic organization, and try as I might, I don't have those skills, personally, and so I feel like the council would benefit from bringing in some of that that academic perspective on how this is done. And bringing those people on I think can help facilitate that strategic planning and that sort of productivity setting that I'll be talking about.

Paul: I think in terms of these new areas particularly just defining in transportation welcome would be the most useful I'll come to that I can define the inputs that are needed. So I direct responsibility for 20 research institutes and centers, and pretty much all of them have five year strategic plans. But that's quite different to this multi stakeholder requirement here at the lake and I agree, a strategic plan overhaul for a scientific direction and advice on Lake Tahoe is going to be unbelievably complicated, but at least in these new areas that there hasn't been existing activity just really defining what would be the most useful kind of forward direction so that you understand what the end goal is will really help I think identify who would be the most useful partners to bring in, into the discussion to try and facilitate that scientific and research advice to the agencies.

Joanne: I was going to say, that's exactly how we did engage, we came and we said, we have some very targeted questions about what actually drives VMT in the region. It was just a small example of how we did engage in exactly that way, it started as a narrow question and we said how best do we answer that and who has the right expertise and so, you know, as Bob describes this, this can be fairly organic you can put together a working group of scientists in an area, and they then provide advice to the agency as to, we have the best person for that or

someone else has this person to that so it's one of the reasons that I kind of support this idea of science-oriented working groups because I think there will be a myriad of questions.

Brad: I also see it as a little bit of a chicken and egg issue, because we're trying to take a more ecosystem wide approach in the basin. And until we fill in the blanks within the ecosystem that we haven't looked at as closely as over the years. It's hard to know where is that most immediate pressures are or what needs to be done. And so it's balancing those things as we get a better, more complete and clear picture of the pressures and how that can help us direct us into what kind of expertise and additional scientific needs and management problems we need. I agree with you, I think we just got to balance that with getting a complete picture.

Julie: I would just summarize this concept with echoing what I heard you say earlier Bob that we have benefited from world class scientists for decades and Tahoe in the Natural Resources science areas and the physical nature of the lakes ecosystems where we see emerging this new need is much heavier focus on social science, because the emerging areas of sustainable recreation tourism management, transportation, all really get embedded in the side of the equation, and how do we better protect our natural resources by engaging the people who are living here visiting here and commuting here. So just looking at that as the big picture, then as Joanne said we can drill down into specific needs, as we dive into these particular topics but in general I think we just see a future where those social science expertise, we want to grow that and it's hitting that tipping point with some of the pressures that we're facing right now.

Jim: A little bit to add I really agree with everything that's been said particularly you know the work that you know the two states have been doing regarding sustainable recreation and transportation certainly I liked the need to get some different perspectives. At the same time, I wholeheartedly agree with what folks have been saying and Julie just said we've, we've had the fortune of having some really world class scientists do work in the basement. So, it strikes me, this moves forward. Bob as you work with the council I think the trick is going to be, how do you bring in some more different perspectives. How do we create that separation that I think I heard you say that it'd be beneficial in the program to have a little bit more separation between the folks doing the work and the RFPs and the folks given the advice. And how do you create that separation with the working groups but not alienate some of the institutions and folks that have been working so hard I don't have an answer for that, I just kind of wanted to throw it out there that that's going to be something you have to be really mindful about working with the council and how to set that up. But that being said, I do like what I'm hearing it, it does seem to make sense and it seems like it is sort of the next iteration of TSAC.

