

CA Fire Services Task Force on Climate Impacts

Meeting Minutes-**CONFIDENTIAL**

August 22, 2016

Present: Jessica Abramovich (Cal OES), Keeley Bosler (Governor's Office), Jeff Bowman (Orange County Fire Authority), Christina Curry (Cal OES), JR DeLaRosa (California Natural Resources Agency), Mark Ghilarducci (Cal OES), Saul Gomez (Governor's Office), Rob Griffith (USDA Forest Service), Jose Lara (Cal OES), Mark Lorenzen (Ventura County Fire Protection District), Robert McCord (FEMA), Paul McGinnis (Cal OES), Nicole Meyer-Morse (Cal OES), Lori Newquist (Cal OES), Lou Paulson (California Professional Firefighters), Ken Pimlott (CAL FIRE), Matt Rahn (CSU San Marcos), Dave Rocha (Alameda County Fire Department), Dave Roberts (El Dorado Hills Fire District), Reggie Salvador (Cal OES), Gabe Schultz CAL FIRE, David Thomas (Orange County Fire Authority), Jason Weber (Marin County Fire Department), Brian Woodbeck (Cal OES), Kim Zagaris (Cal OES)

Next meeting: 12/7/2016

I. Welcome and Introductions (Mark Ghilarducci, Cal OES)

- Review/Approval of 5/25/16 minutes
 - Approved – no changes or edits.
- Update on Fire Season
 - Ken Pimlott- The siege started middle of July with several large fires including the Soberanes fire in Monterey and then it kind of moved its way around to the Cole fire in Napa and then south. We are engaged in 6 but, we are considering 6 major fires, the Soberanes is really transitioning into more of a wilderness fire on the Las Padres. It's just close to about 95, 000 acres this morning. The structure threats have been mitigated for the most part and that was through significant effort of a lot of resources and a significant time commitment. Actually on that fire a discussion between the lead agency and the county and others was a little bit of a change in paradigm. A lot about what we are talking about today and in this task force and what is the reality of the impacts of the changing vegetative conditions, fire environment, the overall changes in climate and temperature increase and all of those things in five years of drought. The Soberanes fire, this isn't the first time that fire has been there.
 - Very difficult terrain and very different fire environments from the coast, right along highway 1, very moist fog literally going 2,500 feet inland and up a few hundred feet in elevation you get out of the fog belt and you're very dry and warm and changes in vegetation so really all of that continues to play the same role. Coming back into this fire at the same time and the same types of topography now with this complete impact now where we are at with fuels. To think that we were going to have any different levels of success I actually applaud all the folks, and these are seasoned fire veterans across the board who came forward and said that we don't want to look at this the same way. We want to be aggressive and put this fire out, but we want to do it in a way that's smart and

doesn't necessarily put the firefighters at risk and has a very aggressive plan of protecting structures, but we do it in a way that's (1) Thinking about where the fires going to be normally in 3 days, but there in 3 hours so let's think about getting those resources out there. A lot of public engagement, I think this fire of all of them probably hasn't had the greatest need for public outreach and community information exchange at a fire that ended up with two or three different incident support and staging areas. Very diverse communities from Big Sur, Carmel and all the way around to Carmel Highlands and up. So it was a challenge across the board, it was not cheap and it's been a very expensive fire, but at the end of the day, the feedback from the county the locals and from all the cooperators has been its been fire service has really learned its lesson in engaging in this area as and as far as how to deal with the issue and the floor supervisor there Bob Baird was very interactive with all the county.

- But, right now the focus has been on wrapping up the Blue Cut fire in San Bernardino and which really for the first couple of days had some extreme fire behavior and rapid runs and is now the 20th most damaging fire in the state's history as they have been updating the information on the number of structures damaged and destroyed, it popped right in at the bottom at 35-37,000 acre range. Significant effort coordination and damage to railroad and electrical infrastructure there, but again Mark and I and others and Kim were down visiting late last week and again a very unified effort between San Bernardino County fire, the forest service, Cal Fire and so many others there to mobilize that number of resources. Right now though I think what we are seeing is the longer term kinds of fires. We've got the Cedar fire in Kern County on the Sequoia, the Ray fire in the Las Padres in Santa Barbara County and Cal Fire on the Chimney fire in San Luis Obispo County which has been getting a lot of attention because of the threats to Hurst Castle. As of last night about 8,000 acres of the Hearst Ranch had been burned and of course the risk effort to protect that landmark. All of these fires are burning in just the same kinds of conditions that we've been talking about for the last couple of years of extreme rates of spread and spotting.
- The Cedar fire is our first major fire engaged in tree mortality in that northern Kern County, just getting into the bottom part of Tulare County. So its significant impact, so again fortunately it's not quite damaging as the areas like Shafer Lake or other maybe more populated areas, but it's still a significant impact to those communities there and with the fire behavior and that's what's going on there. We continue to mobilize resources and Kim will talk about that on the mutual aid side and that has been significant in moving resources not just in the state, but we have right now 60 fire engines from other states that we requested about a week in a half ago from several adjoining states that are now actively engaged in assisting. That has become such a seamless process to engage in 12 packages of 20 person hand crews and we have the Guard out and Kim I'm sure has the latest numbers, but we have rotary wing and the two MAFs. So significant on all fires, just a significant commitment of all types of resources and again I can't thank everyone enough on the little government side of the house because there is such a significant commitment there to make this work not only on the fires, but covering the fire stations to maintain that initial attack piece. Last week we had 270 initial attack fires, so if we have 6 major fires then that 7th fire is all initial attack and as you all know that's working collectively to keep our initial attacks success rate up and we are doing that. That's not happening without the fact that you are all out there doing it.

- Kim Zagaris – Ok so from the mutual aid stand point I think the height is about 650 local government engines out the door probably about two weeks ago and about 140 of our engines and apparatuses are out and as Ken said we hit a peak, then it would kind of level off a bit, then we peak back up, but it's been pretty steady. In fact as we close one out, we seem to re-mobilize resources from north to south to central; back and forth. I am noticing a lot more injuries, a lot more accidents out there. Talking to Chief Opty this morning as their supporting several fires and he was talking about his challenges of today's firefighters and all the work and quality rest cycle of being out and wanting to be home. I think we can all probably relate to today's fire service and back in the time where most of us can kind of relate to more fondly that you went out the door, you came home and you didn't have 14 days on back in the day and it is definitely changing. We are really watching some of the issues out there, we have actually seen several incidents a couple weeks ago which folks had been out the first go around for well over two rotations and pulled one of their engines back. We've had some folks staffing issues back at home not only at single agencies but, the entire op areas with resources that are gone and getting people to fill the shifts with those kinds of issues that are out there. In fact Chief Porter and I were just on the phone dealing with a couple releases this morning off the Chimney fire in this particular issue, it started out a little rough I think with a couple CDFA issues, but it seems to be smoothing out. I kind of laugh sometimes because I don't know if we've got more fires lately in the last few weeks on Cal Fire versus our federal partners, but even the federal fires are going on right now and we don't seem to see a lot of CDFA issues, things are working.
- Mark Ghilarducci – I have a couple questions. But before I say that, I think we kind of take this for granted, but I've been doing this now for going on over 30 years, but I am really more amazed than ever when I see the way our state mobilizes and comes together and the commitment that everybody has moving from fire to fire, being reassigned, being redirected and being out for long periods of time. It just basically, moving this state's overall fire service around in such a, it's really a coordinated balance of resources. That really is a commitment to the system and to all of the local governments participation, to Cal Fire's precise actions and the way they approach the firefight to our federal partners in the forest service and it really is one team one fight. It's just amazing to me after all of these years of working it and seeing it and how well it's done.
- That said, I still think that there are gaps that I'm seeing and my question is how do you think Kim and Ken, and then people can weigh in on how are we seeing this challenge that we are seeing with increased temps, higher temps, a 50 year drought the coalition to our climate impacts to our fire threat in California and what is the from your professional perspective, what is the end stake and how much more can we go that the means don't justify the end? So can you kind of talk about that a little bit? It just seems like a really big factor.
- Ken Pimlott - It is, it's just one of those things that's been perplexing and you just have to maintain that response system and we pride ourselves in the state already having a 3 year system and we do and we have way more resources in this state collectively both local, state and federal better than anywhere in the country and other states look at us like why do you guys do it that way? We have 38 million people and soon that will be a lot more and we have infrastructure threat like Hearst Castle or power grids. All of these

things unlike any other place does, so we are always going to need to maintain a very strong system and I think we are going to need to find some collective ways to improve, to increase that, but we can keep dumping money into that and increasing that and we are still never going to be able to combat the conditions that we are changing into. So I think it's a couple of things, I think this might have been heresy a few years ago even, but I think we also have to be thinking about what's the smart way to do it and I think fires like the Soberanes is what we need to think about and other places. Another good example is the Cedar fire and Mark and I were just talking about that and hey its tree mortality, but is it a bad thing that it's burning like that? I don't know, but were not going to stop it from burning, so how do we think smart about we have to spend a whole bunch of effort, people, time in something that we know we are not going to change or do we redirect that focus and make sure that we are out in front of protecting the communities and engaging and all that and engaging in the fire at the right place.

