Cal FRAME Partnership Group Meeting Brief

October 27th, 2022 9:00 AM – 11:00 AM by Zoom

Brief

- Clarke Stevenson presented the preliminary draft Market Impact Assessment.
- Christiana Darlington presented a review of the forest biomass management entity options.
- A recording of the meeting can be found here: https://www.fallriverrcd.org/

Action Items

Actions	Responsible Parties
Convene an ad hoc committees in winter 2023 to provide a technical review of the MIA and provide input on the biomass management entity options.	Clarke Stevenson, Christiana Darlington, Regine Miller
Add Bruce Goines, Chad Peterson, Elliot van der Volk, Kania Pereira, Michael Maguire, Mark Rychlik, and Terrance Rodgers to MIA ad hoc.	Regine Miller
Add Bruce Goines, Kania Pereira, Kristy Coughlin, Michael Maguire, and Terrance Rodgers to biomass management entity ad hoc.	Regine Miller

Present Draft Market Impact Assessment and Preliminary Results

Clarke Stevenson, of CLERE Inc., reviewed his presentation outline and emphasized that the Market Impact Assessment (MIA) findings presenting are preliminary and may change based on feedback provided during the meeting. The reader is referred to the slide presentation for detailed assumptions and volume estimates.

Clarke stated the goal of the MIA was to estimate current business activity and forest-based fiber flow within the region and to identify how much additional capacity exists for new and existing wood utilization business development. This goal was achieved by developing a terrestrial condition assessment, determining how much biomass is being generated and utilized within the resource service areas (RSA), and how much biomass will there be based on desired treatment levels.

Clarke described how he built the forestlands data base using Oregon State University Landscape Ecology, Modeling, Mapping and Analysis (LEMMA) under the Gradient Nearest Neighbor (GNN) forest structure maps and performing a suitability analysis which includes data through 2017 and focused on forest land only. Clarke stated that junipers were lumped into conifers for ease and simplicity. He then went on to describe how he estimated the suitable acres of forestland within the RSA, and discussed the areas that were excluded from the analysis. "Forested" includes broadleaf, mixed conifer and conifer types while "Productive Timberland" was focused on mixed conifer and conifer types only. He found there is a loss of 825,00 acres to productive timberland, leaving approximately 1.6 million acres as suitable for biomass procurement.

Clarke described how he estimated the amount of biomass that is potentially available within the RSA. This is the maximum amount of biomass that could be generated based on current market capacity. Timber biomass residuals were estimated based on commercial harvest activities which includes any project that removes sawlogs and was documented through the Board of Equalization (BOE) Timber Yield Tax and Harvest Value Schedules. Clarke described how he weighted treatment intensity within each county in the RSA and used an established

biomass conversion factor of 0.9 BDT per MBF conversion factor. He found that 343,607 BDT generated within the RSA, of which 90% originates from private land and 10% from public land.

Clarke then described how he identified the number of acres treated annually to determine market capacity and baseline acres for desired treatment goals treatment goals. He did this using CAL FIRE Timber Harvest Plans (THP) data set and the USFS FACTS Hazardous Fuels database to represent the bulk of the acres treated within the RSA. He found on average, there are 40,000 acres treated annually within the region.

Clarke described how he estimated the target biomass generated from pre-commercial thinning (PCT) which was defined as the selective felling, deadening, or removal of trees from a young stand maintaining a specific stocking or stand density range. He stated that PCT is well practiced treatment type but not always reported. Clarke stated that he used the three most likely treatment types that would warrant PCT under CALFIRE THPs (commercial thinning, alterative prescriptions and clearcut) and the USFS Hazardous Fuels "precommercial" treatment type attribute which was the only type used for public land. The pre-commercial treatment residue projections were modeled with Forest Vegetation Simulation (FVS) under the CalPoly Humboldt/Schatz Research Center's CA Biopower Impacts projects which are 3-9 BDT/ac. He found that, when applying the lower conversion factor, there are on average an estimated 75,000 BDT of biomass generated annually by PCT treatments.