Bob: It's been really exciting to me to have different agency partners and different folks. Reach out to me, or reach out to the Council for Science needs right I think it's becoming a growing assumption that the council is kind of the hub of science in the basin and, but as we move forward, I think, maintaining that connection and maintaining the relationships that we've built over the last 60 years are really important. I also feel like just because you're not sitting on the council doesn't mean you're not doing science in Tahoe. So I think we need to figure out what

that balance is of making sure that the folks that are on the council have maintained that connection with the individuals in their institution as we've been talking about whether it's bringing in some special expertise or tapping into the folks that have been involved in along for a long time so it's going to be interesting. And I too share your perspective, Jim, I don't have the answers really. And, but I'm looking forward to kind of running our way through the forest in the next couple of months we've talked about RFPs a couple of times and honestly like the council which is the council is just embarking on our first RFP processes we just haven't had the resources to really justify it, and so I feel like now that we know there are resources, and you know potentially more resources in the future like that the need for an RFP process in many ways is driving this conversation and I think possibly drive some of the structure that that comes out of it.

Paul D: Just to critically, you know the process that the California Sustainable Growth Council used when they were in stock have moved completely I remember it well we had a whole series of town hall meetings on our campus and elsewhere, where people really weighed in to try to contribute to what their first RFP would look like. Again, I think the direction that you're going with these kind of key stakeholder engagement workshops is a good one. That will help form, I think at least some of those kind of broad creativity areas. But the Sustainable Growth Council did a yeoman's work in over the course of, I think it was nearly a year probably engaging with a whole load of now you don't necessarily need to do some of the coins on that scale because this is the whole California in the context of what they were tasked with doing, but that kind of approach I think is warranted here.

Bob: SGC is awesome and I it's been it was great to talk with them, I actually the staff there sent me a bunch of their documents which is really helpful and I'll just share that one of the things that, that really resonated with me is the way they craft RFPs is kind of, there are two big areas right one is technical validity, like, what are you doing and how are you doing and what's your approach on that kind of a traditional RFPs but they put equal weight and equal importance to what is what is your engagement then. Who have you talked to, and what is your plan for engaging with partners, moving forward as you develop this project. And that to me I think is something that the council can learn from and the council can build from. As you said, like, I don't think we need to go, you know, full as to what SGC is doing but I do think some of the ideas that are out there. I don't have the bandwidth to recreate the wheel and unfortunately there's a lot of wheels out there to look at.

Vic: I think this looks like a pretty good direction. And some of the devils in the details.

Ahmad: Same thing as Vic said want support the city council and that is accurate.

Bob: I'll be working with individual council members to kind of figure out who best to talk to you but I do look forward to having further conversations with executives at the institution so you know I think, as I understand the way that the structure was working, the new folks were responsible for picking council members right and I think at this point it's initiating a conversation about the type of council members that we're looking for and then, you know,

having getting some feedback from the institutions about what the options might be trying to be a little bit more thoughtful.

Vic: Something like a, maybe not a formula or something like a position description, what the gaps are, that can really kind of help them within our institutions.

Bob: From the discussion we've been having again thanks to Julie and Joanne for kind of weighing in on kind of the transportation and social science case I think those are, those are some of the most immediate obvious things, when we can anybody else that would like to chat.

Geoff: I've enjoyed listening to the different perspectives. I guess one that puzzle maybe the wrong word, but let's say this topic of transportation, where there currently aren't any transportation specialists or the council, but when the need arose TRPA brought forward that they need. The Council, essentially created, brought in that expertise. So, in a way, what the system has is what I believe. TRPA seems very happy with people that engage I think from UC Davis and possibly UNR and DRI as well. So, in some ways it's what you've outlined in that document having working groups, different expertise, that sort of exists already. Maybe it needs to be more formalized, but it's, I guess when I read the document, it just seemed that it was portraying the council as being broken. And I don't think it's broken or broken as I interpreted the document to say.