- Again, I don't want to mistake that for changing our approach that we have to be aggressive in that initial attack and even extend it. We want our fires to go out because we can't afford to let them, but at the same time we have to look at that smartly. So I think that's going to have to be a cultural change for us thinking its ok to admit were not going to put the Cedar fire out burning in a 100 percent mortality because it's not going to happen and its putting people at risk. So, I think it's looking at it from that perspective, it's the other piece that we got to continue to engage in fuels treatment mitigation around these communities and where we have wildfire protection planning going on in the States fire plan, what the National Forests are doing and we really have to ramp up our efforts in mitigating the fuel issues in these critical areas. It's really a multi-faceted approach, but not mistaking the fuels treatment and other things for insuring though that we have a strong robust system. You know I'm with Kim; a lot of it has to do with what's going on out front here in a few minutes. It's over how much can people take and how much can people throw in the same number of people and the same resources. We are asking at all levels to do the same, and Kim just said that it's not just Cal Fire, were asking all of you to have folks out there for longer periods of time and pull more resources. While everybody is struggling to get that, were getting a lot of UTF's. I have a whole list this morning of unable to fills and it is a lot of it is in the overhead positions. We are just struggling to get folks to fill some of the positions and it's not just the people out there, all of this impacts the people back home in the fire stations and those people have to cover behind. So that's my perspective anyway.
- Mark Ghilarducci – Well it certainly seems that we are trending in the direction that really going way back to what the Blue Ribbon Commission really predicted we would go, but without all of the change in climate. I think the climate issues have increased and exasperated it even more, but I guess to some degree would you say that it doesn't come to a big surprise right? It's kind of what you expected? So what I'm hearing from you is that while having an adequate and robust response capability, there also is this sort of 3-legged stool right? You need the education and the change if we do need to change in fire or fighting and based upon the changes that we are seeing in our forests etc. Then we also have to do greater fuel management and so those are some of the key things.
- Kim Zagaris - Some of the resource requests that are out there we got you know more than enough Type I engines in the system, but those aren't meeting the requests needs of the folks that are managing the fires on the other side of the house. As you well know

boss, we put a request in for additional Type 3's and Type 6's and that was met with resistance. I can tell you from Chief Bowman's side of the house a week or two ago, they had people they just didn't have assets to put on them. I still think you know the majority of what we are doing is we are trying to match the right resource with the right the right tactic to go into that. We can surely substitute Type 1's for some of that, but it doesn't quite get us into some of the area we are going. The higher up in elevation we go tighter we have to run the Type 1's and then were run into a safety issue.

- Jeff Bowman – Kim, were kind of in the second quarter of the game right now and it isn't even halftime yet. So you're right on the money. We are going to unfortunately experience, and it's pretty obvious that we are going to experience more injuries, fatigue factor setting in, maybe not even injuries, but illnesses setting in related to fatigue that are going to start showing.
- Kim Zagaris –Just maintaining equipment to keep it out on the road right now is another issue. We just don't have enough of fire mechanics out there to keep the equipment up and running and I tell you it's just another big hole in the system and we asked for a lot of mechanics and we just don't get them out there because people, you know if you're at home and you maintaining ambulances that's a crucial issue to keep your equipment back. I will give you an example of Chief Ward in Alameda County, I bet that during the 44 apparatus she maintained at least just in that Bay Area Corridor, just in their shop. They do a great job because; as soon as they get something home they are on it right away. I don't know how he keeps both his fleet and some of the other stuff that he does out there up and were actually very lucky. We are trying to keep things up and running, but that's the other side of the game and how long can we run the equipment for and then we see them breakdown.
- Mark Ghilarducci – So, given the understanding that resources have some level of being finite, to a degree, and getting back to what you were saying Kim and Ken. I think this issue of fighting fires smarter and a different way to approach how do we think through that concept a little bit? What you're saying is that we either through technology or new methods or you know fighting fire may not be necessarily putting boots on the ground in the future or maybe there's some way to do that. What are some of your thoughts on that I know you guys have been thinking about that for some time.
- Ken Pimlott – Well I think it's kind of all the above. It's the access to the new technologies and the overall awareness that gives us some more access to the fire behavior and a feel of where its going. I think that its starting back even with the basic understanding of fire behavior where we train folks with fire behavior analysts and then train folks right on the ground on the operations side. We have historically relied on historical fire events, you know it's always gone out on the ridge or we are always going to pick it up because of the down canyon winds at night and it will burn back on itself and we will be fine. Well it's not giving up and not losing that history but, at the same time, but guess what the humidity is never recovered at night, that we had an up canyon wind because of this particular event and it continued to burn actively all night. So it understands not to expect the same thing, so how do we get that piece in our training and pass those slides down. But it starts I think with a cultural change and it really has to be at the top and what is our expectation of everyone out there so they can start passing that down. I tell you the feedback from the Soberanes is that we stood up and said I want

to think about this fire this way a little differently and all of the leadership was bought in, but the folks at the division and branch level were like great well this just sounds like another grand exercise or experiment to do. The feedback later was well oh maybe it did make sense; it was the right strategy so that we didn't set ourselves up for failure. So I think it's trying to provide some intent if you will from the top and let that sort of work its way down. What I keep telling everybody is stop telling me that the fire isn't burning like you expected it to; it's been doing this for two years, so stop. Its burning like we didn't expect it to, so expect it not to burn like that so, how do we begin building that into our discussion all the way to our company and strike team leaders to our supervisors and all of that?

- Kim Zagaris – I just wanted to let you know some more firefighting statistics. This morning there were 17,000 firefighters on the ground nationally fighting fires. 10,200 were in California on the ground right now and this is another example. I think all five of the forest management teams were out and Ken you have three of your six out right now and one just stood down and just came off the fire. Again, were stretching some things and I heard a couple times from our western partners that they think we are hogging the aviation assets. The conversation was that they wanted aircraft and they couldn't get them. An example was that I told one of the partners in Nevada that unlike sage grass, we have people in homes that are dying and I'm not going to apologize for that side of the house. But, some of our friends in the Pacific North West are in the same boat that they were in last year. Their threatening structures and having problems so it will tighten things up a little more. Chief Teter and I have been on the phone a couple of times this year with NFSY over various aviation assets and I think where Ken didn't mention it he's brought on some additional aircraft to call when needed and TYPE I large air tankers. So it's up to us quite a bit and at some point nationally when it was going to be made available into the system and I said I can't imagine why Cal Fire wouldn't make them available if they weren't otherwise committed. That's a case and day by day basis and that's kind of where we are at. We're constantly juggling on that side just to keep things up and running and other critical issues.
- Mark Ghilarducci – That's interesting that keeps happening. Seems like every time I go to a fire I meet with older and grizzlier firefighter guys that say I've never seen fire like this before. We hear that consistently and we go what's happened? That's pretty significant. So on the training issues, this is Fire Scope and the State Fire Marshall and at some point we need to take this discussion and also have the Fire Scope Board to update some of our kinds of training and ultra-issues that we probably need to address now so that we move into the next 10 years the way it's going to be like for firefighting.
- Ken Pimlott – I would agree. I think that the structural defense boat was a really good start at acknowledging the urban setting about the moving changes there are and some of that and backing up and looking at some of the fire environment period and seeing where that goes.
- Mark Ghilarducci – How about from the local perspective? Anybody have any thoughts or comments about this and how you are feeling the resistance resonating across the board?

