

CLIMATE INSURANCE WORKING GROUP MEETING | MAY 20-21, 2020

DRAFT MINUTES, TO BE CONSIDERED AT THE NEXT WORKING GROUP MEETING

MEETING MINUTES | MAY 20, 2020

Participants:

Commissioner Ricardo Lara | California Department of Insurance
Alice C. Hill (Chair) | Senior Fellow for Climate Change Policy at the Council on Foreign Relations
Carolyn Kousky (Vice-Chair) | Executive Director, Risk Management and Decision Processes Center, Wharton School of the University of Pennsylvania
Dan Firger | Co-Founder, Great Circle Capital Advisors
Kathy Baughman McLeod | Director, Adrienne Arsht-Rockefeller Foundation Resilience Center at the Atlantic Council
Sona Mohnot | Senior Policy Analyst and Program Manager at the Greenlining Institute
Michelle Passero | Climate Change Program Director, The Nature Conservancy
Katelyn Roedner-Sutter | Manager for U.S. Climate, Environmental Defense Fund
Lloyd Dixon | Senior Economist at the RAND Corporation and Director of RAND's Center for Catastrophic Risk Management and Compensation
Louis Blumberg | Principal of Blumberg West Consulting
Rex Frazier | President, Personal Insurance Federation of California
Raghuveer Vinukollu | Natural Catastrophe Solutions Manager, Munich Re
Serena Sowers | Vice President, Public Sector Solutions North America, Swiss Re

I. Welcome and Approval of February 21, 2020 Meeting Minutes

Deputy Commissioner Mike Peterson welcomed the members of the working group and thanked them for their continued dedication and contribution to the working group while facing the variety of challenges presented by the ongoing pandemic.

Because of the pandemic, this meeting was held telephonically. Deputy Commissioner Peterson advised that the public was also able to listen to the meeting telephonically and reminded the members of the working group to verbally share all substantive comments. An online conference monitor available to co-hosts should be limited to identifying that members have a comment to make or to advise the teleconference vendor of any technical issues. Deputy Commissioner Peterson also reminded the public that meeting materials were accessible via the website of the California Department of Insurance, including agendas for May 20-21 and draft documents discussed in the May 20 meeting. After taking roll, Deputy Commissioner Peterson then turned the meeting over to Chair Alice Hill.

Chair Hill welcomed the working group, noting the difficulty of working through this challenging time. She appreciates working group's continued efforts in determining what solutions are available to address climate risk. Chair Hill identified that climate change is occurring and the risks have manifested. Chair Hill pointed to the significant disasters

that have occurred just since the beginning of the pandemic to underscore the importance of identifying how insurance products can be used to make the world safer.

Chair Hill asked, in the course of approving the minutes from the February meeting, whether there were any objections to the meeting minutes as written or did any members wish to revise the minutes.

Member Blumberg identified that on page nine he was credited with a statement when, in fact, the speaker was Member Sowers.

Chair Hill requested he specify the proposed amendment and Member Blumberg stated he wished for his name to be replaced with Member Sowers.

Chair Hill proposed the adoption of the amended minutes. The votes were all ayes; No nays, abstentions or further discussion. Chair Hill asked the moderator to seek public comment, if any. There was no public comment. Chair Hill confirmed the amended minutes were approved.

II. Discuss and approve letter response

Chair Hill advised that Item II on the Agenda is to briefly discuss a letter the Department received on behalf of the working group. The letter was circulated to working group members. It includes many thoughts and suggestions for the working group to consider as it develops recommendations. She thinks the working group should ask each subgroup to consider the letter as they work. Chair Hill asked if there were any objections to that plan. Hearing none, Chair Hill advised the group would proceed.

Member Sowers asked for clarification of the proposed plan.

Chair Hill clarified that the group would consider the recommendations provided in the letter as the working group develops its recommendations.

Member Sowers agreed, no objection.

III. Group Discussion: Each subgroup shares and presents 2-3 recommendations for critical input from other group members

Chair Hill advised that Item III on the agenda allows for each subgroup to present two to three draft recommendations. Each recommendation is considered draft and they are meant for discussion and revision. She identified that the Extreme Heat subgroup would present their recommendations first. The Flood/Sea Level Rise subgroup would share next, followed by the Wildfire subgroup. The working group would then discuss each recommendation one by one. Chair Hill recommended the working group consider cross cutting recommendations and whether recommendations may be characterized as short term, mid-term, and longer term to identify areas for more immediate work, as well as to

identify those that will require a longer time frame or are more difficult to eventually achieve.

Extreme Heat Subgroup

Member Blumberg advised that extreme heat is a problem that leads to sickness and causes death. It impacts many global populations. The science is very clear in the prediction of heat waves, including frequency and severity. The National Weather Service predicts a hot summer this year. Los Angeles is opening cooling centers. Member Blumberg asserted that there is general lack of awareness of the threat. The Extreme Heat subgroup has focused on urban heat and vulnerable populations. They have developed five recommendations but will discuss two which are foundational at this meeting.

Member Baughman-McLeod shared that as native Californians, she and colleague Giovanna Grigsby-Rocca prepared the extreme heat public sector cost analysis recommendation and are deeply committed to California's health and success. Extreme heat is a silent killer and impacts infrastructure. Extreme heat has accelerated from 20 areas experiencing 90-degree heat to 35 areas in the US. The compounding impacts of heat with the layering in of COVID-19, the hurricane season starting early, and the underlying threat of wildfire have problematic implications for recovering from health and economic crises. This recommendation is an effort to build more informed and protective financial products, including risk transfer products to get in front of these heat events, such that intervention can be deployed to save lives and expenses. This particular exercise seeks to identify what a heat event costs. In many cases, governments at the local, state and federal level have different entities, departments, and agencies that do not interact and collect data differently which complicates a clear understanding of what a heat event costs. This recommendation is to perform a backcasting of what a heat event costs. What must be done to identify the impacts to different departments and jurisdictions to begin to understand the cost? What is needed to identify the impact to individuals in terms of health and death, to communities and to the economy? Member Baughman-McLeod argued it is necessary to look at different methods to identify these costs and how this backcasting could work. There is not a clear methodology of how to assess the cost of a heat event.

The Extreme Heat Subgroup suggests looking into a specific city, or several cities, and look at what an extreme heat event costs and build that methodology in order to inform the Commissioner's ability to craft new products, get in front of heat events, and deploy capital quickly in response to heat events. The Adrienne Arsht-Rockefeller Foundation Resilience Center in Washington D.C. is looking at triggering the payout of an insurance product for heat which may be applicable for other subgroups. There is a need to design parametric products where the trigger is based on an indicator that occurs prior to a damaging event or on a forecast which allows for urban search and rescue, cooling stations, and other measures to be utilized to get people to cooler, safer places. Member Baughman-McLeod asked if there were any comments or questions.

Member Passero asked how the Extreme Heat Subgroup's analysis envisions the overlap or integration of fire with other perils that are present.

Member Baughman-McLeod advised that is yet to be determined. They have found that post-event backcasting methodology could be standardized and build new muscle for governments to collect data in new ways. For example, medical data now may indicate renal failure without notation of the extreme heat event that led to renal failure. The cost to get in front of a heat event with specific intervention needs to be addressed.

Vice-Chair Kousky asked is the recommendation to task the Extreme Heat Subgroup with performing this? Or put out a call for another entity to do this? Would the Department of Insurance do it?

Member Baughman-McLeod thinks it would be up to the working group to direct the recommendation but is not suggesting the Extreme Heat Subgroup execute the backcasting. Funding and staff would be needed. The initial recommendation is to identify what needs to be done. Who and how that would be executed has not been discussed.

Deputy Commissioner Peterson asked how might the back-casting approach differ for areas that experience extreme heat but to varying degrees?

Member Baughman-McLeod responded that there is the target for the maximum understanding of the exercise but an area's willingness and ability to participate is a factor. The Extreme Heat Subgroup has not discussed varying the approach and recommends starting with the county of Los Angeles. Member Pawling may be able to partner with this pilot. It would be ideal to examine different types of communities which yield different results.

Deputy Commissioner Peterson agreed that approach made sense.

Chair Hill thanked Member Baughman-McLeod and the Extreme Heat Subgroup for their important and well-rounded work and turned the conversation to Member Sohnot.

