



Integrated Climate Adaptation and Resiliency Program

Resilience Metrics Work Group Meeting

FEBRUARY 24, 2021

10:00 AM – 12:00 PM (PDT)



Agenda

Item 1 | Welcome and Roll Call

Item 2 | Approval of Meeting Minutes

Item 3 | Lightning Talks on Resilience Metrics

Item 4 | Discussion on Social, Natural and Built Resilience

Item 5 | General Public Comment

Item 6 | Wrap Up and Meeting Adjourned



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Resilient Built Systems

"Infrastructure and built systems withstand changing conditions and shocks, including changes in climate, while continuing to provide essential services."

Why do we want to measure resilience in built systems?



How would we know if California has resilient built systems?



When last we met...

1. Why do we want to measure resilience in built/natural/social-human systems?
2. How would we know if California has resilient built/natural/social-human systems?



Resilience Metrics Survey

1. Do you use climate resilience metrics in your work?
 - a. Why do you measure climate resilience?
 - b. Please share your indicators and metrics
2. Have you come across climate resilience metrics from other organizations that you think could be useful to your work?
 - a. Please provide examples of climate resilience metrics that you think are worth sharing.
3. What do you think the state should measure to demonstrate its progress towards achieving climate resilience?



Why do you measure climate resilience? (n=15)

- ❖ To measure progress, to understand adaptive pathways
- ❖ We measured resilience to inform our restoration strategy for Lake Tahoe West, a project designed to take an all-lands approach on the west shore of Lake Tahoe.
- ❖ To ensure funds are being invested in projects that can withstand climate change impacts
- ❖ To determine and outreach our progress
- ❖ To better understand risk
- ❖ To assess function and value over time of publicly-funded capital improvements



Why do you measure climate resilience? (n=15)

- ❖ To help measure the effectiveness of coastal adaptation or hazard mitigation strategies in preserving coastal ecosystem functions and protecting infrastructure, people
- ❖ Health and socioeconomic factors related to health
- ❖ To measure degree of challenge, and progress.
- ❖ To determine if adaptation actions are working to address climate impacts
- ❖ Part of overall monitoring program and region sustainability dashboard
- ❖ To see how well the community is responding to different strategies or crises



Why do you measure climate resilience? (n=15)

“Resilience alone is not something that can be measured in one metric or indicator, but will require a suite of information to be assessed comprehensively to detect changes to a given system, habitat, community, etc. Understanding these trends over time is so important to informing good investments, planning, and policy development.”

What do you think the state should measure to demonstrate its progress towards achieving climate resilience? (n=38)



- ❖ GW levels, GHG's of course, temp, snow, rain, flood, fire
- ❖ Knowledge community has about its climate
- ❖ Critical facilities, individual homes, businesses protected from a climate hazard
- ❖ Fire return interval, biodiversity, water stress
- ❖ Watershed partnerships should define the appropriate metrics for their watersheds.
- ❖ Reduction in GHG; and critical infrastructure redundancy
- ❖ Social/spatial information to understand resilience/adaptation efforts through an environmental justice lens. It would also make visible the areas that still need work/improvements.



Interagency Resilience Work Group

State partners working on adaptation and resilience

Resilient Social Systems

"All people and communities respond to changing average conditions, shocks, and stresses in a manner that minimizes risks to public health, safety, and economic disruption and maximizes equity and protection of the most vulnerable."

Frame 1

Why do we want to measure resilience in social systems?

to identify health disparities and direct our efforts to the most vulnerable

Resilience priorities boil down to: Resilience for whom?

To identify ways to support and build community capacity to respond to stresses

To ensure that recovery following a disaster is equitably addressed

To keep the focus on resilience (of which health equity is a part) since what we measure gets done

to ensure public safety and community resilience in the face of climate impacts

People are the actors who will move us to resilience, if we don't nurture their resilience, we can't get anywhere.

Also we are at the end of the day a human society moving towards a preferred (hopefully) future, if we can't see ourselves and our needs in that future, we're going to leave many out and/or do harm while trying to make things better.

to better build equity into our resilience work

to understand when social systems are breaking down or broken

to make sure vulnerable communities are not getting impacted by climate change to a greater degree

to prioritize resources to most vulnerable communities

To foster equity: prioritizing resources for those who have experienced systemic disinvestment

To ensure that the social system doesn't erode with changes due to shocks/stressors, etc. and instead people have access to (at minim) basic needs but preferably to more than that

to understand the underlying factors that determine how well a community can cope and address those

To prevent and reduce health and equity impacts of climate change, especially on communities facing inequities

to avoid the historical pattern that the gap between the most vulnerable and the most secure widens when systems are stressed

to ensure that mitigation and adaptation strategies actually improve quality of life

to identify any maladaptation and resulting disproportionate negative impacts

People are the ones who initiate and operate resilience strategies, and they need social system to do that

we need to understand the impacts to social systems and integrate this into planning and adaptation- otherwise this will be a barrier

To focus on human impacts in addition to infrastructure and nature

equity and fairness for its own sake and to ensure government provides benefits equitably and fairly

Because in Ag at least, certain communities suffer directly with the weather, affecting cohesion, education, etc.