- Dave Roberts – I can speak from the El Dorado County perspective and that I know it's similar up and down the state as far as local government goes. I think the committee here has done some good amount of long term thought processes and I think that there is some good money committed to some long term solutions. Though how much we can influence Mother Nature, I don't think we can very much. I think she's going to slap us when she's going to slap us, but I think on our side and I think Chief Zagaris spoke to it in one of our initial meetings, and I don't want to quote exactly but it was somewhere between 20-30% less resources on the road when he needs them for these big events. I think that equates to local government across the county that were 20-30% less firefighters in our fire stations because of our economy and truthfully 30 years of unfortunate financial events that consequently caused the financial decisions across the board. Cal Fire got a much needed bump to their budget and I think that was really good to see. Like I said I think we have some really good money committed to some long term thought processes, but I think we need to all know that that's not going to make much of a difference for us on the fire side for probably 5, 10, 15 maybe 20 or longer years.
- Local government is probably responsible for the weight and speed of attack to get to those incidents before they become out of control and cost us all a lot of time and effort and money. But, I've got 3 agencies in my district right now that are living off of the aid to fire funding which terminates at the end of this year and their going to go for 3-2 or 2-1 as far as staffing goes. There are fewer resources on the road for big events when they happen, less resources quickly able to mitigate the fire when it does happen and before it becomes a big event. So it may be time to split the organization or the companies up here to some groups that are focused on some of these other issues, because I think that's the card that we are missing and I think the local government piece is the card we are missing now and if there is anything that the state can help with through like I said 30 years of unattended financial consequences that many of the decisions have been made at the state level that have created these problems that maybe we can work on to help mitigate some of these problems that are coming because, like I said, we are going to be continuing to degrade the fire service in El Dorado County and I'm sure that continues to be a problem in every county up and down the state. I'd like to see some splitting up the group here to tackle some of these issues.
- Jeff Bowman – The flip side to that is that we don't always have the people, we don't have the equipment.
- Dave Roberts – That's the same with us, many of our agencies and I'm sure it's the same up and down and we have deferred the purchase of fire apparatus just to keep two-person staffing on an old engine that is out dated. So we are running into the same thing, we just don't have the equipment that is reliable to send on these strike teams therefore I think we are seeing a lot of failures out there.
- Jeff Bowman – So I'm referring more to the excess equipment and I'm going to go right back to the Blue Ribbon Fire Commission where we were handed 150 units we purchased back in 2004 and here we are 12 years later and we have only purchased 44 of that 150. And, you guys go to the state begging for assistance to fund added equipment and you get run through the ringer on that stuff. We have people and if we had a strike team of Type III's engines available to Orange County, they would be on the road already, but we don't right now. At least one more strike team. If we had Type VI's

we could staff those too, but we've run out of equipment. I'm pretty sure Mark that it's the same for you guys in LA. I have no doubt that they could send more help and San Diego could probably do the same. But, we don't have the equipment to put them on.

- Mark Ghilarducci – In the case for City of LA for example, their commitment out the door is those two Type III strike teams.
- Kim Zagaris – An example in both the City and County of LA, is that they are struggling with more people going out the door retiring than people coming in. Well actually City of LA is now at a point where they have more people coming in then they got going out. So their numbers are coming back up and LA County is somewhat in the same situation so in some parts of the state, they are correct with having enough people to staff the equipment that they have and on the other end we more influencers that have more people, but just not enough equipment to meet the need. Again it's that balance that we have to try to look at that Type I's we have a plethora of those, just not the right thing and mix that we need out there in some of those cases. When I was in Monterey, there was a big push for the Type VI's as an example just for some of the fire operation that Cal Fire had going on to support just that one side of it and it's a pretty steep and gnarly country in there with fuels. Again, I think we have two distinctively different issues depending on where you're at in the state and we have to just keep at it. I think that as Chief Bowman's indicating is that they definitely have the ability to staff some of these things we just don't have the assets to give them.
- Mark Lorenzen – One quick point, and there is a third thing and Chief Pimlott kind of indicated it with the UTF's and we have mandated and forced people to go out on strike teams unlike some other, but our challenge is that we really have very few qualified people in overhead roles and it goes back to it's a generational thing where our new young kids aren't so interested in going out for 21 days and their not really working their way through the CICCIS system or whatever system we happen to be going through. Then it takes a long time to bring somebody up to that true qualified division sup though and that's another area. Beyond the equipment and beyond the personnel we are also seeing that shortage in leadership and management and that's going to be and continue to be a future problem for us. Like I said one of the things has to deal with is how do we streamline the qualification process? The other is how do you motivate the younger generation that's interested in more time off?
- Jeff Bowman – Mark you probably know that's on our Blue Ribbon list, the CICCIS thing and it does need to be looked out and evaluated. A lot of the overhead staff guys are the ones that are leaving the organization and were not filling from the bottom.
- Ken Pimlott – We've had the exact same challenge and its either what Mark said or that this group really does want their days off or its just as easy to make that overtime covering behind than it is to going out and making your own. So one of the discussions that we have been having and just throwing ideas out there, couldn't we look at some career enhancements i.e.; if you get these qualifications and you take so many assignments that it gives you points on an exam or as appropriate on a hiring or something that tries to incentivize this, because it really isn't just the money, its vs. going out or being at home. Yah I think that there has got to be some other ways to tackle and get into the head of this new generation.

- Mark Ghilarducci – So would you guys say that this is something we need push a little harder asking to, so where does this start? Fire Scope asking for action to push our task force and op's team to develop different kinds of standards? Would you say that is a place to start?
- Mark Lorenzen - I don't know if its different standards, Cal Fire has already figured out a way to make the system a little easier. They have their own qualifications system and those are things that the rest of the fire service has to look into.
- Jason Weber – I think you look at a priority training program like Cal Fire has with very successful team launches that doesn't exist on the local government side right now and I think that the expectation of something similar to that. That would allow for, because what we see is no one wants to be gone on the operation side so there needs to be a way to you know you want to get in, you start over on this side. You can become a Plans Section Chief and then you'll be a really good Op's Section Chief. But having something on the local government side will help because we are seeing and end of an era retiring that was necessarily, and they were probably grandfathered in and we get to see ICCCS, where others coming up and you look at the track and it takes 20 plus years. So how do we speed up that track a little bit without compromising quality of it and then maybe look at the whole CICCIS piece and make sure that it's still working? But, I think the priority training piece is important.
- Kim Zagaris – You know one of the things that I learned a long time ago on this, my side of the house was our ability to mobilize only exceeded by our ability to manage it. The overhead side of the house is that management side. You know and most of us are thinking hey Div Sup, top Section and those key positions, but the ones that come back to us constantly are those people in logistics and everything else that just makes this whole thing run very well together. So again if we don't get enough people in the system to help manage it, it's not going to do much good for the people on the ground if we can't maintain the system.
- Jason Weber – Is this something we should bring up at the CWCG as the federal state contract county partners to discuss priority trainee? The federal team punches out and they got trainees. The state has the system, but the way for a local government to have more of an established program. Maybe just focus on those hard to fill things and not the operations side. Let's just say it's all those other duties that we know that keep the argue moving.
- Kim Zagaris - Right now I think the feds are doing pretty good. We started the first part of the year out their not interested to much in taking trainings then as we start cranking in the incidents then their happy to take people, because their just happy to get some folks out on the ground and they realize some of the issues on the table. Again, I think the hard part is that you, local government are paying to get your people trained and again in some cases you get them to the training and then get them out and get their ticket punched it becomes hard sometimes, but not always. Again, I think Type III teams are allowing great capability. I think we've seen several of those deployments this year with the Type III team's prior keeping us from having to put a Type I or Type II team on the ground or in some cases running in until the Type I or II team gets there. I've seen a

pretty good side to that a couple times this year already. Again, I think that's the other key side that we have to continue to manage.