Member Sohnot shared that the Extreme Heat Subgroup identifies a need for an education campaign. The subgroup proposes that Commissioner Lara work with the government at state and local levels, and specifically with the Public Health Department, to launch an extreme heat campaign. Extreme heat events are expected to increase in duration. There is a general lack of coordination and clarity in response to heat events so, in effect, no one is responsible. It is challenging to create insurance products in this space. The subgroup further recommends developing extreme heat risk communication. It is difficult to understand the severity of risk these events pose. The Extreme Heat Subgroup makes 11 recommendations to decision makers. Member Sohnot will highlight several of these. The Extreme Heat Subgroup recommends:

1. Commissioner Lara meet with Public Health Departments to develop educational materials. Commissioner Lara can share the educational materials by cohosting the working group and develop the planning of research during their committee meetings. He may choose to invite local government officials and risk managers to attend which would enable the Commissioner to learn about the approaches local governments are using and identify which issues need to be addressed and how an insurance product might work.
2. Commissioner Lara conduct a Road Show and meet with mayors and local folks about different requirements such as climate action plans and safety and emergency response plans to identify what is taking place, where gaps exists, and how insurance can take a role.
3. Commissioner Lara speak at Climate Adaptation and other events to share the findings of the working group and to see what other states are doing.
4. Commissioner Lara work with the administration for public support of the education campaign on extreme heat like Save Our Water to reach statewide water conservation goals. Partner with community-based organizations of areas effected by extreme heat.
5. Commissioner Lara work strategically with the state legislature and the Governor to name heat storms like how hurricanes are named. Heat storms can be categorized to indicate severity and other information such as location and guidance may be issued to alert Californians (example; "Category 4 Warning: Wear loose, cool clothing, stay indoors with closed curtains or blinds if you are elderly).

Member Blumberg emphasized that the costs of Extreme Heat events are not well documented. The work needed in this space will be building from the ground up.

Chair Hill thanked the Extreme Heat Subgroup for their work and turned the meeting over to the Flood and Sea Level Rise Subgroup.

Flood and Sea Level Rise Subgroup

Member Vinukollu advised that it is important to understand how flooding has impacted everyone. According to FEMA, 98% of US counties have flooded in the past decade. 15% is the insurance take up rate for flood insurance. In California, the take-up rate is as low as 2%. California has experienced floods; the main sources has been rain. California is home to narrow rivers extending miles and carrying as much water as 15 times of the Mississippi River combined. Historically, this had a substantial impact in Central Valley in Sacramento's great flood in the winter of 1861 and 1862. This is a reminder of how a significant event of that magnitude can occur again. There is a report by the USGS highlighting what the impact could be. The Flood and Sea Level Rise Subgroup focused their attention on recommendations in 4 focused areas. Specific recommendations for those four areas are:

1. Risk Communication: Access to digital information on flooded properties.

2. Risk Communication / Insurance Solutions: Discourage development in High Risk Zones.
3. Planning / Risk Mitigation / Insurance Solutions: Increasing Community Level Mitigation through existing “Abatement districts” and “Planning & Zoning Law”.
4. Planning / Risk Mitigation / Insurance Solutions: Increasing Community Level Mitigation through existing “Abatement districts” and “Planning & Zoning Law”.

Vice-Chair Kousky then spoke directly about the need for risk communication and identifying the challenges of understanding and communicating risk in a way that is accessible and actionable. The subgroup recommends:

1. The state maintains a digital database by address and be a required part of property disclosure. Information on flood risk is not currently available in market tracking. The database would make it easier for people to understand and evaluate risk before they assume it. The city of Portland already does this so there is a working example to reference.
2. Equipping real estate agents with information to sufficiently inform potential buyers about risk hazard to enable buyers to make sound decisions. A county in Florida is currently piloting this. California may build from that pilot project.

Member Baughman-McLeod suggested the working group consider the Commissioner take certain steps across all perils with clear action items.

Vice-Chair Kousky agreed, identifying that cross-cutting action items may lead to easier implementation.

Chair Hill concurred regarding the value of adding specificity of who should do what to strengthen the recommendations overall.

Member Vinukollu turned the conversation to Member Dixon to present the subgroup’s second recommendation.

Member Dixon shared that the second recommendation is for the state to develop maps of high flood risk areas and areas critical to mitigating the effects of climate change, similar to CBRA zones, where any development or infrastructure will be discouraged by the state. For background, at the federal level there is the coastal barrier resource system which was established to encourage conservation in hurricane-prone biologically rich coastal barriers. Most new or substantially improved residents and businesses do not qualify for certain federal funding or financial assistance and national flood insurance policies are not available in these areas. While there are no coastal barrier zones in California as the state does not experience that risk, but the idea is to draw on CBRA system to designate areas in California to create areas where there would be no state funding or state-funded infrastructure or development in those areas. Examples to be considered for designation include coastal areas that mitigate the effects of more damaging wave action or storm surge. A second example is areas that

have a major effect on downstream flooding. A third example is areas close to floodways or behind levees where development should be discouraged. The insurance angle is that there would be a prohibition of state funding in these areas. Commissioner Lara would consider how to restrict insurance subsidies if NFIP policies are not available, how to ensure NFIP subsidies are not available in these areas, and not allowing FAIR Plan subsidies in these areas, and to limit the insurance regulation that would exist in these areas.

Chair Hill agreed that using the CBRA model for California is a fantastic idea and shared her opinion that the model should be used by the federal government across the nation. She does not have the figure off hand but knows that the estimates of what has been saved because of CBRA is the billions of dollars in recovery cost. The federal government does not underwrite the development or the disaster recovery in these areas. California could lead the nation in implementing this model to help to drive the land use issue, to get highly vulnerable people out of flooding areas, and ensure against new development moving forward.

Member Passero flagged that, while they are not discussing the specific recommendation today, the Wildfire Subgroup recommends a conceptually similar working recommendation; this is an additional opportunity for cross-cutting ideas.

Chair Hill agrees these ideas are applicable to multiple perils.

Member Vinukollu advised that there is one additional recommendation that is common with the Flood and Wildfire Subgroups but before that he would like to thank Lloyd and Carolyn for their recommendations. The third recommendation is to increase community-level mitigation through existing abatement districts and the planning and zoning laws. They believe that, for long-term resilience, it is important to address things at a community level. A one-size-fits-all approach is difficult to apply to the entire state of California. Communities should have a region-specific mitigation plan.

Member Vinukollu directed the group's attention to two laws:

1. The Beverly Act of 1979 (SB 1195) creates geological hazard abatement districts, which, based on the subgroup's research, appears to be unique to the state of California. The districts are focused on prevention and mitigation of geological hazards. These C-HADs are abatement districts and are useful financial mechanisms enabled by SB 1195 that respond to the physical reality of the geological hazard and allow property owners cooperate in solving a common problem unique to a community. Once the C-HADs are set up, they are responsible for a plan of control that is developed by a certified engineering geologists and they are allowed to access bonds and acquire property by eminent domain, levy and collect assessment, and maintain the property.
2. The Planning and Zoning Law of 2015 (SB 379) requires the legislative body of a city or county to adopt a comprehensive long-term general plan that includes

elements such as safety from unreasonable like flooding or wildland or urban fires that are associated with the geological hazard. The bill requires the safety element of the local hazard mitigation plan to be reviewed and amended as needed to address climate adaptation and resilience strategies that are applicable to the city or county.

When considered together, the subgroup sees an opportunity to enhance the community-level mitigation for climate perils like flood and wildfire, and potentially urban heat and sea level rise. The state should consider enhancing Community level mitigation for Climate Perils (Flood, Wildfire) by:

1. Broadening the scope of the Beverly Act (1979; SB 1195) to include mitigation against climate perils, i.e. Climate Hazard Abatement Districts (C-HAD).
2. Encouraging Firewise Communities to consider aligning with C-HAD districts.
3. Considering the C-HAD districts as part of the Planning and Zone Law (SB 379).

The Planning and Zoning law is written in such a way that it's focusing only on the legislative bodies of cities and counties. It should also now include the C-HAD districts. Specifically, the C-HAD districts could be responsible for enforcing development of property and land use in the WUI zones, addressing climate adaptation and resilience strategies, and generating pre-disaster hazard mitigation plans, issuing resilience bonds, and purchasing insurance and reinsurance products on a community basis.

Chair Hill thanked Member Vinukollu and the Flood and Sea Level Rise Subgroup for their recommendations and turned the meeting over to the Wildfire Subgroup.

Wildfire Subgroup

Member Passero thanked Chair Hill and provided a brief introduction. The Wildfire Subgroup's discussions have centered around three main questions; When and how to mitigate fire risk, how to avoid development in high risk areas, and when adaptive relocation should be considered. They consider nature-based strategies, how that plays a role and where insurance fits in. The subgroup will present three recommendations today to discuss: mapping, modeling, and data collection and the need to improve this, expand into mitigation and how insurance can play a role in risk transfer.

Member Frazier reviewed the subgroup's recommendation for mapping. The subgroup recommends developing a better understanding of wildfire hazard and what can be done to lower wildfire risk. The existing front-line tool is the maps developed by CalFire which identify and rank fire hazard zones. Hazardous conditions are defined by the conditions in the landscape that increase the likelihood of what will burn. This hazard does not consider risk mitigation efforts. Risk is the potential damage a fire could do given whatever mitigation efforts have been taken.