Analysis of Discussion Findings

Protection of natural and working lands/environment

Adaptation/Resilience

- physical processes are in state of equilibrium
- responses to drought and extreme events
- coastal wetlands and beaches maintain pace with rising sea-levels
- increase in the rate of migration and integrity
- reduction in the rate of natural system disappearance/damage
- rates of beach loss
- continuation ecosystem services
- assess capacity to respond to stressors, visitation

Biodiversity/wildlife

- biodiversity (growth/loss)
- biodiversity is maintained
- thriving species
- gain or declines in species
- wildlife adaptation/resilience
- ecosystems not being overtaken by invasive species

Working lands

- soil resistance to erosion
- healthy soils
- pest patterns in crops
- pets and stock animals taken care of
- rangeland animal health

Water Resources

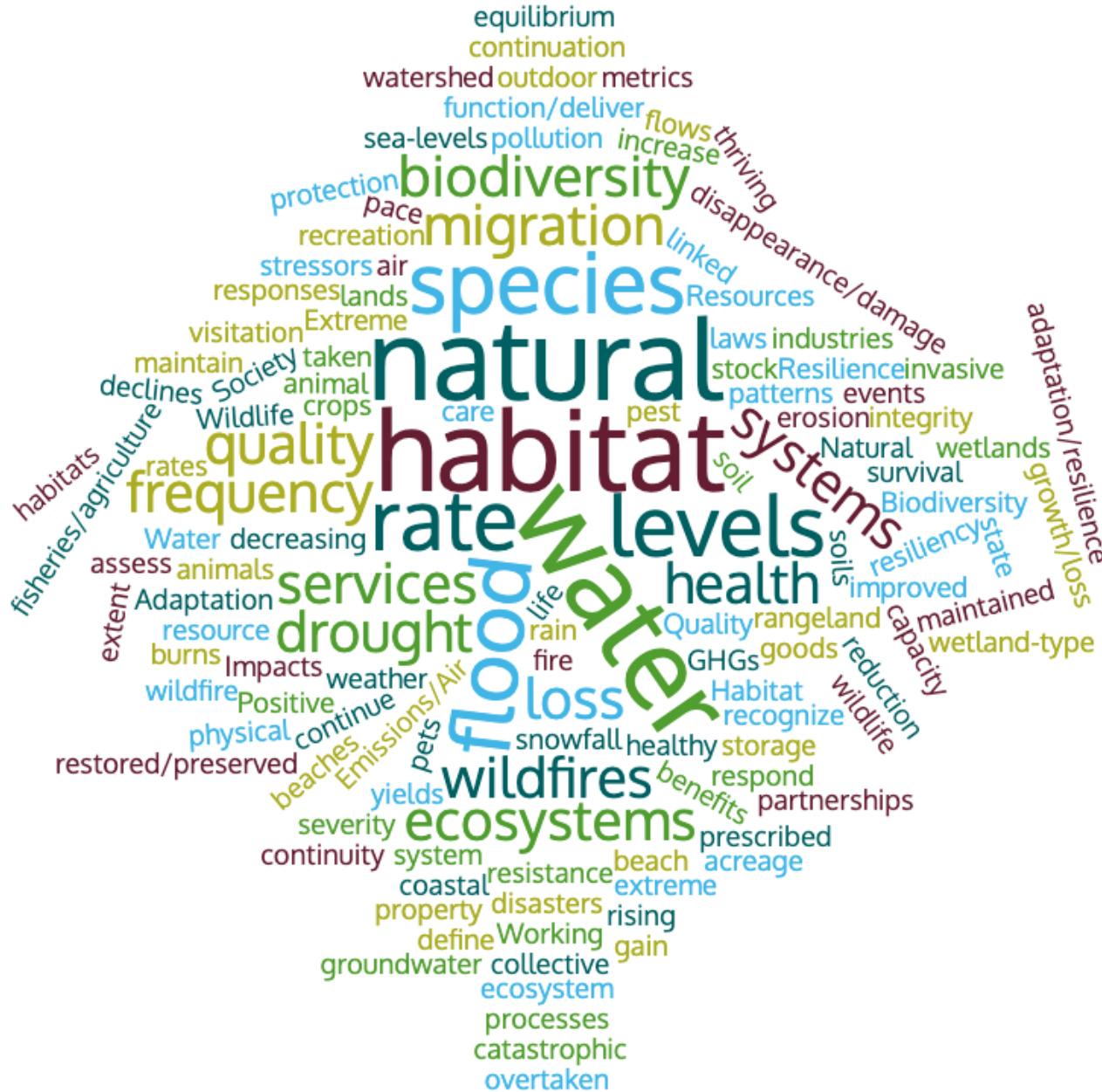
- rate of water storage
- water flows
- water levels
- watershed partnerships should define their own metrics
- groundwater levels
- water quality