- Mark Ghilarducci – That's a good point. It seems logical that if we have this plan moving forward that again, that everybody is on the same page with trying to build that capacity with everybody across the board. I went a little longer on this on the agenda to talk about it, because I think really this is sort of and giving everything that we've seen this is a good discussion and its critical, because it all does play into what is our challenge moving forward and as the climate and our population increases and moving into the whole issue and the fact that we are seeing such extreme fire conditions. I'm just thinking that with the way fires are today, more than anything we need to be fire managers that really get it, because these are tough fires to fight and needs that really good coordination. More on this later, we need to move on to the next topic and we will have more time to discuss this afternoon. Thanks for that part of the discussion, we'll capture this and I'll look for some sub-committees as well.
- **Update on Budget/Initiatives**
 - Mark Ghilarducci- Let me just close out on this one section of the budget update. As many of you know, we at OES were able to get an enhancement at least on some of the budget operations and we did get funding to do replacement engines. At the last minute really, some rambling at the Senate for I'm not sure quite what the reasons were for, but they opted to not fund the new \$20 mil for new engines, yet they gave us \$20 mil for Human Trafficking of which we didn't ask for. Anyways, we are on it again and I've talked to the administration is committed to addressing this issue of enhancing the engine fleet and are chipping away at the 150 engines that were recommended at least. I'm not really even sure that the 150 number is even legitimate given what we've been talking about? But one of the questions that came up is the LAO and was that why 150? Why not 20, why not 50? 250? Of course what happens after 12 years of administration changes is that you constantly having to educate and be educated and you get some people who want to just sit back and say well I looked thru this Blue Ribbon thing and there's nothing in there that provides analytical data that shows that you need to get 150 engines.
 - So it's hard for us to concur on your plan to or fund you appropriately. I just think that it's another way for them not to say that they don't want to fund it, but the bottom line is that there are some key areas and that we constantly be on it and to continue to make our case. Both Ken and I have gone into the Governor's office here and talked a lot about what our needs are and what the needs of the system are and I would say while we have not gotten everything, the commitment has been pretty strong to be able to continue to get items that we did get and we have an enhancement. But, clearly there is more to do, and there is a farther way to go and we are going to continue at it.
 - There's also been discussion of external initiatives that you've all been involved in the past making a broader statewide exercise in being able to put fees or services in place to be able to enhance our public safety posture and to be able to have adequate training, firefighters and equipment across the board. I don't think those initiatives are unreasonable or have fully died yet, but there has been a lot of discussion and there continues to be a lot of discussion on that. So I'm just saying on the area of the budget at least on our end there needs to be and from my role as an Emergency Services Director there has been issues and there is an intent to try to address the needs of these fires and future fires as we move forward. But it does have to be so that we are all on one page and that we have a clear pathway forward in making recommendations to the legislature.

- Ken Pimlott – Just echoing what Mark said, even Cal Fire's only getting the drought augmentation on a year to year basis. But I do think that as Mark said, this hasn't died yet. I think having a year like this really gives us a great opportunity again like last year to talk about what's the new norm and what should become permanent and I don't mean just what's for us, but what should become permanent to support the fire service to work at this higher level. So while it didn't get everything where we would have liked to have seen it be this year, we have some great opportunities to take what's happening this year and have this dialogue.
- Jeff Bowman – I think just one more comment, because I think Ken you hit on it earlier on in your conversation and we no longer have peaks in this workload and over the last several years it has continued to ramp up steadily each year. If that's not the driver for that, the headline on the board up there, I don't know what is? Clearly there is an impact from the drought. The fuels that we are seeing, the rate of speed that fires are moving it's got to be related. It may not be the only cause, but this constant ramp up is showing us in the fire service that this thing is not going away and it's not happening in the fall like it used to, it's happening in the summer.
- Kim Zagaris – I think with the tree mortality alone; we are only seeing one segment right now. There are a couple phases where I know it's going to go through and you know and you find it all dead on the ground and hundreds and hundreds of fuel left for the next generation of firefighters that are going to have to deal with and I think it will be the other side and how they're going to manage it. You know again, last year we saw two fires, two distinctly different fires that made the top ten, number three and number seven. One was wind driven, and one not wind driven at all and the destruction of those two. We still aren't seeing a real lot of heavy wind driven the way we do for Santa Ana and that's the other side of the house that I think concerns me. Every fall no matter where we are at it then gets injected into that fire situation. We have the fuel we have the fire and probably where it ends at that next juncture. I watch how we are struggling now and I tell you I look at it and go we are the aircraft, were the next generation aircraft and last year we ran into this problem just getting fuel to them and keeping that running. We are so much far ahead and I'm watching how quick they get out there and yet the fire with the intensity will burn through the retardant very quickly. Again, I try to put myself where these kids are today and out on the line and I watch some of the footage and how quickly it's burning through the retardant lines and there's not that much time left anymore and whatever the equation is around the deck. I think, wow, at some point we start looking towards what's the next thing after the retardant that we go to that would buy us more time? I don't know if it's out there, but I mean those are some of the things out there and I think technology is the other real side of the house. We are just barely up and running with the transition from NIX to Scalp. I'm seeing a lot of local governments not engaged with it. More that would be engaged in it, the more that would be engaged in it would help us translate and we have to do a particular better job with marketing that particular side of it and the other issue is that Cal FIRE and Cal OES get on board with the AVL. We have to start bringing more local government on to AVL as well for that situational awareness and those particular issues that are on the table, don't you think Ken?
- Ken Pimlott - Absolutely.
- Kim Zagaris - Again, we have systems that aren't totally driven proprietarily that are driven so that we have some open architectural share that information so that we can speak freely that we are operating off of.

- Mark Ghilarducci – Ok great. Well thank you. Thanks for the discussion. Let's move on to the tree mortality task force update.

II. Tree and Mortality Task Force Update (*Gabe Schultz, Cal Fire*)

- Organizational Changes:
 - Governor's office representative has changed and as far as I know right now we do not have a new name yet.
 - In terms of the leadership of the team, if you guys were familiar with the original make up it was Glen Barley, Chris Anthony and Whitney Bray. So Rick Carr and I are replacing Glen and Chris.
 - The Forest Health and Resiliency Working group was kind of a quiet one and has changed leadership and has also changed their overall objectives. Looking at kind of a long term and short term on what to do next after the crisis of just the trees dying. Now they are looking out just a bit further ahead now. They are headed up now with Pete Cafereta and Stuart McMara.
 - Prescribed Fire Working group. There hasn't been a lot of work load with that group. There hasn't been a lot of interest in it given the current situation right now. So, they have actually bumped down to a sub group now that's going to be working under the Forest Health Group and if there is continued interest and an increase in interest then we can bounce them back out again. The Sub-group is seeking opportunities from CDAA and what other various organizations are aware of to seek out additional funding.
 - In addition, we also have another Sub Working group. It's a landowner and assistance group and we have got a lot of positive feedback on attacking the issue and that is this group is dominantly been built to help address to seep funding out there just for the landowners to utilize and seeking an opportunity to CDAA and the various grants that have been made available. It's something in between that, so that groups been made and has a pretty good make up and that group has been able to expand in its makeup and its goal is to seek out additional funding and help just on that local level.
- Numbers:

One of the things that the tree mortality task force has not had a lot of is the stat side to it you know we dominantly give out just the one number of what the tree mortality status is. So last year we were giving out the numbers in the 29 million and in the 40 million and this year we are going to look at providing additional stats. So right now the current statewide number is 66 million dead trees and that's given just the latest aerial detection survey. One that was over to us just a month ago which increased the count to 26 million trees that have been identified in being dead just for this year. That's significant in terms of 2014 we accounted for 3.3 million trees that died that calendar year and last year we accounted for 29 million trees that died with an expediential jump and this year just on the very first survey its 26 million, so we expect that number to greatly grow. With that said, from the task force side we are going to look at producing additional numbers. We get requests quite frequently from various entities on what's the statewide living tree count? What is the bone dry ton count on the landscape? So we are working on through our mapping and monitoring group has a whole list of various numbers. In the monthly updates we are looking at adding these as we get a unified approach. This is something that we are going to be looking at with the partners in the task force so that we are giving out one value for each one of these various topics. The hope is to provide additional information and also reduce any confusion or potential overlap of values. So the Forest Service might provide a number that Cal Fire is offering, but how the numbers were built could be slightly different and if their added it may not be in the appropriate way just to look at that total. So we are looking at a way that is just a unified approach. Just continue to expect that to just list this and the numbers will continue to grow each month as we come to agreements just on how we are going to build.
- Working Group Efforts:

Current working group efforts right now, the right away entrance agreements thru the use of just the CDAA have recently been a hot topic dominantly from the local level. People are being required to fill out basically a right away disagreement that alleviates the state from any liability that is associated from any of the activities just occurring from the contractors working that particular parcel. It's required for every parcel that we are moving thru and this has kind of spiked up as an issue and we haven't really got an answer and that information is just being brought back to that local level again. The bottom line is that right away disagreement language where that liability is a necessary language to have that element in it. If the landowner chooses not to sign it, it's in that landowners right and then they would have to identify other sources of funding just to pull out dead trees.