The first step should be that we ensure that accurate information about fire hazard in communities throughout the state. Specifically, the accuracy of fire hazard information

would be improved by updating state and local maps. There are two types of maps: State Responsibility Areas (SRAs) where the state has a responsibility for the prevention and suppression of wildfires and there are Local Responsibility Areas (LRAs) which are areas within city limits. The state treats state and local maps differently. Though CalFire maps fire hazard everywhere, what is communicated to State Responsibility Areas and Local Responsibility Areas differs. SRA maps were last updated in 2007 and LRA maps were last developed in 2008. A lot has changed since then.

The first recommendation is that the state should determine whether SRA and LRA maps should be updated at regular, particular intervals. Things to consider are how often to update and whether there should be triggers, such as changing science, that can interrupt and accelerate the normal update interval. Cal Fire is currently working on updating the maps. The next round of maps will include wind data for the first time.

The second recommendation focuses on whether there should be additional elements in the maps, such as the inclusion of previously unmapped developments. The Fire Hazard Severity Zone (FHSZ) maps initially focused on guiding development in undeveloped areas. A lot of currently developed areas, such as Coffey Park, do not exist in these maps. Not being included in a risk designation does not mean there is no risk, it means the tool was conceived of for one purpose and we have gaps and holes in the maps. For local governments, currently, the maps do not identify areas of moderate or lower risk; they only identify very-high risk designations. Should the FHSZ maps, which impact local land use decisions, include additional granular definitions of hazard? Should climate scenario changes be included in mapping? Should housing development patterns also be included in this methodology as they influence fire frequency patterns? Lastly, should these maps trigger parcel level fire mitigation considerations? In Australia the hazard is mapped at the landscape scale but can also dictate impacts at the finer parcel level so that developers may adjust the placement of the particular structure on the parcel and consider water availability on-site. The next step for this group would be to consider how these maps can trigger parcel level considerations. Considering all of these items will help to make sure our maps are more useful.

Chair Hill thanked Member Frazier and agreed that mapping is key.

Vice-Chair Kousky shared that she has heard that local governments can choose whether or not to adopt the LRA designation and that there are pockets in California, such as the Oakland hills area, that chose not to adopt the LRA designation.

Member Frazier advised that when CalFire submits an LRA map it is designated as a recommendation. No action is taken unless a locality takes action by adoption of an ordinance as to how they want to utilize the information.

Chair Hill shared that Australia experiences similar challenges with who does the designation and where responsibility is designated. These are complex questions.

Member Passero advised they have another recommendation prepared but, due to time constraints, the working group may want to move forward.

Deputy Commissioner Peterson confirmed the working group should probably move to the next segment. All subgroups have noted the potential help of improved mapping, forecasting, etc. Are there any other areas where the working group might integrate its recommendations?

Vice-Chair Kousky shared she was surprised by the extent of the crossover between the subgroups regarding risk communication and education, risk reduction and loss reduction, and actual insurance solutions. While the report approaches perils topically, the working group could consider framing the report using the shared types of recommendations and then break out peril-specific recommendations.

Chair Hill asked the working group members to consider revising the report to show the crossover with all climate related apparel, noting that resilience to climate change, the emergence of aspects unique to each peril themes emerged, and the existence of commonalities should all be considered, as well mapping and land use, it seems.

Member Firger agrees and advised he wanted to share that the Global Innovation Lab for Climate Finance (climatefinancelab.org) is looking to service innovative insurance mechanisms and financial instruments to solve problems related to disaster risk reduction. There are cross cutting themes emerging that the lab is interested in, as well as nature-based solutions. This may be a resource for the working group. Some innovative instruments could be applied across categories to flush out elements of the report.

Chair Hill noted this may help make the report more consumable.

Member Baughman-McLeod identified that Member Firger raised an excellent point. The Lab could be a place to even pilot a product and is a great reference point. The working group could potentially recommend that for new products that need advice, the Commissioner could apply with an approach to the Lab which would give all sorts of resources and visibility.

Chair Hill agreed.

Member Blumberg noted that it may be helpful to track which recommendations require legislative solutions.

Chair Hill agreed that would be helpful.

Deputy Commissioner Peterson requested the call moderator check for public comment. There was no public comment.

IV. Subgroup work time

Chair Hill asked that Deputy Commissioner Peterson review the instructions for the next part of the day.

Deputy Commissioner Peterson reviewed that subgroup discussion time is built into the day's agenda to provide an opportunity for each subgroup to discuss next steps while this discussion is fresh. He raised that the recommendations reviewed today may help inform the work of other subgroups. Deputy Commissioner Peterson asked that each subgroup focus on identifying next steps taking into consideration any feedback received, and also discuss how each subgroup can expand visual aids further. The subgroups will not discuss those items today but are charged with continuing to develop at least two visual aids to help communicate subgroup recommendations in the final report. The working group will reconvene at 11:15 a.m.

V. Reconvene and Report Visual Aids Back to Full Group

Deputy Commissioner welcomed the working group back to the larger discussion and reviewed that, at the February meeting, each working group was asked to develop a visual aid for their chapter to either frame the problem or illuminate their recommendations, or both. The working group will now briefly review what visual aids each subgroup has been developing.

Chair Hill turned to the Flood and Sea Level Rise Subgroup.

Flood and Sea Level Rise Subgroup

Vice-Chair Kousky shared that they have two ideas for visual aids. One is to show the extent of the risk and hazard and the problem of low insurance take-up rates. The subgroup could potentially reach out to groups that specialize in mapping and modeling. Another idea is to create a visual recommendation wherein one axis represents projected time to complete and another represents the complexity of the recommendation.

Deputy Commissioner Peterson shared that to help make the report as well received as possible, visual material to make the report comprehensible will be helpful.

Member Vinukollu shared that California property owners should not be asked to go to different websites. There should be a one-stop shop that identifies risk related to their property.

Chair Hill turned to the Wildfire Subgroup.

Wildfire Subgroup

Member Dixon shared that the subgroup is not ready to do graphics yet. They have a lot of recommendations and want to focus on narrowing them down. The subgroup discussed the organization of the report and liked the notion of having a matrix both of perils down one side of the axis and the other axis be risk communication, mitigation, and insurance approach as columns. They think it may be more concrete to have the report organized by peril with a matrix with peril and the particular issues being addressed. Each cells of the matrix would contain a list of recommendations.

Member Passero asked if there will be a graphic designer available to develop images or will that be left to others?

Deputy Commissioner Peterson advised the sooner image ideas are developed the sooner the better. Subgroups may wish to meet directly with Deputy Commissioner Peterson to discuss ideas. He is happy to explore the possibility of a designer.

Chair Hill advised that the Wildfire Subgroup has rejoined the call and turned the meeting over to them.

Extreme Heat Subgroup

Member Blumberg advised that Commissioner Lara joined their group to discuss the cost about medical issues related to extreme heat. The subgroup was not able to talk about graphic elements.

Member Baughman Mcleod advised that they discussed the need for underlying work to be done. Member Mohnot walked through what an education campaign could look like and the potential action the Commissioner can take. The subgroup reviewed portions of their recommendation regarding what action Commissioner Lara might take.

Chair Hill and Deputy Commissioner Peterson agreed they should move on to discuss chapter structure.

VI. Group Discussion: Revise Chapter Structure (see Framework Document and Full Report Framework)

Deputy Commissioner Peterson advised the next part of the meeting will be a discussion of the Chapter Framework Document and the Full Report Framework document that were sent out. The goal here is to provide a clear picture of what the final product will look like and provide an opportunity for the members to suggest revisions and extensions to the Framework documents.

Today the working group discussed how recommendations overlap and the importance of visual aids. How can he be helpful in developing these items? The document should be seamless. A goal today is to get feedback from working group members on the

makeup of the report. He would like the working group to provide some initial feedback today and then again in July.

Deputy Commissioner Peterson then reviewed the Full Report Document and the Chapter Framework Document. He will guide the working group through the process. The first section is the introduction which establishes the mission statement and identifies how the subgroups were constructed and the core questions each subgroup is seeking to address. This will frame the issues of having substantial climate risk and gaps in insurance.

The second section states the problems and describes the perils that the state is facing. The working group has identified three thus far. This section will also identify cross cutting issues related to building codes, evacuation, and recovery plans.

The third section will delve into solutions to drive greater resilience. This section will go peril by peril and will comprise the bulk of the report. It is important to keep in mind that some recommendations may be implemented quickly, and some may take more time. Structuring recommendations in this way will help the reader digest the information.

The fourth section is the conclusion will be more challenging as the working group will try to build on integrated solutions. Deputy Commissioner's goal is for each working group member to review this portion and approve the contents. Deputy Commissioner Peterson then paused for questions and comments regarding the overall structure from the working group.

Member Passero asked what are the responsibilities and expectations for drafting? Where do the working group members come in? Are they responsible for more than their particular peril?