Bob: And my apologies that that's, that's how it was portrayed I think I need to be careful but as I've been said, I think the council's been really successful and what I think what I and others maybe are seeing as the council is growing and evolving. And you're right, there's been the transportation example actually worked really well, to some degree. That said, like I know that, I can't speak for TRPA, but in many ways the questions were formed, right, like it was kind of like let's go out for this project, rather than being able to have a transportation someone on the council to have a conversation about what that project should look like or what the project needs might be or what the you know different metrics are, you know, having a more general conversation, I guess, and it's some of the challenges that we faced on the lake side too, right, it's about having these more general conversations as opposed to project specific discussion. So, yeah, I would agree with you. The council isn't broken, and I certainly am not trying to fix anything per se. I do think it's more just a matter of creating some, creating a more effective Council, and trying to build on what you all have built today with what the council where we are.

Paul: At least with the existing institutions, I think the selected representatives on this group are people in positions that understand expertise across the entire expertise. That's my job to know that. Happy to play that role of orientation. There may be expertise from regional institutions that need to be brought in, interested in a way to facilitation the identification of expertise. Leveraging the expertise of this Executive advisory committee more so even, you didn't come to me, and ask me about the capacity of Dan Sperling as director of transportation studies, so you knew where to go, but may be other times an open call out to this group would be helpful in helping to orientate things.

Bob: In my position, usually have Brad and Wade as my touchstones but I appreciate your comments that there is a great deal of support on the institution side it is a good opportunity to take better advantage of that.

Wade: We recognize we want to broaden our scientific focus beyond the natural systems. Separating where appropriate those who are doing the research on those who are structuring the call for research just seems like good government. In another respect so Bob from my perspective, this is, I think you've planted, we've planted a good constructive seed here. I think these are all good questions that are being asked and we need to really kick the tires on this and potentially poke the holes on this because we want whatever changes we make to ultimately be effective. Speaking for myself and the agency that I lead. You know the time and energy that we're putting into TSAC, makes sense, because we see the promise of the science informing resource management. And so I think what we're telling you is the entities that really are, hopeful that TSAC can continue to play this role that we need, its focus to broaden its composition to diversify and for us to be really clear about how we're setting the research agenda in a thoughtful way. So I wanted to provide that input at least from the California State agencies perspective into that summary.

Bob: We need to advance some of these things as I kind of said my presentation at the end there to see what works, what doesn't and how do we move forward. I'm really grateful that there are a number of council members who are listening to the discussion today so when we meet next month, I think we'll have a really, really productive conversation about kind of next steps and where we go from here. I also want to acknowledge the council regional management team. Lizzie, Jim, Joanne, and our co-chairs that I need on a pretty regular basis that groups, a great support network for me and I think a great support for the council to kind of really provide some of this feedback and so I'm looking forward to working with those folks to kind of kind of start to dive into some of the details as to how this works. Geoff, I do appreciate your comments and thinking about thinking about what's working now on the council and not trying to not trying to fix something that's not broken but really trying to think about how we can we can evolve the system to advance our goals is really where we are.

4:25	<p>Closing Public Comment</p> <p>Brad: The blessing and the curse of Tahoe is that there's so many players involved in everything. And when it comes to the science and research agenda, I think we can make it more of a blessing, because we can go from the vast resources we have across our academic institutions on between, between two states and that's lucky we get diversity of participation from local institutions and scientific backgrounds and we should leverage that.</p> <p>I also don't see this as fixing of it as broken I see it as building on success, and maximizing potential. I think, to be perfectly candid shortcoming in my mind on TSAC is that it's not structured in a way right now, that it easily evolves with the science and policy needs of the day, and we need to create the mechanism that allows for that to be easily done without having significant upheaval so that has been smooth and coherently and that's my goal is to make us relevant on a yearly basis, that really informs a near, medium, and long-term story about how we're all working together to protect Tahoe. We are pretty lucky to be organized around something that's so unique like Lake Tahoe, and have a built in annual high level event [Tahoe Summit] with major players to take advantage of, and if we're not really maximizing all those opportunities, then we're doing ourselves a disservice. So that's my goal and I hope we all share it and I don't I get from this conversation and I look forward to working with everyone to get there.</p>	<p>Brad Crowell Wade Crowfoot</p>
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