- The Resource Allocation Working group is starting to collect what we know of that's funding sources out there and what they are trying to do and coordinate if at all possible what we can overlap interest and try to utilize just the known funding's for the biggest bang for the buck. That is going to be a work in progress and not too sure what the product is going to look like yet, but they are collecting that information and making contact with the various counties about it.
- Equipment:
Another issue is the equipment use agreement for the tree mortality task force equipment. Originally, well late last year and early this year as the equipment keeps rolling in, there is just various equipment out there. What we wanted to do is develop a contract with the individual counties if the counties were interested to take these pieces of equipment and operate with them whether with local county personnel or potentially contract people. So we started with the air curtain burners which are probably one of the touchier pieces of equipment out there, but we also want to use it as a platform to identify contract needs. So that's working through its process now, the counties all have that draft contract and they have already been offered some comment on what they would like to see changed and that we are going to be working with legal staff just to help incorporate the necessary changes. It's expected that that additional contract with the additional pieces of equipment will be coming out to.
- Ground Work:
The 4th and last topic here is the ground work. Right now just the dominated ground work is through the counties and the utilities and they are working on the tier one high hazard zone areas and almost no one is working in the tier two's and that's just because of funding limitations and the priority needs. So with that said, progress is being made and the work is continuing there. Talking with the utility companies, their pretty dis-aggressive. One of the challenges is that trees are dying within a three month to six month time period so as they might go through and clear out something that was deemed safe at that moment, just a couple months later it's not. So it's requiring a re-entry effort.
- There are additional funding's that are going to become available today on the Cal Fire webpage is the SRA tree mortality grant, so we are looking at getting that funding out there towards the end of this year as it goes through its application process and we are encouraging that that money be used in the areas that the CDAA doesn't necessarily cover. So if that makes sense, just trying to reach out into those local needs.
- Mark Ghilarducci – Gabe could you just refresh everyone's memory, what is a Tier 1 priority vs. Tier 2?
- Gabe Schultz - Within the tree mortality task force, we were just identified to break the emergency or the totality of the situation and the priority zone so we have a tier 1 and tier 2. The Tier 1 is the critical infrastructure, just to break that down to its simplicity. A Tier 2 is broader and it dives into the water shed element too. There are some various just statistical

purposes of what constitutes one or the other and we just recently had an update just on the Tier 1 and we had them posted just on the internet last week so the tree mortality viewer has a new version just of the Tier 1's, but the simplicity is the critical infrastructure elements.

- The last comment that I have is about some of the limitations about utilizing some of the funding as it stands right now are trucks and drivers are two dominant issues besides the fact that we have a limited ability of outlets just to utilize the dead wood on. We know that the logging mills are filled and we are seeking out options to increase bio mass interest, but we are really looking at local storage site that is just to remove the areas from danger areas to safer places just to store it until there is another use to identify. But, along with that, one of the challenges is getting some of the trees from site A just to stop B is trucks and truck drivers. That is a limiting factor and one of the choke points. The other market that is out there is the export market depending on just the land owner there are also choke points there as well. That is what I have for you and open to any questions?
- Ken Pimlott – Ok, can you just give a quick update on the counties and what are considered priority counties?
- Gabe Schultz – Yes, so just originally there were six counties, but that number has increased to ten counties. So basically we have the original six counties which were Kern, Madera, Mariposa, Tuolumne, Tulare, and Fresno County. Then we added Calaveras, Placer, Amador and El Dorado County. The issue is growing north when you look at the tree mortality viewer and you look at its phases from 2012 to 2016, it is generally moving north and it's also wrapping south and around the greater valley. This is a continuing issue and one that has a lot of potential growth. Seeing it up just in the north state and up as far as Siskiyou County, but we are seeing some of the most significant changes up and around Placer County and the northern end. So the various counties that are not part of the task force right now there are quite a few of them that are starting to develop their own task forces which is one of the dominant steps for us just to coordinate with them just down the road from the state wide level. So, through that effort, our local Cal Fire units are trying to work with those counties to help them get those task forces off the ground.
- Mark Ghilarducci – It's a heavy lift for sure and complicated just to put in on a couple of the funding's. There are two funding efforts so there are grants and then there is CDAA reimbursement program for efforts that have been put forward by local governments or state agencies to be able to get reimbursed for 75 percent of their efforts. So both of them, both extremes take a lot of coordination from the locals and between the locals and the task force. But, I have to say that there is progress being made and kudos to the task force members and really the boots on the ground. They are in this collaborative effort with public utilities, local government, Cal Fire, CDCC fire inmate crews and Caltrans which has been phenomenal, all of OES, all of us coming together on a way to address this problem. Sixty six million trees and getting bigger and we recently flew the area and folks it is phenomenal to see where you have green and then you have yellow and the ones that are turning to brown. It's just a matter of days that all the pine and that core of our Sierra are going to be gone. Even if it starts raining tomorrow it will take years to recover from that and it has to be consistently wet all the time. So it's there, it's in our face and we just have to continue to manage it in this marathon sort of fashion one step at a time. So any questions on the tree mortality?
- Jason – The grant that you mentioned, there is a CDAA? Is that correct?
- Gabe Schultz – Yes.
- Jason – And, the one that is coming out today, is that only eligible for impacted counties?

- Gabe Schultz – No, there is actually \$66 million dollars available just with that, but we are looking at about \$11 million of it being focused just on those ten counties, but there is money to be spread.
- Ken Pimlott – The way it came out Jason, is that the Governor puts \$6 million dollars into the general fund to reach out and to fill some voids that the CDAA doesn't cover, that the SRA fund doesn't cover, but they are trying to leverage that so that these high hazard trees that there is no other program. It's not a utility corridor and there is no other way to leverage that to help remove some of those critical trees, so it was kind of reaching out to that. So it's tying in to the \$10 million dollars in SROA fee funds that the governor authorized into the legislature this year. \$5 million of that is earmarked for the tree mortality areas and the other \$5 million are going out separate through the regular process for work around the state.
- Jeff Bowman – Mark, more of a comment than a question. The last time we met Shawna was going to provide us a written update of the tree mortality, the latest numbers? She had mentioned that her crew was going out the week after we met last time. I don't know why I get asked constantly what the update is on the tree mortality issue. Is there some way at least in this group that we can get an update? A written update on numbers?
- Ken Pimlott – Well I think between Rob's shop and the tree mortality, I think the latest information that came out was the high hazard updates and it's all available on the website. On the task force website. What we were finding is that we all wanted to leverage the numbers and to really push this issue and we were all kind of speaking from a little different kind of perspective. So the Governance now is that we are all going back to the task force so that there is one set of numbers that maybe we could all speak from.
- Jason – These all went out last week correct?
- Ken Pimlott – I believe so, yes.
- Jason – So this is from a response perspective for agencies. You haven't seen this yet, there is a QR reader, so you got folks entering these zones and it's kind of a nice tool that Cal Fire put out. Pass it around so everyone can see it.
- Ken Pimlott – Yes, pass it around Jason. I mentioned it at the Fire scope meeting in Burbank and we tried to mass produce it using some of this funding making as many copies to get out as we can. There are also links to it on the website so that you can use the QR reader with it. It's basically got maps of the ten counties of the high hazard areas within the ten counties. So it's a little bit of the background information on the insect itself, sort of the high hazard protection impacts that would result in that. So the idea was get it out on the web, but also yet we are trying to get hard copies to places as well.