Deputy Commissioner Peterson confirmed the subgroups are responsible for their particular peril. He will weave everything together and work on the introduction. For the conclusion, he will assign a very small drafting group to look at what he has put together and how to move forward. Tomorrow he will ask for volunteers. Deputy Commissioner Peterson confirmed he wants to conclude the discussion with confirming the working group's agreement that between now and July, each member will submit any revisions or extensions to this framework and we can discuss anything outstanding at the July meeting.

Deputy Commissioner Peterson moved on to review the framework document that the working group developed at the third meeting. At the top of document, there is the mission statement which identifies the components that will be in each peril's chapter. There would then be an introduction which Deputy Commissioner Peterson is responsible for. Each subgroup should draft a problem statement which can be edited for consistency. Roman numeral III refers to the core questions developed by the working group in November. Deputy Commissioner would like each subgroup to

contribute to this. Deputy Commissioner Peterson is happy to edit but these are the questions the working group agreed to answer. Roman number IV are the actual recommendations. All of the subgroups have more than four recommendations. He would like the subgroups to start thinking about the amount of time that different recommendations would require and, to Member Blumberg's point earlier, which recommendations require legislative action. Deputy Commissioner Peterson is responsible for Roman numeral V but he needs direction as soon as possible regarding what recommendations are missing models from other places. He wants to be supportive of group if more research needs to be done. In roman numeral VI is one that ultimately may be integrated into the conclusion but should remain in the framework document for now. Roman number VII is the conclusion to the chapter.

Deputy Commissioner Peterson wants the subgroups to focus on specific recommendations. That is the mission. Requests for any adjustments should be made in reference to this document. Subgroups should take a hard look at this format and get back to him.

Member Blumberg asked who is responsible for drafting the responses to the questions in Section III. Will the subgroups answers be included in the report?

Deputy Commissioner Peterson will draw from the responses of the different subgroups in a way that makes sense in the introduction to the entire report.

Member Dixon asked for clarification of item III and how it overlaps with item II in the outline.

Deputy Commissioner agreed that is a little confusing. The answers to the questions could go in the introduction to the larger report or in each subgroup's chapter. He does not have a clear answer now and proposes responding to the group on this point after reviewing what subgroups submit.

Member Dixon agreed that was a good plan.

Member Passero advised she thought each subgroup was asking these questions in the context of their recommendations. If recommendations do not directly respond to questions, it may be just be that it is not applicable. Is that not the case?

Deputy Commissioner Peterson advised that if each recommendation addresses a question, then you can reference the corresponding question. Each recommendation doesn't have to answer every question.

Vice-Chair Kousky asked if there is a limit to the number of recommendations. Should they narrow to the strongest or include them all?

Deputy Commissioner Peterson expects some recommendation may ultimately be condensed but everything should be included at this point.

Chair Hill concurred that all recommendations should be included. The working group may see overlap that leads to grouped recommendations. The idea of a matrix is great. It will likely become clearer how each of these recommendations may be used. The working group should not lose anything at this point.

Vice-Chair Kousky asked how the working group should distinguish between short-term and long-term?

Chair Hill suggested using 1-2 years for short-term recommendations as an internal distinction.

Member Baughman-McLeod agreed that was appropriate.

Chair Hill agreed and said the working group may revise this distinction once recommendations are received. She also asked if the group has any other ideas for how to make the report effective, such as increased specificity. Hearing none, she asked Deputy Commissioner Peterson if the working group should move on to the next item on the agenda.

Deputy Commissioner Peterson circled back regarding the number of recommendations to ask the working group to consider the core questions in choosing whether to include a recommendation. At this phase, the group should not lose work product but also keep relevancy to questions in mind.

Chair Hill asked to check for any public comment.

Deputy Commissioner confirmed with the moderator that there was no public comment.

VII. Group Discussion: CDI to update group with logistical plan

Deputy Commissioner Peterson advised that, given the current state of the pandemic, there is a great deal of uncertainty. In order to finalize the report by the end of September, he'd like to reach agreement regarding the timing of events. The working group will have time to discuss the drafting process and the logistics of putting together the final report at the second portion of the meeting tomorrow, May 21.

He reviewed that the working group:

- Discussed the Chapter and Report Structure
- Is aiming to complete the final report to present to the full group by the end of September
- To do that, the working group will meet in late July to share additional or revised recommendations
- Between now and then, Deputy Commissioner Peterson needs to receive feedback on the structure and continued work on visual aids.

- The month of August will be targeted to finalize and share drafts of specific chapters.
- The month of September will be focused on final steps, review of drafts and communications

Chair Hill asked the moderator to check for any public comment. There was none.

VIII. Subgroup Work Time

Deputy Commissioner Peterson then provided an overview of the agenda for the May 21 portion of the meeting.

The Office of Planning and Research (OPR) will be giving a presentation on what local governments are doing to report to the state their climate risks and mitigation efforts. It is important to understand what is going on already but also think about pilot projects.

Vice-Chair Kousky and Member Sowers will present on risk transfer mechanisms followed by a discussion about the logistics of recommendations, any interesting scenarios to consider, and how to integrate recommendations.

The “homework” for tomorrow is for working group members and subgroups to title chapters or headings for recommendations.

Chair Hill asked if there is any direction for logging in the next day.

Deputy Commissioner Peterson confirmed he will send out updated call-in information.

Vice-Chair Kousky advised she is excited about the working group’s coherent set of policy recommendations.

Chair Hill confirmed the working group would adjourn for the day and return the next day with proposed titles and will identify how the sub-group will work through the requests.

MEETING MINUTES | MAY 21, 2020

Participants:

Commissioner Ricardo Lara | California Department of Insurance
Alice C. Hill (Chair) | Senior Fellow for Climate Change Policy at the Council on Foreign Relations
Carolyn Kousky (Vice-Chair) | Executive Director, Risk Management and Decision Processes Center, Wharton School of the University of Pennsylvania
Kathy Baughman McLeod | Director, Adrienne Arsht-Rockefeller Foundation Resilience Center at the Atlantic Council

Michelle Passero | Climate Change Program Director, The Nature Conservancy
Sydney Chamberlain | The Nature Conservancy
Katelyn Roedner-Sutter | Manager for U.S. Climate, Environmental Defense Fund
Lloyd Dixon | Senior Economist at the RAND Corporation and Director of RAND's
Center for Catastrophic Risk Management and Compensation
Louis Blumberg | Principal of Blumberg West Consulting
Rex Frazier | President, Personal Insurance Federation of California
Raghuveer Vinukollu | Natural Catastrophe Solutions Manager, Munich Re
Serena Sowers | Vice President, Public Sector Solutions North America, Swiss Re

Deputy Commissioner Peterson welcomed the working members back and encouraged attendees to connect to the meeting telephonically and through WebEx.

Chair Hill shared that the May 20 meeting was highly productive, and she looks forward to the interesting presentations to be given in this meeting.

Deputy Commissioner Peterson identified that some working group members were logged in to WebEx but were not on the call-in number. Following a short period of troubleshooting technical issues, Deputy Commissioner introduced Erik de Kok, Program Manager of Planning and Community Development, from the Governor's Office of Planning and Research (OPR). Erik de Kok then presented on SB 379, a California law that passed in 2015 which requires local governments to report Climate risks through their existing planning documents for hazard mitigation or safety.

I. Presentation on how local governments are understanding and approaching their climate risks and what existing reporting practices are in place.

Erik de Kok discussed the OPR's role as the state's land use and planning agency. The OPR issues guidance on general plans, issues guidance regarding California's Environmental Quality Act (CEQA), issues technical advisories on planning and CEQA issues, and issues targeted technical advisories when necessary. The OPR has statutory duties as well such as serving as a military liaison with federal military agencies, engaging and coordinating with state agencies, working directly with the Governor on executive initiatives. The OPR has a sister agency called the Strategic Growth Council which is a granting agency and also works with the California climate investments program to fund certain coordination efforts. The OPR has a new program: Integrated Climate Adaptation and Resilience Program (ICARP).

After providing an overview of elements to California's General Plan, Erik de Kok then reviewed various safety elements related to climate adaptation in general plans, the adaptation planning process, ways to assess vulnerability to local regions, how to implement adaptation goals and policies, and integrating other plans and funding sources. He concluded the presentation by identifying a variety of adaptation planning resources.

Deputy Commissioner Peterson thanked Erik de Kok for his presentation and asked the working group for any questions.

Member Vinukollu stated that the Disaster Recovery Act of 2018 actually incentivizes communities to focus on pre-disaster mitigation and asked whether something similar existed at the state level in California. Is more support available after an event if the community focused on pre-mitigation before the event?

Erik de Kok confirmed there is through legislation. FEMA has it with local issues in the general plan. The foundation is in place and identifying pathways before disaster is a huge incentive to do so.

Member Blumberg commented that one of the slides referenced the prioritization of natural infrastructure. SB 379 identifies priorities and defines natural infrastructure. Member Blumberg asked if any jurisdictions are considering extreme heat and whether that peril would be included.