Climate Mitigation/Risk Reduction/Disaster Relief

Natural disasters

- wildfire habitat

Natural Resilience



- ❖ Capture co-benefits
- ❖ Capture intrinsic value of nature – habitat/biodiversity
- ❖ Look to SFEI Adaptation Atlas as way to see how natural systems help protect from climate impacts

Social Resilience

- ❖ Crucial to use environmental justice / frontline community lens to identify where to focus our resources to protect human life
- ❖ Equity has to be the priority
- ❖ Social resilience is glue to ensuring resilience across natural and social systems
- ❖ Look to EPA's update of EJSCREEN, which is currently updating their data and analysis on environmental justice and social systems





Resilience Presentations

Dr. Robert Lempert
RAND Corporation



Resilience Presentations

Kimberly Clark

Southern California Association of
Governments



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Bringing it all together





When good metrics go bad...

- ❖ Money spent isn't everything
- ❖ Context specific
- ❖ Fair
- ❖ Transformational
- ❖ Comprehensive
- ❖ Robust

- Courtesy Stephane Hallegate, World Bank



Metrics Discussion

How can we strive to get it right?

What should we watch out for?



Digging into Social Resilience

What social resilience indicators should we develop?



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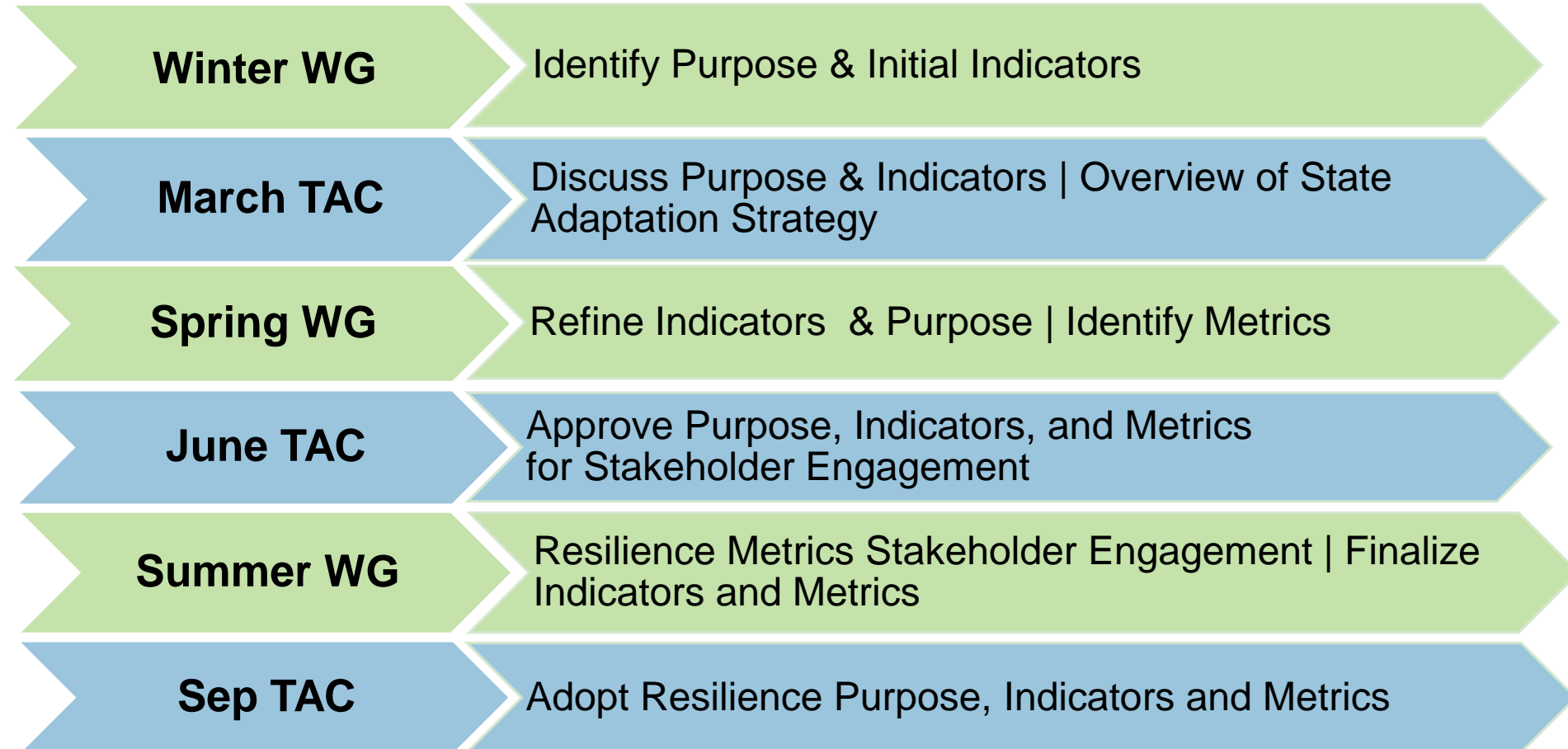
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Resilience Metrics Timeline





Thank you!

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