III. White House Update (*Ernie Mitchell, U.S. Fire Administration*)

- Mark Ghilarducci – Ok, we are a little bit behind, so let's reconvene. Hi Chief Mitchell, it's Director Ghilarducci. Thanks for being on the call.
- Ernie Mitchell – Thank you.
- Mark Ghilarducci – Ok, so we will just turn it over to you at this point for the update.
- Ernie Mitchell – Ok, thank you. I don't have a lot of update. I think the message is although there is not a lot of work going on until they get to some specific milestone or accomplishments. I will just go on to say that Patty Blankenship last reported I believe during her update after the White House meeting on the executive order on the mitigation calling for mitigating wildfire risk to

federal buildings and the wildland urban interface. That's to be applied to new buildings and alteration to existing buildings on federal land. The assignment for implementing guidelines to be developed by the Mitigation Framework Leadership Group, also known as the (MitFLG). So where the MitFLG is now is they have quarterly meetings and their working on that now and the White House meeting that we had increased the visibility and consideration of climate impacts on fire related disasters. They need to include it, actively include it within the scope of work being addressed by the MitFLG. Up until then the MitFLG has largely been focused on hurricanes, tornadoes and earthquakes. MitFLG is composed of 13 primary federal members, some other federal members and then local, state tribal territorial and governments that seek to obtain a balance point view. They also have guidance for private sector coordination. So in those quarterly meetings as they work on things, they work on them and develop information and don't publish any minutes or publish any public release. The last meeting was July 14th and I can tell you some of the things that they are presently working on. There is a top five desired outcome for the MitFLG to address in calendar year 2017 and those were to increase capacity for mitigation at the state and local level and to work on the national mitigation investment strategy. Recommendation from the Government Accounting Office (GAO), agreed to by the Department of Homeland Security to establish an investment strategy to identify, prioritize and implement federal investments and disaster resilience. There was a comment period regarding that investment strategy that ended June 7th and so MitFLG is also working with them through that.

- One of the other top five items to address is the focus on social vulnerability and it's largely about survivors of a disaster such as for instance what is going on in Louisiana right now where there is so many people that they have to be moved and housed and fed and those impacts. Another point is the better use of data analytics and communicating risk to the public. As you've noticed they have the new big open FEMA data component that you could get to on the FEMA website and the idea of collecting and analyzing large amounts of data to contribute to our preparedness mitigation efforts is increasing momentum I should say. Then the other major point that we are working on is increasing private involvement. As I said, all of these were largely for hurricanes and tornadoes and earthquakes, but now the climate impacts and expect to the wildland urban interface expansion of the wildland urban interface is now a visible part of those discussions as we move forward. We are also working to develop their own webpage for information sharing in support of the mitigation framework. That mitigation framework is part of the national preparedness system that is designed to increase resiliency of the entire nation through prevention, protection, mitigation, response and recovery. Essentially we have raised a level of awareness and the efforts that are going on to include more of a focus on wildland urban interface. No specific measurable outcomes as of right now, but those were some of the discussion points from July 14th meeting.
- Mark Ghilarducci – Excellent, thank you Chief. Are there any questions for Chief Ernie Mitchell? So Chief at this point, the mitigation committee will continue to convene and is there a timeline when we should maybe be seeing some deliverable on some of these outcomes?
- Ernie Mitchell – You know I would hope so, but I don't have that at this time. I can ask and then get back to you and I don't even have to wait until your next meeting. I will send that into you whether there is or there isn't I will send you a response to that. Patty's been attending those meetings in my place and coordinating. A lot of this has been coordinating by FIMA, which is the Federal Insurance Management Agency here at FEMA. I can find out just where they are on that.

IV. Working Lunch Presenter - Educational Component CSU San Marcos (Dr. Matt Rahn, CSU San Marcos)

- It just so happened that the CSU system was being represented on an issue by the folks over at Aaron Reed and Associates, you may be familiar with. They also represent Cal Fire Local 2881

and it was in their coffee room where we both were grabbing a cup of coffee at the same time and they asked and this was shortly after the Cedar fire and right during the 2007 fire siege in San Diego County they asked since I was working with San Diego State University, do you guys do any research on economics and a few other questions and the answer was yes. What we did was very simply an economic analysis the Cedar fire and the 2007 events and that started a whole series of projects here in a direction where I and a lot of other folks never really expected to go into, but here we are years later talking to you folks.

- Connecticut has the largest wildland urban interface of any state in the US. Normally, you don't just think about that. Their starting to now because, like you were talking about earlier the dynamic on fires on a National landscape, not just California, but National landscape is shifting. So historically while the urban interface fires weren't a huge issue for Connecticut or New York or Pennsylvania, their becoming one right? So a lot of these states are starting to play catch up with what California has been doing for decades. But, we still win as far as total housing is, because California is 5.1 million, house losses increasing, and temperature increasing the predicted size of fires and all that starting to increase and then we know that a lot of the fire sin California aren't natural events, in fact the vast majority of them aren't natural events. But, when we start thinking about the urban interface issues, some of the other number that jump out at us is one in six wildfires damages transportation structure in the United States. One in ten wildfires include a structure and on average we lose about 3,000 homes a year nationally right. So one of the things that came out of all of this and then the acreage increases about 3 million in the 70's to about 8 million on average today. So recognizing this big gap in information and a need to move it forward, one of the things that the CSU system has done and San Marcos in particular has begun to focus urban interface and wildland fires on research and education at the university.
- So just a few of the highlights of what we've done since about 2013 and we've been working very closely with CAL Fire, US Force Service and others to understand and things like smoke exposure and basic fire ground exposure. We were able to over that time work with about a hundred, nearly a hundred firefighters and we outfitted them with all sorts of sensors and made them swallow a big pill that measures core body temperature, heart rate monitoring, respiratory monitoring, hydration monitoring all of this sort of information and a couple of key findings and this is important because you are in the middle of a pretty severe set of incidents statewide. Again what I hear earlier is that folks are on duty for how many days in a row and its taxing, not just a mental thing, but a physical thing as well. Bottom line for a lot of the firefighters we work with, they are actually starting out dehydrated every day. They are actually starting their shift at or near dehydration and that's kind of surprising to us. The good news was that nobody was reporting and we monitor these folks closely drinking the energy drinks. There was a lot of concern over that and we didn't run into that issue. A lot of coffee consumption, I don't know if that's a pre-requisite or what? Absolutely on any given day I probably consume enough caffeine to kill a small rhinoceros. So I get it, but that has its complications right? So knowing that, one of the things we found was is if you are starting off dehydrated in many cases you were worse off at the end of the day. Some folks however were able to self-correct and so one of the studies that we will be initiating this year is to look at what are those protocols and how do you make sure that folks stay hydrated or self-correct if they have to? One of the biggest questions we had was we were able to sort of see periods and I will show you some of the data with periods of time where firefighters average core body temperature and heart rates were extremely high and then very rapidly decreased.

V. 4th Climate Assessment Update (JR DeLaRosa CNRA)

- Adapting to Climate Impacts and California Story – The story of how we are adapting to climate impacts is an incredibly important one especially to tell and provide a narrative. It's incredibly

complex and touches so much of what we do and all different sectors, public and private sectors have some nexus on fulfilling their goals and duties and impacts by changing climate and effects on water, transportation, agriculture, forestry and emergency management etc. It's highlighted in many articles and reports and the worst predicted impacts on climate change are starting to happen and their happening a lot faster than the climate scientists have expected. So we are already experiencing the climate impacts. Essentially its people, nature, and property that are really experiencing the impact and trying to figure out ways to adapt and mitigate these impacts. I know this is a lot and we are seeing record setting temperatures each year, record drought, more intense and frequent fires, seeing higher than anticipated sea level rise and erosion, warmer water temperatures are effecting industries and changing global current patterns and we are seeing that billions of dollars' worth of properties vulnerable. There are a few stats in San Bernardino County that saw 82,000 people were ordered to leave their homes as an explosive wildfire which some of us saw quoted in the paper hit with an intensity that we had not seen before surge across thirty thousand acres and around the same time it followed dramatic flooding in Louisiana that the Red Cross had termed the worst disaster across the country since Hurricane Sandy. Thirteen people were killed and 40,000 homes were damaged and those numbers could have been worse. The same week as the Louisiana and California disaster, the Alaskan Village of Shishmaref voted to permanently re-locate their island as it was being threatened by the rising sea levels. So it seems that more and more of a pattern worse than one in one thousand year flood in South Carolina to 2015 floods in Texas and Oklahoma that people are starting to agree it's been exacerbated to climate and a new normal we are starting to see. On sea level rise quickly, this is interesting, on Zillows, does anyone use Zillow? It's the app where you can look at homes that are for sale. They recently used some data from NOAA that took into account six feet of sea level rise and six feet of sea level rise by 2,100 and they saw that almost 300 cities would lose almost half of their homes and thirty six US cities would be completely lost. So in six feet of sea level rise it's estimated that almost 42,000 homes would be under water and an estimated cost of \$49 billion dollars of property would be affected. That's scary stuff and it's all along the coast and all of our coastal cities that are vulnerable.