Erik de Kok responded that there is a range of specific climate exposure. He is seeing it show up in general plans. SB 379 has been in effect since 2017 so local governments are in the middle of the process now.

Deputy Commissioner Peterson asked what risks governments are identifying as vulnerabilities and what responsive actions are governments taking.

Erik de Kok confirmed governments are looking at data and identifying vulnerability based on regulatory frameworks but they also encouraging folks to look at experiences and how folks have responded to vulnerabilities. If a community has prepared for and mitigated for known hazards and it is not enough then there is a problem.

Deputy Commissioner Peterson asked if any of the reporting documents include or are related to insurance at this point.

Erik de Kok advised that they don't have any direct guidance for insurance in the general plan guidance at this time. They do have a fire hazard plan. AB 2911 will roll out a review later this summer. Inner agency circles and subject matter experts are included regarding the alignment of community risk reduction frameworks for fire and align with the insurance industry around community scale issues and vulnerability: home hardening program, defensible space, development standards that have not been widely implemented.

Member Frazier asked if Erik de Kok has any observations to share regarding existing usage by locals of severity zone maps and how they play into the safety zone maps? Does he recommend any kind of improvements?

Erik de Kok shared that in statute there are wildfire safety requirements. SB 1241 of 2012 mandates that all communities in the state have a responsibility to different areas

from very high fire zones to areas of local responsibility. Local governments who may not have territories in these higher risk areas might still face significant risk. Past regulation focused primarily on higher risk zones. There is draft guidance publishing this summer that will help to clarify that communities not in these high-risk zones may still face moderate or high risk. CalFire is making updates to moderate fire severity zones. Communities recently affected by wildfire that were not in a fire zone—Sonoma County was not previously captured in mapping—may be designated more accurately as CalFire is applying a broader range.

Member Dixon asked if there are any financial requirements when a community wants to approve a new development. Is temporary housing or another resource required to be able to respond to the consequences of an event?

Erik de Kok advised that in considering costs, when a local government creates a plan, it is almost always the case that they examine whether a local agency has the ability to cover the policy. When you look at it from a financial stability issue, it gets murky. Local governments are more and more looking to communities to identify risks, benefits and trade-offs to mitigate these risks, including the development of review processes and the protection of natural resources. That is more of an analytical process that conforms with best practices.

Deputy Commissioner Peterson asked the moderator to check for public comment. There were none.

Chair Hill turned the group's attention to the next agenda item, a presentation and discussion on risk transfer mechanisms, a combined effort by Vice-Chair Kousky and Member Sowers. This is an opportunity to renew the working group's investigation of existing models for risk transfer and to brainstorm how these may be applied to the recommendations in the three subgroups.

Deputy Commissioner Peterson added that he wished to highlight that the legislation which created the working group directly calls out several components: community insurance policies, risk transfer market mechanisms, nature-based solutions, insurance incentives, and avoiding future liabilities.

Chair Hill asked Vice-Chair Kousky to begin the presentation.

II. Presentation on how we can we better understand the building blocks of risk transfer mechanisms

Vice-Chair Kousky described how risk transfer mechanisms work and how insurance improves resilience. She would like to guide the working group's policies to make sure that they are implementable and successful.

Vice-Chair Kousky described risk transfer as the most common type of insurance. She described insurance as an agreement where the policyholder pays a premium each

year and when a loss is suffered the policyholder is covered. Whether it is life, health, property and casualty, homeowners, rental, business interruption, workers' compensation—there is a risk transfer market. Insurance enables economic activity where businesses alone could not cover liability. For example, medical malpractice coverage for surgeons, mortgage insurance, building bridges, skyscrapers, etc. Firms would not take on these projects without insurance.

Insurance is sold at different levels, including the individual level and the small business level.

Most people are risk averse and prefer certainty and a smooth income. Insurance is an income-smoothing tool. Policyholders pay a little bit in a good year so when they suffer a severe loss, they have claim payments to cover these losses. And thus, businesses make it through all the years without a lot of financial suffering.

Insurance is not funding. The policyholder must pay for the premium. Insurers do not have unlimited money. There is a lot of legislation that is asking insurers to cover losses that do not appreciate this.

Insurance is not risk reduction. When transferring risk from one party to another, the risk is not reduced. Insurance is a complement to risk reduction.

Not everything may be insured. It is like Goldilocks, just the right amount of risk. Small risks like breaking a plate, the transaction cost is so high. The policyholder would pay more than the cost of the plate in overhead costs. On the other hand, high risk cannot be transferred. A global recession, for instance, cannot be insured.

Insurance is relevant where money is a financial tool. Sentimental photographs, for example, cannot be replaced with money. But a home can be rebuilt. The oldest living tree cannot be replaced with money. When it is lost, money cannot bring it back. Understanding this limitation is important.

Risk pooling is diversification that underlies insurance. Uncertainties are reduced and distribution is much more symmetric. The risk is not held; it is passed on.

The uptake rate for insurance that protects against disaster perils is concerning. People with insurance recover better and faster. There is no substitute to having it. 44% Americans don't have liquid funds of a few hundred dollars. Over half of SBA loans are rejected because of credit issues. If you don't have loan access and no money in the bank and couldn't afford insurance, you will face challenges in recovering. It is a misrepresentation that federal aid will make people whole. FEMA is not enough; insurance helps people to begin to get back to where they need to be. There is a significant insurance gap. The drivers of this gap are lack of information, poor insurance literacy, and affordability constraints.

Auto insurance is very predictable. Every year a few people get into an accident but the total dollars of losses are stable. Disaster is not like this. There are very good years and

enormous loss years. Extreme events are more than likely. When you take wildfire or other disaster, you see the equivalent in disaster losses of the 15-foot person. There is a spiky loss problem and insurers can't pay for the loss that year. Insurers purchase their own insurance: reinsurance. They buy enough so they can pay losses.

Reinsurance is limited. There is not enough capital to pay all the business Interruption from COVID-19. Reinsurance is not free. Insurance companies have to pay for the risk transfer and that price is passed back to the insured. When the cost is passed down, the price level is not what people can or are willing to pay.

The United States handles all disaster lines differently from flood to terrorism. California has different models for how to handle different disasters lines with the California Earthquake Authority and the FAIR Plan. Internationally even more models exist in how governments intervene.

Deputy Commissioner Peterson thanked Vice-Chair Kousky for her excellent presentation and asked the working group if there were any questions.

Member Blumberg asked if there is a local government appetite to insure climate risk. Is this happening for any disaster type or for fire or flood or extreme heat?

Vice-Chair Kousky responded not really. Local governments get a lot from the public government. Risk transfer is not free and local governments are cash-strapped and can't pay the premium year after year.

Commissioner Lara shared he appreciated the tone of the presentation in that it emphasizes that insurance cannot be a comprehensive solution to all problems. After California's recent wildfires, the limits of insurance were evident. California needs the insurance industry to enter the conversation and develop innovative products. California needs them to be part of the discussion to help with the messaging of the importance of these products. The United States is not as engaged as in Europe. What are key talking points to engage them in utilizing insurance models and insurance projects so that risk can be diversified? How can we be partners to move this forward?

Vice-Chair Kousky asked why there is a lack of understanding insurance at the household or small business level. Nongovernmental organizations are building up financial literacy, but insurance is often left out. Insurance must be incorporated so that people understand risk management in their finances. In local municipalities there is a problematic disconnect between the folks in local government working on risk management and risks—standard risks like buildings and the health of employees—and the climate folks aren't tuned into those types. So it's siloed and they don't talk to each other.

Commissioner Lara asked how local governments can be better supported to get the city up and running as quick as possible so that cities are not dependent on state and federal assistance. How can these essential conversations be facilitated?

Member Sowers commented that the right people are not speaking to each other. The risk manager is thinking about a building they want to insure and the community needs that they're trying to address. But the CFO isn't aware of the full aspect of the risk that the risk manager needs to consider so the CFO, or Treasurer, does not have a full view of the budget to identify the risk in isolation and see how it would be impacted. They might see the Cal Fire budget but not all other aspects of wildfire. There needs to be communication within. Who is responsible? When you talk to federal government they point to local and state entities to take responsibility. Everyone's fingers are pointed in every which direction but there are no shared conversations about who is responsible for what.

Member Vinukollu shared that no one wakes up in the morning and says, "I want to buy insurance." There needs to be a point of sale. Flood is an example. Flooding is an issue everywhere in the United States. In California, no one knows their risk, and no one says, "I want to find out what my risk is and wake up and buy flood insurance." Where should be the point of sale from a disaster risk perspective?

Member Roedner-Sutter asked if there is a rationale behind the variety of policymaking and is there one approach in that makes more sense for the federal government to be engaged than another?

Vice-Chair Kousky advised that her personal opinion is that the variety exists is the consequence of incredibly reactionary policy-making that is responsive to particular events, peril by peril and responsive rather than systematic.

