

BIOMASS WORKING GROUP

SEPTEMBER 24, 2013

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Attendees:

In Person: Jonathan Kusel, Mik McKee, Tad Mason, Jim Bowmer, Judith Ikle, Bruce Springsteen, Fred Tornatore, Karen Khamou, David Lewis, Peter Tittmann, Bruce Goines, Mark Rentz, Steven Nicholls, Matthew Marshall, Angie Lottes, Lynn Jungwirth, Larry Swan, Craig Thomas, Jerry Bird, Phil Treanor

On the Phone: Bob Goodwin, Paul Mason, Chip Ashley, Rick Breeze-Martin, Tedi Duree, Christa Darlington, Marcia Armstrong, Kim Carr, Adam Schultz

MAD RIVER VALLEY BIOMASS PILOT PROJECT / REPOWER HUMBOLDT

MATTHEW MARSHALL, REDWOOD COAST ENERGY AUTHORITY, PRESENTATION

BACKGROUND

Redwood Coast Energy Authority (RCEA, www.redwoodenergy.org) is a Joint Powers Authority made of the County of Humboldt; the Cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad; and the Humboldt Bay Municipal Water District. RCEA has been operating for 10 years with a focus of energy efficiency and renewable energy development and implementation across Humboldt County.

Currently, electricity in Humboldt County comes from two major fuel sources. 50% is generated from natural gas and almost 30% can be from large scale biomass direct combustion plants. Humboldt generates electricity locally

by necessity because it is a “transmission island”. The statewide grid only connects 60-70 MW to Humboldt County, which is about half of the demand.

REPOWER HUMBOLDT

PG&E, CEC, RCEA and Schatz Energy Research Center (HSU) partnered on RePower Humboldt grant to look at if and how Humboldt County could generate all of their electricity from renewables. Findings were that it is technically possible to get 100% of electricity from renewables. Wind, small hydro, wave and other renewable fuel sources were part of the mix, but findings were highly dependent on biomass fuel to provide baseline energy. It was really helpful in the analysis that PG&E had recently built a natural gas plant with 10 separate engines that can be quickly fired to support an intermittent supply of energy.

Humboldt County does not have a surplus supply of mill waste- the three existing commercial scale facilities utilize the supply. As a result, RePower looked at building small scale biomass plants that can be used to do ecosystem restoration and be placed appropriately.

CEC awarded a follow up grant of \$1.75 million to do energy efficiency and renewable energy development. Part of the grant will fund Mad River Valley community-based campaign to promote heat pumps, solar hot water and other efficiency based technologies. Much of it funds a pilot demonstration of a small-scale, biomass fueled system. Project must be wrapped up by Spring 2015.

BIOMASS GASIFICATION / FUEL CELL PILOT

Pilot project is a biomass gasification fuel cell that provides CHP to Blue Lake Rancheria; 175 kW_e. Green Diamond saw mill in Korbelt will provide fuel supply to keep pilot demonstration easy; phase two will evaluate restoration chips as fuel source. The system will utilize 25 tons of fuel/week, or about one truck per week. The system is designed to be expandable- additional gasifiers, and fuel cells will be added if system works well and demand grows, and is housed at the Blue Lake Casino and Hotel. Heat generation, 200 kW thermal energy, will be used for swimming pool and other hot water need.

The Blue Lake Casino really needs electricity, not heat. The Rancheria had already been looking at systems for their site and that work was completed just in time to get the team into the queue for the RePower grant. Fuel cell greatly increases biomass to electricity efficiency, the fuel cell system is 50% efficient as compared to 30% at the local biomass power plants. Gasifier options being considered are by Proton Power (www.protonpower.com) and Cortus (www.cortus.se).

QUESTIONS

Rick: How long did it take to get from community input and strategic planning to \$3.5 million project?

Matthew: Strategic planning took 3 years, starting in 2009. That was a lot of technical analysis and overlapped a bit with strategic planning with the Rancheria.

Judith: I assume that the energy efficiency strategic plan was supported by PUC?

Matthew: Actually it was RESCO grant paid by CEC, matched locally and supported technically by PG&E.

Judith: In the presentation, you showed county demand over one month to illustrate County-wide demand. Why did you model November?

Matthew: We have crummy weather and have a winter peak, so November is an arbitrary shoulder month that gives good representation of the average.

Mark: What volume of supply from Six Rivers National Forest might you need to fuel this project with restoration material?

Matthew: I don't have the exact number but Davis did a county by county analysis and that fed into the modeling

Mark: Where does the PG&E natural gas come from?

Matthew: We have a 12" pipe that comes over from the Central Valley and 10% of that is pulled locally from the Eel River Valley.

Kim: How did you come up with 1400 MW capacity for the state?