Clarke evaluated biomass residuals generated from forest health and fuel reduction projects that are not completely recorded through BOE sawlog volumes, CALFIRE THPs, or USFS HazFuel databases. This treatment type included the use of CalMapper which is a project viewer of CALFIRE-funded projects lead by Fire Safe Councils, Resource Conservation Districts, and non-profits, among others, on private and public lands. He reminded the group that the volumes are based on current levels of activities, not future levels. The biomass recovery rate for these projects was conservatively estimated at 9-14 BDT/ac based on interviews then extrapolated across each fuel treatment type. He found that the 2020-2022 three year average number of complete and active projects treated 19,086 acres, of which 18,214 acres were fuel break and fuel reduction only. He used the three-year average because it better reflects current policy and goals. He found an average of 354,597 BDT of biomass generated from Forest Health and Fuel Reduction treatments per year, of which 38,435 BDT were from public land, 106,699 were from private land and 209,464 were from other (CalMAPPER).

- Mark Deprerro: *Are the areas available for extraction purposes taking into account ESA conflicts (e.g., core areas, nesting sites and high quality nesting-roosting habitat) that make them off-limits? Mark added that the pine martin will be a significant ESA conflict to consider.*
  Clarke replied that he only included Northern Spotted Owl habitat in the suitability analysis, meaning protected areas for owls were excluded from forestland database but ESAs for other protected species were not excluded. Clarke stated he may need to consider this in the future.

Clarke described how he estimated the volume of biomass that is generated through mortality or standing dead material, including fire recovery. He found that LEMMA estimated 2.47 BDT/acre of mortality in the region which may no longer be accurate because there have been a number of wildfires in the region over the past four years. Dead trees can safely be harvested within five years and utilized by a biomass facility. Clarke stated the estimates for standing dead concurrent with commercial harvest were not included in his figures. He estimated standing dead biomass within 100 ft of roads and trees above 20 in DBH from 101 to 1000 ft of roads within burn scars for the period 2018-201 using a biomass conversion factor he generated based on LEMMA data (through 2017) and using other publicly available data. Clarke stated that the figures do not include sawlog volume as a result of salvage because it's a complicated analysis to perform, and that research shows private landowners can salvage

30-100% of material. He stated his analysis should be taken with a grain of salt, and that he was reliant on Chris Trott's work in Tuolumne County. He added that fire recovery estimates were considered opportunistic.

The LEMMA data estimated 2.47 BDT/acre of stand dead biomass to which Clarke added the number of burned acres with an applied a mean percent of tree mortality based on burn severity. His estimates do not include Northern Spotted Owl ESA, riparian areas or areas with slopes >35%. He found that approximately 22 GT/acre (11 BDT/acre) could be expected. He then applied the 100 ft road buffer, and found that there are 392,566 BDTs of fire-killed mortality biomass available from within 100 ft of roads in fire scars. Because this is an opportunistic biomass source, all of the material will not likely be harvested at once. Therefore, Clarke stated that he averaged its recovery on 3-, 5- and 7-year averages which do not include additional growth. Clarke went on to explain how he estimated fire-killed mortality biomass from trees located 101-1000 ft of roads that were > 20" BDH. He found that there was a total of 440,327 BDT of suitable biomass, to which he again applied recovery on 3-, 5- and 7-year averages. Clarke added that he used 5-year averages in his final biomass estimates.

Clarke explained how CLERE Inc. together with Spatial Informatics Group (SIG) is conducting research to quantify forest biomass piles from in forests and on landings from 2018-2021. The team is validating the piles, determining if they have been burned, and evaluating their accessibility for utilization. Volume estimates are expected to become available later this year, and will eventually be incorporated into the MIA.

Clarke summarize the volume of biomass potentially available. He found 1,019,018 BDT of biomass potentially available per year, of which 158,696 was from public land, 600,2220 use from private land, and 260,101 was from other (CalMAPPER). He further described how these volumes were designated as "sustainable basis" and "inflated basis" to account for the opportunistic use of biomass generated from fire salvage year to year. This results in 76% of the total biomass, or 773,926 BDT, that can be sustainably (reliably) available each year. He opened up the presentation to questions from the group which included:

- Nick Rossow: *What is meant by "sustainable basis"?*
  Clarke replied that the "sustainable basis" estimates are going to be reliable on a year to year basis. As a business, one could rely on this volume of material to be readily available. Conversely, the volume of biomass that is designated "inflated due to mortality" is not necessarily available on a year to year basis, and could shift based on wildfire, policy changes or other unpredictable factors.
- Bob Hambrecht: *Won't 20" DBH material also need to be removed as part of the post-fire clean-up?*
  Clarke replied yes, every size class was included within the first 100 ft. of roads, however, beyond 100 ft. he only included trees >20 " DBH since this is a general cutoff for economic viability.
- Chris Trott: *Did Clarke attempt to estimate net forest growth since 2017 and into the future for green timber stands? According to Chris' research, net growth can add another 25-50% of available biomass over 20 years.*
  Clarke replied that his numbers are based on 2017 data and that did not attempt to account for forest growth for 2018-2021. When completing the future project biomass estimates, Clarke stated he will include forest growth on average up to 20 years. It is important to note the current numbers are based on 2017 data and that he did not attempt to grow them for the last four years.
- Michael Maguire: *Do the estimates account for wildfire footprint prior to 2017 or is this modelling based on earlier data sets?*
  Clarke replied that the estimates are based on LEMMA data up to 2017 and that he assumes the data includes land use change impacts due to wildfire were included. For fires after 2017, he incorporate wildfire footprints.

- Clarke replied to Bob Hambrecht's chat message that utility line clearing and sawmill residuals will be discussed in the next part of the presentation. He stated that he did not include CALTRANS in the database because he thought it was in the fuel reduction database but on further thought it should be included.
- Clarke asked the group: *Should standing dead be its own category, or should it be included with commercial harvest?*
  Chris Trott: lf standing dead has been excluded from previous estimates of green timber stands, then he does not think it is not double counting. It's opportunistic and not sustainable over a long period of time. Chris stated that it's difficult to estimate standing dead fire salvage with commercial harvest. He stated that most sawlogs will be salvaged from private lands but on USFS land, the fire salvage logs often won't be removed. He added that most roadside hazard trees may be removed but that it's a long shot to estimate everything within 0.25 mile of road will be salvaged from USFS land. Clarke said he would like to discuss this more with Chris offline.

Clarke continued his presentation and discussed how he estimated the volume of biomass within RSA for each treatment type that is practically available by applying a 60% conversion factor that takes into account the unintended and unforeseen factors that can affect availability. For biomass generated as a result of pre-commercial thinning, Clarke applied 0% conversion factor due to the rare occurrence of material removal.

Clarke explained the challenges he faced when trying to account for utility vegetation management along power distribution lines due to lack of publicly available data. He offered that one may be able to use transmission lines to approximate data for distribution lines. Currently, he has relied on interviews with facility operators in the region who shared at least 12,000 BDT were delivered in 2021.

Clarke went to describe how he estimated the volume of sawmill residuals generated from lumber production and how he relied on a number of different conversion factors. Clarke used a 1.67 sawlog to lumber conversion factor, and 78% of MBF lumber to biomass factor. He applied a weighted treatment intensity by county within the RSA as he previously did for biomass generated as a result of timber harvest. He found there was a total of 519,175 BDT of sawmill residues generated within the region which is heavily skewed toward private landowners producing the sawlogs.

Clarke stated that the total amount of practically available biomass is 1,097,153 BDT per year which does include utility vegetation management and sawmill residuals but does not account for feedstock currently utilized. Of this volume, 938,098 or 86% is available on a sustainable, or year-to-year, basis. There are +/- ranges due to fact that Clarke is using low and high ranges for the volume of BDT procured per acre.

Clarke state it was difficult to estimate biomass generated from utility vegetation management because distribution line data is not publicly available due to national security, and the fact that utilities don't have to file permits. He stated that PGE transmission lines are regularly maintained and generate clippings, but that most of the potential biomass is generated through vegetation maintenance along distribution lines.

Clarke stated that new facilities in the region could shift the amount of material potentially available and increase conversion factor for practically available from 60 % to, say, 70%. He asked the group: how should this be acknowledged specifically related to feedstock harvest for PCT? A new facility could allow material that is not currently utilized to be delivered to the market.

- Bob Hambrecht: *It seems like we need some calculation of how much more material you could access depending on how much could be paid for the material. If there is an economic driver, the pre-commercial*

thin biomass could become viable to move. This said, Bob stated he doesn't know how to include economic driver to move the material.
Clarke: The economics of this is always connected to transportation distance. If there are more facilities available, the cost to haul material to market would be expected to decrease and improve the viability of use biomass generated as a result of PCT.