- So we go by the 3 R's, reduction, readiness and research is our pillars of climate action. In terms of reduction, we have been fortunate enough to establish a solid foundation with AB32, with our renewable energy portfolio standard, with our energy efficiency and our clean fuel standards and we are trying to catch up with the readiness and research pillars. So in terms of readiness, in 2009 we issued the first adaptation strategy that really mapped out vulnerabilities, mapped out different impacts to key sectors of California and it called for things like having a GIS visualization ready tool that planners and practitioners could tap into and had readily available data and available science from the research community, but also from state, federal and local entities. One thing that came from that is it led to the creation of Cal Adapt which is an online GIS visualization tool that maps out impacts from sea level rise, average temperatures, heat, snowpack, fires and precipitation. Cal Adapt was designed to provide access to a wealth of data information that we are able to tap into research institutions from public and private, but also practitioners from folks at the state level and also the local level. So it's been a great tool we are trying to continue to update it. Also, if folks want to use their own visualization tool, but just want some of the data, the data is available there and it's updated regularly by the entities that are supplying it whether it's NOAA, or anyone else that's also very helpful.
- The other pillar is research which ties directly into that what I was just mentioning and we're now on our 4th climate change assessment and the 1st, 2nd and 3rd helped to establish and really to support some of the policies such as AB32, things like Cal Adapt and what sea level rise are we going to expect in Northern CA and Southern CA and the Central Coast etc., and how is that interacting with the delta, how is that interacting with the snow pack melt and our water management conveyance system and how do we filter this into a way that practitioners can use? What are the key questions that are key practitioners need to address and answer? The 4th assessment has been building on that and it's primarily been looking at what do we need in terms of adapting to climate impact since we are already experiencing these impacts at an accelerated rate, but it is a limited amount of funding and we can't capture all the needs of the practitioners,

but we're trying. We're trying to leverage external funding from the feds and foundations. The framework for adaptation was established by executive order B3015, which the Governor signed in April of last year and provides for a regular update of Safeguarding CA which is the state's adaptation strategy document. It called for also creating the implementation of actions plans. So one key question was we are understanding and working around and recovering from natural disasters impacts, but what are we doing to implement recommendations from lessons learned from Safeguarding California or other various policy guidance and lessons learned?

- Lastly, there is a directorate to create an adaptation clearinghouse, which is a repository for some of this key information, key plans and also key contacts. Who are the sectors leads, who are the contact leads at the local and sector level and what are some of the timelines we are working on? Basically the executive order was adopted in legislation, three bills that were passed and signed last year, so essentially they do exactly what the EO was calling for updating Safeguarding California, adaptation objectives, and goals AB482, SB 379 calls for local hazard mitigation plans to include adaptation strategy and to have local vulnerability assessments and by 2022 all cities and counties will have a climate conscience local hazard mitigation plan, and SB 246 calls for OPR to establish an I-card (Integrated Climate Adaptation Resiliency Program) and that helps to coordinate at the state and regional local level and the clearinghouse to maintain the repository and it also calls for Cal OES to update the adaptation planning guide which is a key element to the local governments and their resiliency.
- Climate Update Continued (David Stoms, California Energy Commission)
- One of the goals in doing the 4th assessment was to have a consistent set of scenarios for both climate change, land use, and things like wildfire and sea level rise that all the projects, the individual research projects and there is about 3 dozen or so research projects comprising the 4th assessment that they would all be using a common set of scenarios when it came time to start getting grades and compare to cross sector kind of studies and the consensus was they could go ahead and dismiss it as well using this set of scenarios and people using a whole other model and we can't really compare results. So the climate scenarios are being done by a group at Scripps Institution of Oceanography and these folks have been doing it for a while that have been so successful doing it for California that now the National model assessment is modeling their technique and they are sending it nationwide. So that's what we would consider a primary set of scenarios that sort of drives all the other studies. But, we also have what we call out secondary scenarios that are things like wildfire that are derived from part of the climate part. So rather than just projecting the same into the future historical information, how do we incorporate those different scenarios into climate change as well? It's a little more complicated than that as well because, we are not assuming that only climate change and everything else stays the same for the next forty years into the turn of the century that we are also looking at land use projections and scenarios that then change in terms of a fire model and change both the risk and the fuel at a fairly high level way. So we'll talk a little about both of those, but focus on the wildfire scenarios.
- So the wildfire scenarios are being done by Westernly at UC Merced who has been doing this for a while from the previous assessments. It's a statistical model using the historical information on wildfire and the fire side distributions and so forth as a function of the climate information as well as, I said the fuel information and basically modeling it as a function in a one in 6th degree grid cell which is seven kilometers I think, so fairly coarse resolution for the climate data that's being used. So the land use and fuel part of it is done at 1% of that cell is vegetated at that time is small in that time and so as fermentation increases there is less wildland fuel and that changes the fire probabilities. So we have developed a statistical probability based on the historical information and then use the climate scenarios and the land use scenarios to see how those inputs change in different scenarios in this particular output in their simulation. So it's obviously a projection, not a detailed forecast. But, in terms of fires and burn area within each grid cell for each year through the rest of the century and then looking across at a whole bunch of simulations to see what the overall pattern might be.

- The previous assessment is results showing really dramatic changes in the amount of fire and burnt area like four fold increases in the more extreme places of the state. The goal is to have these wildfire scenarios by sometime in October which would feed into the research project so they have time to use that. We are trying to at least have mock ups so they have something to start setting up their models so they know what the outputs are going to look like and so forth. We had to sort of re-boot on the land use scenarios, what we were following didn't really pan out which we are working now with USGS land survey, that has done a lot of recent land use modeling in California and also in coordination with the natural working lands group who are working on the AB32 scoping plan that's also looking at land use and the consequences for part of emissions so we are trying to coordinate that way as well. Since then we had to sort of re-boot and we will see if October is realistic for getting at least some data for the researchers if not publicly available at that point. At some point it will be posted as JR mentioned on the Cal Adapt website as part of the 4th assessment products. So it will be available to anyone.
- Mark Ghilarducci – Great. Any questions on that? Both of you guys thank you very much. I think what I take from this is the great work that has been done. Obviously between what we are seeing in real time with these fires and the kind of fire activity that we are seeing and all the discussions we've had this morning based upon what your two groups are doing is substantiating really what we are seeing. We are building and have built enough of a foundation and that we have got some strong cornerstones to make projections or recommendations for how the fire service can be enhanced and improved to address all of these issues. This is not necessarily esoteric or sort of conceptual, but in actuality it is on the ground and is actually happening. While these experts are meeting, we are actually seeing it roll out in the long run not with just mitigation plans and emergency management, but what kind of fire service do we need to address that moves out into the whole moue and increased population and how that effects structure protection and having enough resources to address it. If we didn't have all of these homes, I think that the discussion would be mute in regards to how we need to let it burn like it did in the 1800's. But, that's not the case fortunately, JR's team and the work done has really helped us with this. So thank you very much, this is very helpful information and look forward to working with you all.
- Tina Curry – What is the timing of the assessment?
- JR DeLaRosa – 2018, but we will see what we can roll out beforehand. It's a long time to wait for this.