Matthew: The biomass availability and estimate for up to 1,400MW of state-wide small-scale, Distributed Generation biomass Combined Heat and Power was based on the California Biomass Collaborative 2007 assessment of biomass resources in the state (Williams et al., 2008) and a Combined Heat and Power Market Assessment prepared for the CEC (Darrow et al., 2009).

Doug: Can you give pros and cons that the project encountered with the public?

Matthew: That was definitely one of the concerns, we thought that if biomass was a big part of this that people would think that we were building tree hungry systems. Hearing that provoked us to reach out the restoration groups to hear how much supply would be available, and we built the project to fit the community's desires.

Paul Mann: What's your estimated cost per kW?

Matthew: This one's going to be expensive. It's not quite \$3 million because of other components of the program, but it's not going to be really a cost efficient system. One of the concerns is the parasitic load that we will get from gas clean up. It's not a given that it will be successful, that's why it's a pilot program.

Rick: How important is this project to your overall strategy to using biomass to achieve distributed renewable energy?

Matthew: This is definitely a key component, but one of the key findings from the whole study is that as long as we have a portfolio of technologies it will be okay. One of the wild cards was whether wave energy would be available- we have a significant resource that hasn't yet been developed.

Tad: Great presentation, hats off to the project. TSS has a lot of clients interested in this scale of technology. We really hope you will come back in 18 months and report on the project. What is the project schedule?

Matthew: System design will be completed by the end of Spring and installation will take place by Fall of 2014 and monitoring through Spring of 2015.

Tad: Does the Rancharia plan to use this as baseload?

Matthew: Yes, they are trying to cover baseload with this system, all behind the meter.

Phillip: We installed a small system like this years ago and we found that the heat recovery was worth more than the electricity but we had to install the proper water flow, we often had more heat than we could use. What is your heat recovery on a unit like this?

Matthew: The system has a conventional radiator system- it's just a loop that goes to the swimming pool. Heat recovery planned to be via a heat exchanger tied to the 175kW Ballard fuel cell, which Ballard states would be 205 kW at 60-65C.

STATEWIDE WOOD ENERGY TEAM OVERVIEW

OVERVIEW

California Statewide Wood Energy Team was awarded Cooperative Agreement with the Forest Service to partially fund the group and provide support wood energy projects.

OBJECTIVES:

- Enhance biomass utilization outreach and education
- Coordinate and enhance targeted project development technical assistance
- Conduct pre-feasibility scans and/or feasibility assessments where justified based on pre-established criteria
- Assist projects with completed and promising feasibility assessments to apply and obtain next level of funding and support (e.g. private and public funding)
- Improve effectiveness of stakeholder coordination
- Explore and develop financing opportunities
- Investigate and establish BWG MOU and future financing mechanism for sustainability

BUDGET

Activity	Description	Amount
Personnel	Project administration, BWG coordination, thermal project scans and technical assistance	\$123,204
Project Development Assistance	Assistance with contracting, fundraising for feasibility, engineering and design, and project finance	\$198,100
Feasibility Assessment	15 assessments at \$2,500 each	\$37,500
Technical Assistance	“Barrier” issues like sustainability, CEQA and finance	\$25,524
Develop support tools	Wood energy project planning and decision support tools	\$67,500
Travel	WEIT member travel to BWG meetings and for onsite assistance; travel scholarships	\$10,640
Supplies & Materials	Educational and technical information in support of workshops and project development resources like technical bulletins, case studies and project development guides	\$1,920

IMPLEMENTATION TEAM MEMBERS

Organization	Name
Watershed Research & Training Center	Nick Goulette, Angela Lottes
USFS, Region 5	Larry Swan, Robert Goodwin, Jerry Bird, Bruce Goines

Sierra Nevada Conservancy	Kim Carr, Elissa Brown
University of CA	Peter Tittmann
California Energy Commission	Garry O'Neill
CAL FIRE	Doug Wickizer
TSS Consultants	Tad Mason
Sierra Institute for Community & Environment	Jonathan Kusel
Breezemartin Consulting	Rick Breezemartin

The first meeting of the implementation will be a conference call on Monday, October 7, at 3 pm.

DISCUSSION

Point: It would be useful for this group to be represented at [North Coast Resource Partners Workshop](#) on October 2 10-12:30.

Counter: Peter and Nick, both members of the implementation team, will be speaking in that biomass panel. We are also planning to have representatives at the three upcoming UC Berkeley Community Scale Energy Workshops.

Point: We should consider financing opportunities current and future to sustain this effort. We need to start looking for where there are opportunities to promote biomass as multi-resource benefits. There are a lot of concerns about air and water quality and water supply etc. There are programs in all of those areas that have financial wherewithal. We should start opening the windows of opportunity for the multiple benefits of wood energy projects.