- Bruce Goines: *Was Clarke able to distinguish between industrial versus non-industrial land?*
  Clarke replied that he did not focus on non-industrial timber lands which may be an untapped resource given the potential for small, private landowners to generate biomass, but that he did include CFIP program projects as part of CalMAPPER.
- Bruce Goines: *Does Chris Trott have any data related to the level of activity that non-industrial private landowners engage in forest management? He believes it's important to think about when considering where material is sourced and where it might go to.*
  Clarke agreed and said he did not split up by industrial versus non-industrial lands but that he. will reach out to Chance Joyce at American Forest Foundation to explore.
- Kristy Coughlin: *CalForest would be a great resource for all forestland data including industrial timberland among others.*
- Michael Maguire: *Based on what we know, the margin of error and what is being consumed: how large is the gap between biomass availability and biomass utilization? How much do we have to grow the market and enhance economic development in rural communities to consume the available material? Can future iterations of this workshop address how we get there*?

Clarke replied that this leads into the net available estimates that potential emerging facilities could leverage. Clarke described existing facilities within the region and their current procurement volumes from sawmill residuals (402,529 BDT) and in-woods activities (381,497 BDT). He stated the assumptions made when estimating these volumes and shared that the weighted treatment intensity was applied to the lumber tally. The practically available biomass estimates were then subtracted from the current facilities' utilization capacity to generate the net available biomass under current market conditions at 313,648 BDT; this does not project future biomass or growth.

Clarke wrapped up his presentation by reviewing the limitations of the exercise and outlining the timing for the next steps. He asked the group for volunteers for the ad hoc committee which will provide a technical review of the MIA estimates. The ad hoc is estimated to review the report in April 2023 with the final report distributed to the broader group in June 2023. Interested volunteers should email Clarke (clarke@clereinc.net) or Regine (regine.miller3@gmail.com).

Clarke provided information on related research and opportunities for the region. Sharmie Stevenson added that the Fall River and Pit RCDs went into agreement with the Lassen and Modoc National Forests for forest-wide NEPA. The agreements include NEPA for work for WUI and fuel breaks on both forest, and plantations on the Lassen National Forest. RCRC will lead NEPA on plantations on the Modoc National Forest. Christiana Darlington added that the USFS has issued Blanket Service Agreements which will increase access to USFS lands.

- Terrance Rodgers: *Will CSU Humboldt analysis include trucking?*

Clarke replied that he will check with his advisor.

Present Forest Biomass Management Entity Options

Christiana Darlington, of CLERE Inc., provide a presentation on her initial research evaluating the different forest biomass management entity options which is at the core of Cal FRAME pilot projects. She shared that she has a draft paper but first wants to begin with a slide deck to get feedback and volunteers to form an ad hoc to review the paper.

Christiana began by briefly reviewing the barriers to biomass removal and utilization including price sensitivity to external factors, wildfire impacts, transportation costs, time, and contract risk. She reviewed current opportunities for biomass waste including State recognition of the issue and available subsidy, USFS action on the one million acre strategy (Blanket Purchase Agreements), and innovative technologies to use biomass that are cleaner and more efficient than those previously available.

As it relates to risk associated with long-term feedstock contracts, a formula rate contract (FRC) could potentially benefit both parties to the agreement. Christiana described how a FRC uses a formula to calculate a charge with some inputs fixed and others variable (e.g., diesel). On an annual basis, there is usually the opportunity to submit changes to the inputs to the "regulatory body" for review and possible approval. In the case of biomass aggregation, a "regulatory body" for the purposes of these contracts must be identified to make this price mechanism work. The body should be a public agency to ensure transparency, rationality, and equity. Some percentage of a given contract could be set by the FRC price. A "collar" is a financial strategy to limit uncertainty and would put a top and bottom price on the feedstock. For example, 60 to 80% of feedstock could be set by the FRC price, with the remaining amount of feedstock not subject to the price to allow for profit making on either side.

Christiana explained how by combining a FRC with a collar, one can significantly reduce risk by partnering offtake businesses and suppliers who have similar levels of risk tolerance and clearly defining that amount of financial risk. A key element to this is an indemnification provision within the contract that would be associated with an insurance product that protected against the risk of the lack of feedstock or disappearance of the biomass offtake business. Christiana described how the idea would be that the entity that is setting the price would also provide for low cost indemnification provisions and products that support the ability of a supplier or user to reduce risk (e.g., surety bond, bonding used in construction industry). By combining FRC with the collar and indemnification provision would reduce risk and make it more likely for parties to enter into long term contracts.