Vice-Chair Kousky thinks the best course may be to identified examples of where market failure has justified government intervention.

Member Frazier discussed long tail exposure, stating that the political environment allows insurers to charge what it would take to fund low frequency high severity events. If insurers were allowed to charge premium amount to afford more frequent high severity events, they would potentially yield profits that would horrify regulators. Regulators would require insurers to reduce rates.

Chair Hill advised that before World War II there was no disaster fund. As we work through recommendations, we need to wean the state and local governments from the payout to engage in risk mitigation measures to make insurance more affordable since risks are reduced.

Commissioner Lara returned to Member Frazier's comment to underscore the necessity for better education about the role of insurance and why people need it. Collecting a rate that allows a company to remain solvent is critical. There are groups of new insurance commissioners willing to have these conversations to and partner with insurance companies to respond to risk.

Member Dixon suggested having local governments be responsible for certain level of events to decrease reliance on the federal government. The current system is not structured in this way. FEMA pays first dollar losses. Member Dixon raised the notion of risk-based rates. To what extent can rates be tailored to a particular party and people be bucketed into groups?

Vice-Chair Kousky asserted that with data and technology developments, rating may be structured specifically for individual rates. What would be fair for a public program? More information is needed on risk level and where behavior would occur.

Member Baughman-McLeod referenced risk literacy and risk governance. In the Extreme Heat Subgroup, they need to discover things before moving forward. Development intuitions must become more comfortable with seeing insurance as an approach or a tool, not a way to make a big industry more money.

The working group then turned to Member Sower's portion of the presentation. Member Sowers began by commending Vice-Chair Kousky for her excellent discussion and reviewed the framework of climate adaptation to start thinking about risk transfer options and where they might make sense. Member Sowers referenced three documents: one prepared by Vice-Chair Kousky and Member Sowers that discusses insurance for climate adaptation, a document from the Insurance Development Forum entitled IDF Practical Guide for Insuring Public Assets, and a report on parametric insurance entitled Insurance for Climate Adaptation: Opportunities and Limitations. Member Sowers noted that the first document includes an outline of the points Vice-Chair Kousky covered which may help the working group to understand the dynamics as well.

Member Sowers directed the working group's attention to Figure 2 in the report on parametric insurance which lays out what a climate risk financial instrument framework could look like, noting the role of improving societal behavior and price signaling which is important for the climate adaptation discussion. Insurance can be used in a meaningful way, not just as a reimbursement tool for damages endured. Risk transfer mechanisms can help to improve behavior. The price of risk aspect allows decisions to be made around when it makes sense to invest in preparation and transfer to the private sector. How much of the reserves should be saved for states to manage and what point can this be moved to the private sector? What are extreme tail events where is a government backstop needed?

Commissioner Lara asked how this model could apply to the wildfire peril in California.

Member Sowers advised that the understanding of wildfire is shifting. In the last five years the frequency and severity has dramatically increased. The market is trying to figure out how to model for the risk. The model is shifting drastically as what used to be considered a one in 150-year event is now a one in five-year event or a one in ten-year event. From a risk transfer standpoint, the question is how to grapple with this issue. Risk retention is not an answer here. This question can't be answered with how much can Californians be taxed. But, when the peril itself is considered, it's not just driven by

climate change. There are many different political dimensions at work. The climate adaptation measures are crucial to understanding this better.

Member Passero raised the idea that climate change itself is a risk and is a driver behind perils. Are there certain points along this chain where mitigating that risk can or should come in as part of the overall risk mitigation and response?

Member Sowers stated that she has a personal viewpoint but thinks this is a good topic for the group to discuss. With climate change and the drastic impacts of climate risk, the question is how we pursue all of these perils? Figure 2 poses the question what measures can be implemented to prevent identified risk. From a mitigation perspective, what can be done to address risk? The goal should be to mitigate and adapt in time and pursue these changes so the cost is not astronomical.

Vice-Chair Kousky asserted that if the world does not shift to a very low carbon economy, areas will become fundamentally uninsurable. Reducing emissions should be the number one policy.

Commissioner Lara agreed with the importance of this point.

Deputy Commissioner Peterson stated there is a role for risk transfer for California to play catch up in the mitigation context. There is significant opportunity for action that can put the state on a better trajectory.

Member Sowers drew the working group's attention to Figure 3 which illustrates a way to think about financial resilience and review how other nations have responded. Member Sowers then referenced page 106 of the IDF document and identified Mexico as an innovative leader in that the nation is constantly trying new things in this space. The FONDEN program (Fonden de Desastres Naturales) supports state and local entities to support vulnerable and poor populations. A state version is in place to provide support. At the federal level the annual budget manages all types of events that happen on a day to day basis. There is a risk retention layer where they have reserves in place of \$200 million to be used in exceptional scenarios and they buy insurance for anything above that. A multi-cat bond sits on the side. This type of framework positions state and local entities with significant responsibility which enables them to buy risk transfer products in the market. It is a good idea to shift thinking in the United States about where risk transfer plays a role and how the framework works together regarding extreme weather events.

Parametric insurance is constructed to protect against the type of event that presents the greatest concern. Earthquakes are the example to understand. Shaking that can affect a community can be insured. It can be purchased for \$10 million and once it's validated as a 7.5 quake the insurance company starts the payment process. Processing time is avoided. Payment is allowed not just for physical damage but for the full budget and with quick, flexible payment that fits a community's needs.

Another example, KLIP, uses the concept of parametric insurance to assess the browning of a community. It does not wait for the drought to occur. By measuring community browning to meet a trigger and issue payment, water and food is available for the cattle and damages are avoided. This type of innovation avoids suffering. There is a misconception that insurance makes a policyholder whole. KLIP allows the community to seek protection before the community becomes reliant on the government to meet fundamental needs. Member Sowers would like to discuss with the working group in what other contexts this might be applied.

Member Baughman-McLeod suggested a forecast-based trigger, or, as Member Sowers identified, it would not so much be a forecast-based trigger as the identification of a present condition. For the extreme heat group, the discussion is centering around forecasts to get money to the treasury of the community for urban search and rescue teams and ambulances and get people out of their hot apartments before they get sick. How can this be accomplished? In addition, what would it cost?

Member Dixon added that his understanding is that in the United States parametric policies are more complicated in how they function in terms of single or double trigger products and how the claims process works with proving damages; they might be regulated differently.

Member Sowers advised parametric products have a lot of basis risk and are not meant to cover the entire risk. A community can buy a product for \$10 million and losses may exceed the \$10 million. It still helps to bridge some of the budget gaps rather than attempting to entirely cover them with the community's budget. There may be regulatory issues for parametric products at the individual level.

Vice-Chair Kousky added she agreed at the household level one might face regulatory issues because one has to have an insurable interest and proof of loss. If a policyholder has to go through the claims adjustment process, then the entire point of a parametric product is undermined.

Member Vinukollu shared that parametric products should not replace coverage for individual property owners. From a top down approach, it should be complementary.

Member Sowers commented that with extreme heat and forecast-based products there is the issue of proof of loss. What if there is forecast of extreme heat, payment is issued to allow the community to prepare, and the event doesn't happen? The company did incur a loss because they paid out in anticipation of the event. How do we figure out how to start addressing some of these things? Communities spend so much money in preparation for these events. New Orleans spends tens of millions of dollars in preparation for hurricanes. Can that become an insurable interest? Perils like extreme heat and flooding where there is an alignment of interest, the insurance company does not want to pay for the full loss of the event. Why not implement mitigation measures to reduce the full impact of that event and can that preparation aspect be insured?

Vice-Chair Kousky referenced an EDF study that examined different ways to finance resilience projects along the Louisiana gulf coast using environmental impact bonds. She is curious if that may be an opportunity for transferring risk ahead of time as that is the goal from an insurance and climate perspective.

Member Sowers thinks it goes back to the alignment of interests. Data shows that globally only 30% of natural disasters are insured. In North America only 30-40% of natural disasters are insured. How can the full impact of an event be reduced? There is an aligned interest amongst local and municipal entities and the private sector in reducing that full impact. Many options may be considered. Parametric examples are much closer to the actual event, within days or during, in immediate ability to reduce the impact of the full event.

Deputy Commissioner shared that he likes the idea of how preparation can be insured. Because of California's Mediterranean climate and the Sierra's snowpack, it is normally clear what is coming. Extreme heat has a small preparation window of knowing what is coming. Is there a California application for drought?

Member Sowers stated that product developers will say if the data is available a product may be developed. It is necessary to identify at what point it becomes too cost prohibitive to have super indicators that decision cannot be made without data. Solutions exist. China, Thailand, and Mexico are all big buyers of parametric products. The impact of drought to the agriculture community is huge. The health impact of a drought is huge with the proliferation of mosquitos and disease. Insurance solutions exist so that business owners remain secure if they fall ill or pass away, business owners can seek care, families and communities are supported, livelihoods and families remain intact. It will be important to look at how to support livelihood and income replacement, where government entities can collaborate to support vulnerable populations.