VI. FEMA Region IX Mitigation (Robert McCord, FEMA)

- You have one that comes into play only when there is a disaster or a federal disaster declaration for a disaster for the Hazard Mitigation program. Hoping you have heard about that one somewhere. Then we have two annual programs, so they are appropriated annual so the funding can fluctuate. One is called the Pre-Disaster Mitigation program and one is called the Flood Mitigation Assistance program. The Flood Mitigation Assistance program is geared only towards insuring flood losses, so not really what I'm going to spend time on today. The Pre-Disaster Mitigation program and the Disaster HMGP, those are all hazards programs. So projects that you have on the books that you would like to accomplish there's got to be a couple that you know of in your district that would be eligible under one of these two programs. The typical, I guess no fire project has been typical with FEMA, but eligibility wise in a wildfire perspective defensible space, fuel reduction and ignition resistant construction. So that's wood roof replacement programs, doors, windows, vents things like that. So those are typically the wildfire risk reduction projects we are talking about. Those would fit under that disaster program, HMGP and the annual program Pre-Disaster Mitigation. The PDM, the annual program it does take some staffing

resources. You've got to have somebody who can put together their grant application and all of our projects require a benefit cost analysis be done that could be time consuming. So you've got to devote some staff resources to that and plan it out for the next round of annual funding that will come out in the summer. Now is a good time to start thinking about what do we want to shoot for and really starting that after the holidays. It's really a great time to kick into gear about how I'm going to be ready for when Cal OES says we have an open application period. All of our funding goes through Cal OES so they have their own application period, they will put out their own maybe state specific guidelines that you've got to pay attention to as well.

- Tina Curry – Very quickly, I will add to that and your seeing what made the cut of what was actually and potentially eligible and Robert touched on a little bit. There is a lot that comes in that's not and I think one of the commitments that we at Cal OES have made is like Robert said, is getting people ready, we want you to when that when that grant announcement comes in it's really too late to be starting that application process. We want people to be grant ready so that everything that comes your stuff is eligible that we went through it ahead of time and we've educated people. We should be doing that at Cal OES and with FEMA's help. I think a lot of it is making sure we are more ahead of the game; I mean nobody has time to waste on kind of speculating if you have to be really focused.
- Mark Ghilarducci – So that parts on us.
- Tina Curry – So that part is really on us to be thinking about what's more eligible, what would be more successful, what are some of the things you need to do? Environmental is a big one, I don't know if you're going to talk about that? But, that is often so daunting or makes it more difficult, so that's just a part I wanted to add.
- Robert McCord – Definitely as a fire district you go back home and think well what do I do first? It's really to make sure that you understand the states process and what guidelines do they have? Because, you can call me and your certainly able to call our office. I will give you kind of the high level, but then I'm going to direct you to the state mitigation website to talk to the folks there at Cal OES and get a feel of what their looking for in their guidelines. So that's really important.
- Mark Ghilarducci – I just want everyone to know that even if we are not in a federal disaster, like Lake County, the Hazard Mitigation grant funds are statewide and any jurisdiction can tap into those. Not just the areas where the fire was. Not even just for fire, it's all hazard – earthquakes, floods, fire if it's become a federal disaster, 20% of disaster comes back to California in Hazard Mitigation funds. So when he's saying it was \$50 million, it was actually more than \$50 million of the Valley and Butte fire. Of course that money is put into a fund that we can utilize anyplace in the state for all hazards, doesn't have to be fire specific. So that's where that money comes from.
- Robert McCord – But, that's a good reminder that the HMGP is 20% of those disaster costs in a federal declaration and our grant programs are 75/25% and so you have to come up with that other 25% to match. So that's really high level and I hope you have heard of those programs before, if you haven't I encourage you to look them up. It's an opportunity for you to accomplish some of the actions that you have on your books.

- Mark Ghilarducci – When we talk about fuel management and evacuation routes and public programs and areas where you can put in fire breaks. These are all projects that fall under Mitigation, so it's how you do lessen the impact of fire. So when you put your thinking cap on, think through that so we already know one of the three pillars of what we talked about this morning, is expanding the issue of fuel management and public education and so these are the areas where we could possibly fund some of that within the business.
- Robert McCord - Public education could be a portion of some activity that you would want to take that could be some part of your grant applications. I just want to give you a little bit of information about a pilot program that FEMA ran in 2015. I am happy to take any questions that you may have about the other programs afterwards or at any time. But, the reason I want to give you this information is that you may have heard about it and I want to make it clear that it's not it's not in place right now, but will let you know when it may be coming again. So, I'm also hoping that you know the term or have heard the term FMAG grants, Fire Management Assistance Grants and those largely don't involve a lot of FEMA staff, and it's really just financial reimbursement for your costs fighting the fires. So it's really just a financial movement. But, in 2015, a congress person from Colorado added in the DHS appropriation language that FEMA would implement basically the HMGP program anytime there was an FMAG declaration. So it didn't have to turn into a big giant declaration, federal disaster declaration or anytime there was a declaration.
- As I mentioned our main three categories before are defensible space, fuel reduction and ignition resistant construction. None of those address flood following fire although we can always fund erosion control activities, but usually never linked to flood following fire. So we had to expand our eligible span of activities under this pilot specifically. So that could be things like K-railing, outlet improvements for drainage, ditch armoring, protective measures for exposed resources, channelization etc.; all geared at addressing post fire flood. So that was a bit of a shift for our program and even for the states staff and all states dealing with Mitigation programs.
- Mark Ghilarducci – This issue of when the fire comes through and leaves the land a derivative of vegetation, we have a lot of concern of debris flow after fires, the heat intensity that we are seeing in these fires just might be for nothing out there or anything there so we get asked almost every time that we go down to these fires from the local community that are so worried about the debris flows, what is it that we can do? So the feds obviously have the BEAR teams, they come in and Cal FIRE is receiving and trying to do the mitigation of crews in there to address it, but this new piece under the FMAG, if FMAG's are made available for fires gives us an opportunity to do some of those mitigation efforts before the winter comes to be able to address those things. I think it really is a positive addition.
- Ken Pimlott – This is an area where there is very limited authorities for us to operate and once the fires out, we do everything we can to clear debris from culverts etc. Really we don't have any funding authority to work it, so this is good.
- Robert McCord – Good. That's good to hear. So let me go back, I meant to say earlier you can't buy firefighting equipment, we cannot use mitigation dollars to increase suppression capacity, so no hydrant systems no cisterns, no big water tanks or surge capacity. We can seismic retrofit water tanks that are old and wooden to metal, but if there's not one there were not going to get you a new one there.

- Mark Ghilarducci – There were actually a number of requests this year in changing the old wood fire tanks to concrete or metal just to save them. Their primary water supply was in one of these. Great. Thank you, Robert.

Progress on Action Items

Mark Ghilarducci – Re-addressed some of the items from this morning and several of the items do role into Fire Scope so that can be discussed more by Chief Bowman at our next meeting. Some of the key areas that we talked about and what we are seeing with projections for the future and more than in recent time meeting was pointed out today and that we are inadequate on the pillars that we have talked about understanding as a firefighter and how fire is changing and it needs to be built into more training. We have talked about a lot of different programs that can be leveraged, not just from a fuel stand point, but with people.

Delta – Actually looking twelve years later and seeing what has been projected. Taxing the mutual aide system to an extent and not filling the request. Put some recommendations on paper, whether it's Blue Ribbon and new in a sense of delta, what is relevant, seen today and that is significant. I'm very worried on what has been seen and what has jeopardized our firefighters. I'm hearing what people are saying and what they saw fire behavior and how they pulled the plug. That is pretty significant. I will say that I have never seen fire as bad as what we are seeing today.

Are there any recommendations we can capture today that we can reach for in a separate sub-committee? Maybe reach out and get some input on what you have read and heard. What ideas and recommendations can we bring back to the fire service?

Lou Paulson - Way too much time on the ground. Staffing issues.

Mark Ghilarducci – So the issue that's on the table from the past is I don't know if there is a silver bullet to address these challenges in changing the culture of the fire behavior today. I think that we are at a very interesting juncture than previous years. Thank you all for attending today's meeting.

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