Christiana reminded the group that this issue is important because buyers and sellers have high stake in feedstock security so we need to find a way to reduce risk. Insurance tools could include pooling of insurance if the entity is a JPA or possible a State funded risk pool through legislation that is made available to those who enter into these types of contracts.

Christiana described how Joint Powers Authorities (JPAs) can coordinate all different levels of government and allow entities to act cross-jurisdictionally. She noted that the powers of the agencies shared within a JPA have to be the power that all of the agencies have. The one independent power of the JPA through State law is the power to obtain financing bonds (e.g., Mellos Roos bonds). JPAs can managed insurance tools and surety bonds to reduce risk for member agencies, and can also make available risk products within contracts.

Christiana reviewed examples of JPAs including the Redding Area Bus Authority; the Upper Mokelumne River Watershed Authority (UMRWA) who manages a watershed, performs fuel reduction work and forest restoration; the Marin Wildfire Prevention Authority (MWPA) who focuses on fuel reduction work funded through a local measure; the Santa Monica Mountains Conservancy which has nine different partners through JPAs to provide for

park, trail and fuel reduction work; and the West Placer Waste Management Authority who manages wood waste and conversion technologies on site.

She then laid out options for institutional arrangements that could be established to support existing businesses, enable more sustainable forestry by providing contract management services, and in some cases other services. Those options include:

- Option 1 is the most inclusive of all the options and would be formed by counties or cities, or a combination, to directly own, fund and manage public infrastructure like a biomass facility.
- Option 2 provides a menu of community services but does not directly own a facility. It could own equipment for lease for business or community use. Services could potentially include environmental review, help with preparing timber management plans, finding forestry contractors, insurance services, and business support.
- Option 3 includes establishment of a Wildfire Prevention Authority (WPA) that includes forest biomass waste disposal as a circular economy measure. Currently, there is a WPA in Marin County that manages fuel but does not tackle disposal challenges. Another such entity is being created in the east Bay Area that Christiana and team are tracking.
- Option 4 is a JPA Agreement where entities enter into an agreement to allow for community services using existing staff resources and contracts of the member agencies and that are under the authority of the member agencies. There would be no separate entity creation under this option. There are several of these in place including with Sierra Nevada Conservancy for fuel reduction work associated with the agreement.
- Option 5 would be to utilize an existing special district or public entity (e.g., resource conservation district (RCD), water districts, or community services district (CSD)) to offer contract management and risk reduction products, or other community services provided from that entity. This option would allow for small, nimble agencies to manage contracts, however, they have different boards who would not be beholden to the member agencies and not limited to the authorities of the member agencies. Special districts also often operate in a controlled geography like a city.
- Option 6 is for a State agency, such as a conservancy, to manage contracts or risk products and services. Christiana noted that the northeast California region is not governed by a state conservancy so one would have to be created if this were the desired option, or it could look to another State agency such as CAL FIRE, the Department of Conservation, or Natural Resources Agency to provide services.

Christiana described two additional entity models: community service district and climate resilience financing district. The former allows special districts to be created for specific activities such as fuel reduction and would be appropriate if we have number of private landowners who want to perform fuel reduction. When residents want new services or higher level of services, they can form a special district to pay for and administer them. The latter can be formed under a brand new law, lead programs to address climate change and raise revenue through tax increment funding, voter-approved supplemental property taxes, and property benefit assessments. It can also accept subsidy from the State for activities related to fuel reduction.

Christiana briefly discussed possible member entities for the JPA options including counties, cities, RCDs, water or fire districts, State conservancies, and/or federal agencies. She then opened the discussion up for questions.

- Martin Twer: *Who would be the underwriter for the insurance? For whom will this insurance be mandatory which would necessary to fund the pool?*
  Christiana replied that the entity could: 1) work with insurance companies to make available commercial insurance to potential clients and to work with the State Dept of Insurance to negotiate the terms of the policies; or, 2) create an insurance pool where the entity would seek out difference insurance options and

tools (this would need the underwriting that Martin is asking about). Christiana stated the RCD is in need of an insurance expert to support our team. The entity would charge fees for services and/or insurance, but will also look to other potential sources of funding such as a community measure as was done in Marin County that set up funding for their JPA. Christiana is interested to hear how participants feel about this either on this call or in a stand-alone call.