Chair Hill thanked Member Sowers for her presentation and asked if there are questions from the group or further examples that people have been using as models, please share them at this time.

Chair Hill asked the moderator to check for public comment. There was none.

III. Review and consider proposed timeline and recommendation process

Chair Hill advised that the next agenda item should help to clarify everyone's understanding and expectations for the process.

Deputy Commissioner Peterson reviewed several housekeeping items including the proposed dates for the July meeting are July 22 and July 29, both from 12-4:30 EDT; he proposed composing a drafting committee of 2 and asked for volunteers to talk about possibly participating; and he referenced being available as a resourced for pending

legislation or any follow up questions regarding the presentation from this morning or questions for the Governor's Office or any other state agencies.

Member Passero asked if subgroups should reference the experts they consulted.

Deputy Commissioner Peterson advised that each subgroup has the discretion of what they want to include. He wants to avoid a rush at the end of the process to piece together who should be acknowledged. If subgroups have engaged with experts and it had to do with climate risk or insurance or in other ways now is the time to collect those names so they are useful to the group.

Chair Hill suggested if there are particular people to acknowledge in the report, their names could be listed in the end. It's nice to acknowledge those who have assisted the working group's efforts unless there is some prohibition against doing so in a government report.

Deputy Commissioner Peterson agreed it is gracious and straightforward.

Chair Hill identified the working group reached the end of the day's agenda and turned the conversation to Deputy Commissioner Peterson.

IV. (Concluding thoughts and comments on next steps from each subgroup)

Deputy Commissioner Peterson asked for concluding thoughts from each subgroup.

Member Vinukollu shared that today's presentations put everyone on level ground regarding the role of insurance within the subgroups.

Vice-Chair Kousky thinks that after today's conversation her subgroup will be able to examine their prior ideas about risk transfer products a little more carefully.

Member Sowers thinks that based on the conversations the working group has had the boundaries of existing concepts and structures may be expanded.

Member Dixon shared that the wildfire group is looking at how to better communicate wildfire risk and insurance solutions. The conversation today highlighted and underscored the importance of insurance solutions. He also found the idea of providing local communities the right incentives as they make land use decisions.

Member Roedner-Sutter found the discussion and presentation incredibly helpful, especially the "Insurance and Risk Transfer 101" in expanding horizons and enabling creating thinking about what can be done.

Deputy Commissioner Peterson shared that he thinks there is real opportunity for creativity with community level recommendations and encourages the working group to keep pushing there. As the drafting process continues, please watch for reports that are

aesthetically pleasing. The working group's recommendation should be communicated as clearly as possible.

Deputy Commissioner Peterson then turned the conversation to Chair Hill.

V. Subgroup work time

Chair Hill thanked the working group for the lively discussion and shared that it certainly informed her perspective. Time is left for subgroups to work independently. The ultimate goal is to have a robust report by September that provides actionable recommendations, some of which will be cross-cutting and some of which will be peril-specific. Each recommendation will identify the likely amount of time required to implement. Please remember to use the template provided by Deputy Commissioner Peterson.

Chair Hill added that the working group needs to develop a list of important resources/literature cited and let Deputy Commissioner Peterson know if July 22 and July 29 work. Please send those, as well as acknowledgements, to Deputy Commissioner Peterson in order for him to prepare a master list of resources. If the working group can reach consensus in this report, it would be very impressive. In working sessions today, please discuss how the working group might reference what COVID-19 teaches the world about catastrophic risk.

DRAFT Recommendation materials shared among working group members and with the public

**California Climate Insurance Working Group
DRAFT - Extreme Heat Group
Prepared by Kathy Baughman McLeod & Giovanna Grigsby-Rocca
Adrienne Arsht-Rockefeller Foundation Resilience Center
May 6, 2020**

DRAFT Extreme Heat Public Sector Cost Analysis Recommendation

Extreme heat has clear impacts on mortality, energy use, and agriculture, but the total cost of extreme heat – combined with other costs including reduced worker productivity, health care costs, and the decrease in students' ability to learn – is not well understood.¹ In recent years, the ability for researchers to more accurately calculate the diffuse effects of extreme heat has improved as economic and climate modeling techniques have advanced, and larger amounts of data have become available on specific economic sectors and regions.² These developments all provide an opportunity to increase the understanding of extreme heat costs – a critical step in preparing for and developing financial resilience to extreme heat. In order to understand the true economic costs of extreme heat, better prepare for future economic impacts of heat waves, and assess the relative value of adaptation interventions, the State of California should develop a process for backcasting extreme heat costs to be used in several cities in California.

Existing research on the economic costs of extreme heat provides a starting point for local level analysis. For example, a study by the Natural Resources Defense Council in 2011 found that a 2006 heat wave in California resulted in nearly \$179 million in costs due to hospitalizations, out-patient visits, and emergency room visits.³ On the issue of lost labor productivity, a 2014 study estimated that the productivity of individual days declines roughly 1.7% for each 1.8°F increase in daily average temperature above 59°F, and that a weekday above 86°F costs an average county \$20 per person.⁴ The scope of recent research extends as far as the impact of extreme heat on financial markets – researchers using NOAA data from between 2003 and 2017 found that equity markets experienced a 0.42 percent loss in the first 20 days after the beginning of a heat wave and about 0.68 percent in longer heat waves.⁵ A similar analysis – but one that delves deeply into the costs to cities, counties and states (the most likely buyers of a public sector coverage for extreme heat) – can be conducted in California in order to inform the creation and needed size of an insurance coverage and/or budget planning for local and state authorities.

First, reliable meteorological data encompassing a past heat event and data representing associated outcomes in a sector (e.g., hospitalizations, reduced productivity, financial market trends) must be identified. By analyzing outcomes (financial, health-related,

¹ <https://www.climateliabilitynews.org/2018/08/09/extreme-heat-climate-costs-liability/>

² <https://www.gao.gov/assets/690/687466.pdf>

³ <https://www.nrdc.org/sites/default/files/accountingcosts.pdf>

⁴ https://gspp.berkeley.edu/assets/uploads/research/pdf/Does_the_Environment_Still_Matter.pdf

⁵ <https://www.sciencedirect.com/science/article/pii/S2212094719300817>

government and P3 business interruption, etc.) over time, cost impacts and implications of extreme heat events can be isolated. By examining data across counties or cities, data can be compared between locations to identify discrepancies due to extreme heat.⁶ The cost of a specific indicator (e.g., a single emergency room visit) can be established based on information from local authorities or existing research on the subject. Finally, after the cost in one sector is totaled, the State of California or the studied municipality should similarly analyze other sectors to complete a comprehensive approach to understanding past economic impacts of an extreme heat event. The result of this work would not only be an understanding of total extreme heat cost, but the development of a clear methodology and identified best practices to do this analysis in any location or municipality from which to make improved decisions leading to greater financial and physical resilience.

Insurance Climate Change Working Group

DRAFT Proposal: Extreme Heat Risk Communication and Education Campaign

SUMMARY:

The Insurance Commissioner (IC) working with the state and local health departments launches an extreme heat risk communication campaign targeted at local government and state government, decision-makers, and senior public health, emergency management and sustainability staff.

BACKGROUND:

- **Increase in frequency and duration of heat events:** Climate science models predict that extreme heat events like heat waves are expected to increase in frequency, intensity and duration
- **Lack of understanding about extreme heat as a costly, deadly and increasingly common event:** Extreme heat is not being treated or perceived as a serious public health threat or costly climate event from decisionmakers (policymakers, state/local government officials) compared to, for instance, wildfire. Insurance has not been widely discussed as a tool to address extreme heat
- **Lack of coordination:** With extreme heat, there is no one office, person or agency that is responsible for planning and responding. Also, extreme heat can be addressed in a variety of different local plans, which creates ambiguity about who is responsible for long term planning and responding to extreme heat emergencies. This lack of clarity is also an issue when it comes to securing funding for extreme heat planning, mitigation and response.
- **As a result:** It has been challenging to create a market for insurance products that can mitigate the impacts of extreme heat due to a lack of understanding about extreme heat

⁶ https://gspp.berkeley.edu/assets/uploads/research/pdf/Does_the_Environment_Still_Matter.pdf

and inefficient coordination to address extreme heat. Considering that extreme heat events will become more frequent, intense and longer in the future, policymakers should consider a suite of strategies to address this climate threat including insurance and how insurance products can play a role to address extreme heat impacts.

RECOMMENDATIONS:

The following recommendations can be used in an education and communications campaign to increase awareness of extreme heat. The recommendations focus on pilot projects that can be acted upon to help decision-makers (local government and state government, senior public health, emergency management and sustainability staff) as well as the general public better understand the impacts of extreme heat and the role insurance can play to mitigate them.