- Michael Maguire: *Based on the lay of land, are any of the six options standing out for what may be best for the region?*
  Christiana replied that no, not yet but that is what she is trying to get at.
- Martin Twer: *There are studies that show the various levels of willingness to pay for services in a community. In Nevada County there is ballot measure for roadside vegetation management with varied opinions. There is definite concern about wildfire threat, but the willingness of people to pay for it is another issue altogether.*
- Kristy Coughlin: *She would like to volunteer to serve on the ad hoc committee, and stated that it is beyond prime time for a JPA entity to be established. Kristy will tie in Ed Murphy to get the current information on fuel reduction and biomass capacity, green and other sales, and items discussed today. She added we need a JPA stood up sooner rather than later.*
  Christiana thanked Kristy for her input and looks forward to working with her. She asked the group to what degree are people concerned about homeowners insurance? The entity could potentially provide certification if a property undergoes fuel reduction work, to be considered for homeowners insurance.
- Terrance Rodgers: *Based on your work and experience, do you have a sense of how industry perceives the creation of a JPA?*
  Christiana replied that she has spoken about the contract template model with haulers, licensed timber operators (LTOs), and registered professional foresters who are interested in more opportunities for contracts. She has had initial positive feedback from two prominent LTOs in the region on the FRC collar model. She will continue to reach out to parties.
- Michael Maguire provided a link to the Dept of Insurance related to insurance products being offered: https://www.insurance.ca.gov/01-consumers/200-wrr/saferfromwildfires.cfm

Christiana summarized her presentation stating that a market based pricing mechanism and supporting services managed by a public entity may not be right for everyone but could be available for entities. She reiterated the need for stakeholder input to define the sideboards of this approach. Interested ad hoc committee volunteers should email Christiana (christiana@clereinc.net) or Regine (regine.miller3@gmail.com). The draft paper will be sent to the ad hoc in December, then presented to the larger group in February with the final review of the paper in April.

Wrap-up

Regine Miller asked for participants to put their email address into chat if not on Fall River RCD's listserv. She will post a recording on the RCD's website and distribute a meeting brief.

Meeting Participants

Person	Affiliation
Alden Neel	Bureau of Land Management
Alex Carter	McConnell Foundation
Andrew Mueller	Bureau of Land Management

Becky Roe	Shasta College
Benjamin Rowe	CALFIRE, Shasta-Trinity
Bob Hambrecht	Anderson Biomass Depot
Bruce Goines	Marin Wildfire Prevention Authority
Chad Peterson	Shasta County
Chester Robinson	Modoc County
Chris Trott	CT Bioenergy
Christiana Darlington	CLERE Inc.
Clarke Stevenson	CLERE Inc.
Hayley Stone	CSU Chico's North State Planning and Development Collective
Heidi Rogers	BLM, Redding
Jeff Manterach	Red Rock Biofuels
Jeff Odefey	American Rivers
Jill Drinkwater	Go Biz
Kaina Pereira	Go Biz
Keli McElroy	Shasta-Trinity National Forest
Kevin Cann	Golden State Natural Resources
Kristy Coughlin	Sierra Pacific Industries
Lorissa Soriano	Modoc RCD
Luke Carpetner	Blue Forest Conservation
Mark Deperro	Lassen National Forest, Eagle Lake Ranger District
Mark Rychlik	Blue Lake Roundstock Company
Martin Twer	The Watershed Center
Matt Pontes	Sierra Pacific Industries
Michael Maguire	OPR
Mila Hadley	Modoc FSC
Nick Rossow	City of Redding, Redding Electric Utility
Regine Miller	Headwaters Environmental
Robin Wall	Lassen National Forest, Hat Creek Ranger District
Ryan Hadley	Sierra Pacific Industries
Ryan Hilburn	WM Beaty
Russell Nickerson	Lassen National Forest, Almanor Ranger District
Shannon Prather	Lassen National Forest
Sharmie Stevenson	Fall River and Pit RCDs
Tania Greenwood	Shasta County FSC
Terrance Rodgers	Golden State Natural Resources
Tiffany Martinez	
Todd Hamilton	USDA Forest Service Pacific Southwest Research Station
Todd Johnson	Shasta-Trinity National Forest
Todd Jones	Shasta Economic Development Corporation
Tuli Potts	Sierra Nevada Conservancy
Zach Knight	Blue Forest Conservation