1. The Insurance Commissioner develops key messages to educate people about extreme heat and the public health threat it poses to communities (e.g. cardiovascular and respiratory disorders and heat stroke), particularly in vulnerable populations. Visual aids should be included in the education campaign in addition to written materials. Recommend hiring a communications consultant if resources are available. *These materials should be used in all of the following recommendations.*
2. The Insurance Commissioner and Office of Planning and Research through their Integrated Climate Adaptation and Resilience Program (ICARP) co-host a workshop during an ICARP Technical Advisory Council meeting and invite local government officials, local agencies and risk managers. The workshop is an opportunity for the Insurance Commissioner to (1) share key messaging on extreme heat developed in Recommendation #1; (2) learn of approaches local officials are currently undertaking to address extreme heat and what issues still need to be addressed; (3) get feedback and information from local officials about challenges that make it difficult to address extreme heat and where there may be interest in using insurance as part of an extreme heat mitigation strategy; and (4) develop strategies in collaboration with local government to incorporate extreme heat into their local planning efforts.
 - Based on the discussion, the Insurance Commissioner may need to revise and update the key messages and other communications materials
3. The Insurance Commissioner organizes a roundtable discussion with key state agencies involved in extreme heat planning and response (CalOES, CDPH, CEC, others) to share key messages and discuss which agencies carry out what actions to mitigate extreme heat and how insurance can be used to support those strategies and actions.
 - Based on the discussion, the Insurance Commissioner may need to revise and update the key messages and other communications materials
4. Organize a roadshow type of event throughout regions in California where the Insurance Commissioner gathers mayors, city managers, local agencies and risk managers to

have convenings to discuss extreme heat and the role of insurance. The event should include a discussion on (1) the plans that local/county governments are required to create and adopt to address extreme heat, such as Climate Action Plans, Climate Adaptation Plans, Safety Elements of General Plans, Emergency Response Plans, Health Hazard Mitigation Plans and Local Hazard Mitigation Plans; (2) the actions already taking place by local entities to combat extreme heat; (3) the gaps where greater action is needed and (4) exploration of insurance strategies that local governments can utilize in local planning efforts to address the gaps.

5. The Governor declares a state of emergency for heat storms.
6. In addition to the planning strategies mentioned in Recommendation #4, some California counties have also formed Disaster councils. These councils are made up of practitioners that play roles in emergency operations at any capacity and/or have public health expertise. For example, Marin, Sonoma, San Mateo and LA and [San Francisco](#) counties have disaster councils. The Insurance Commissioner should meet with the members of the Disaster Councils and the cities' risk managers to support the actions the councils are taking to address extreme heat and learn of opportunities to use insurance products.
7. Organize a legislative briefing in Sacramento for key members working on climate change (Natural Resources Committee, Environmental Caucus, Budget Committees, etc.) to share information on the intersection of insurance and extreme heat and discuss potential legislative solutions.
8. The Insurance Commissioner presents at conferences:
 - Climate Adaptation and Climate Change Conferences: Present on a panel or on a workshop at climate adaptation conferences like the CA Climate Adaptation Forum that brings together local government, agencies, practitioners and community members. Also consider presenting at more national conferences like the National Adaptation Forum to learn about how other states are thinking of insurance in the context of extreme heat and whether those approaches can be applicable to a CA context
 - Invite community members that have been impacted by extreme heat to speak on the panel or workshop and share stories to visibilize the serious impacts that extreme heat can have on individuals and communities
 - Share findings and recommendations from Insurance Working Group's report
 - Convenings involving National Insurance Commissioners: Present on the work that the CA Department of Insurance is doing to address climate change through the newly established Office of Climate and Sustainability, learn how other Insurance Commissioners are thinking about extreme heat in the context of insurance, and explore whether those strategies are applicable to a CA context.

9. The Insurance Commissioner hosts a workshop for decision-makers that includes virtual reality technology in a climate-controlled room to allow people to experience for themselves how devastating extreme heat can be. Consider having impacted community members narrate the VR and share their stories about how extreme heat is impacting them from health, economic, and social standpoints. Follow up with a discussion on how insurance can be used to mitigate extreme heat impacts
10. The Insurance Commissioner works with the administration to support a public education campaign targeted to the general public on the impacts of extreme heat, similar to the “Save Our Water” public education campaign that California developed to promote and reach statewide water conservation goals. Key components of the education campaign include a website and toolkit with actions Californians can take to stay safe during extreme heat events. The campaign should include partnerships with community-based organizations serving communities that are most vulnerable to extreme heat (including low-income communities, communities of color, the elderly, disabled persons, farmworkers and other vulnerable subpopulations). These organizations can serve as trusted messengers that provide key information to community residents and can work with local governments to support vulnerable populations.

**Draft Recommendation on Mapping
Wildfire Subgroup
May 2020**

1) Proper and timely wildfire risk identification is critical for state and local planning efforts

State law directs the California Department of Forestry and Fire Protection (CalFire) to map areas of fire “hazard” based on fuels, terrain, weather, and other relevant factors. “Hazard” is based on the physical conditions that give a likelihood that an area will burn over a 30 to 50-year period without considering modifications, such as fuel reduction efforts. “Risk” is the potential damage a fire can do to an area under existing conditions, including any modifications such as defensible space, irrigation and sprinklers, and ignition resistant building construction which can reduce fire risk. Risk considers the susceptibility of what is being protected.

CalFire maps identify hazard zones, referred to as Fire Hazard Severity Zones (FHSZ). These maps provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. Fire Hazard Severity Zone maps are intended to be used for:

- Implementing wildland-urban interface building standards for new construction
- Natural hazard real estate disclosure at time of sale
- 100-foot defensible space clearance requirements around buildings
- Property development standards such as road widths, water supply and signage
- Considered in city and county general plans

CalFire defines FHSZ for both State Responsibility Areas (SRA) and Local Responsibility Areas (LRA). An SRA is an area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. SRAs do not include lands within city boundaries or in federal ownership. An LRA is an area where local governments have financial responsibility for wildland fire protection. Only land in “very high” risk is illustrated in LRA maps (even though CalFire maps the different zones in LRA maps), whereas SRA maps include designations “moderate,” “high,” and “very high.”

a) A significant, ongoing state commitment is necessary to keep FHSZ maps up to date

CalFire has an ongoing project to update the FHSZ maps. It is costly and time consuming. CalFire FHSZ maps for SRAs were last updated in November, 2007. FHSZ maps for LRAs were last updated in 2008 and are presented to local agencies as recommendations.

Questions:

- Is it necessary for state law to specify a particular interval for updating FHSZ maps?
- How do we keep up on determining how frequently to update?
- Should updates be triggered by changing science (e.g., availability of wind maps)?

b) FHSZ maps should include additional considerations

FHSZ methodology has historically included past ignition frequencies and fire patterns (ignitions do not always turn into big fires), but these change through time. Not only does this imply periodic updates on a faster cycle than at present, it raises the question of whether past mapping practices are appropriate for today’s reality.

Significant areas of California are not included in FHSZ maps. The original maps were intended to guide new development and the building codes used, and did not include most pre-existing housing development. Lack of inclusion in the FHSZ maps should not imply that no fire hazard exists.

Questions:

- Should FHSZ maps include previously unmapped development, including the already-built environment? If so, should newly-mapped homes in high risk areas face heightened requirements for major renovations and/or rebuilding after fires in these areas?
- Should use of FHSZ maps be required for local governments? Should FHSZ maps in LRAs be expanded beyond just “very high” risk designations? How should FHSZ maps impact land use decisions, if at all, in LRAs (at least in high- and very high-risk areas)?
- Should updated climate change scenarios be included in FHSZ maps?
- Should housing development patterns be included in the FHSZ methodology, since they influence fire frequency patterns?

c) Should FHSZ maps trigger parcel-level fire mitigation considerations beyond building materials?

Research is needed on whether the existing mapping program could also impact additional mitigation measures (beyond building materials) on a particular parcel. The sub-group plans additional study of systems like Australia's, where hazard is mapped in broad classes at the landscape scale (similar to current FHSZ classes that dictate building codes for new development), but then, at the finer parcel scale, the developer must then mitigate further by (for example) adjusting the building placement on the parcel to reduce exposure, ensuring on-site water supplies, designing with shelter-in-place in mind, etc. With the current FHSZ process, none of these mitigation measures are required or even considered, because once the building code requirements are met, the developer proceeds without consideration of these other issues.

Questions:

- Can the FHSZ map process guide additional risk mitigation at the parcel level beyond building codes?
- If so, what additional considerations should there be beyond construction methods and materials (ie, building codes)? Siting, layout, roadwork, water, etc?
- In which hazard zones would they apply?
- If so, would local fire marshals sign off on this?
- Is there or should there be a fire risk class that is “no build” or “not defensible” (i.e., too dangerous for fire fighters to access or work), to highlight extreme circumstances?