RURAL COMMUNITY DEVELOPMENT INITIATIVE

Sierra Nevada Conservancy, Sierra Institute, and The Watershed Center think that building the capacity of rural communities might make a great pairing for the SWET. This RCDI grant is due Nov 12 but we are at a preliminary stage in terms of determining who will be applying. It is important to remember that whoever applies will be an intermediary, and the work and resources will be distributed throughout members of the BWG. An immediate next step for us will be to have a talk with RD to make sure that this is a good fit and that we have a good chance of securing the funding. We won't go down that road unless it makes sense.

The contact for this grant at Rural Development is Karen Firestein's contact.

P: We will have to be careful that we don't double count match or try to use federal funds as match.

P: Too many grants will cause a lot of administrative overhead and a bit of a nightmare. We should think about how this group will be required to participate and what time commitments it causes.

CP: The BWG won't have more administrative roles but will have a consultancy role in this project.

P: Funding will be a big challenge- 1:1 match without counting in kind is a lot. If we are looking at this being a bioenergy project, we should look at ancillary benefits and other groups that might have small contributions to give for the ancillary benefits. For example there may be some local water agencies or private water companies that may be willing to provide those matching funds.

P: two issues going on, time-restrictions and longer-range opportunities. To get this done by early Nov, it will have to be already on the ground. These players will need to be ready to go now. Public applicant appears to be viable so I can see this lining up in partnership with the Smithsee project at SNC or maybe matching up with prop. 84 funding. Refine it in subsequent cycles (years)

CP: We can also consider putting this off until next year.

Next steps will be hard conversations with folks to see if we can get close to the match. We think this is worthwhile and the number of projects we have to support justify asking for the whole \$300,000.

AGENCY UPDATES

This part of the meeting is open for State Agencies to provide updates on legislation.

CPUC

SB 1122:

Judith: Adam is continuing to work on the final staff paper for SB1122. He is planning to go the Thursday's CAL FIRE sustainability meeting. It is very important that CAL FIRE move forward on the SB 1122 definition of sustainability.

Adam is working with the assigned judge to put out a staff proposal for public comment. The judge will decide when it goes out and there will be 30 days for public comment. Revision based on those comments will then go out to the commissioners for a vote. We're still looking at 4-6 months until this is voted on.

Judith: Once the staff proposal comes out, people will have to form a party and formally submit comments in the record. The judge can only consider comments submitted on the record.

Kim: SNC has some members that are party to the record and they have been coordinating their comments to ensure that they can be formally submitted. If you want to make comments and have the judge consider them, we can coordinate with Kim and SNC.

RENEWABLE AUCTION MECHANISM (RAM)

The Renewable Auction Mechanisms (3-20 MW systems) program continues to have insufficient bidding from baseload bidders. Forest fuel is one candidate for baseload as well as wastewater treatment etc. These projects had to come online within 18-24 months of bidding and that may have been some of the reason that we couldn't get baseload projects. It is on the 4th or 5th solicitation. None of the utilities had robust baseload options for this. Baseload, intermittent non-peaking and intermittent peaking options are the three categories that need to have sufficient bidders. These categories were made such that baseload would not compete with solar.

Adam: We are planning to revisit RAM and have a workshop in the future regarding repurposing RAM to provide more of an opportunity for baseload contracting.

BLACK AND VEATCH

Adam had hopes that there would be workshop on the Black and Veatch recommendation- it is still on the radar but not yet scheduled.

PG&E

REMAT

David Lewis: ReMat auction is launching in another month or so and that is another opportunity for baseload funding. It will be for <3 MW systems. Has the same buckets as RAM, but has a more transparent, queue-based system that determines the price rather than bidding. Peaking is the bucket that has the most projects. Solar has been the most successful bidder.

SB 1122 pricing may follow the ReMat pricing.

SUSTAINABILITY

Sustainability materials for Thursday's meeting will be circulated today by the end of the day. Cal Fire and SNC are proposing a definition of sustainable supply for bioenergy to the PUC. A white paper has been drafted and on Thursday they will be wading through the white paper and obtaining consensus. PUC is looking for a process-oriented definition because they do not have the authority or expertise to evaluate sustainability. Adam states that they will go through the process of evaluating the definition.

BIOENERGY ACTION PLAN

Not much going on because sustainability definition has been consuming all capacity. A big part of this plan is actually getting projects going on the ground. There is some progress going along these lines but Kim is not capable of commenting on them.

THERMAL

Small scale projects have been circulating and a few of them popped up this week.

Cool Planet is moving their headquarters back to Colorado (from California) and building a facility in Louisiana.

Part of this discussion needs to remember that pellets are an important part of this equation. Mallard is the only pellet producer in California. There is a market for pellets to residences, and it's being supplied from Arizona and Oregon. California is noticeable for having no institutional thermal energy.

Governor's office bioenergy meeting will focus on fuel supply. The pellet market is raising the price of the feedstock in the SE. That part of the US is exporting pellets to the UK and it is impacting businesses that are modeled on cheap fuel.

TSS is working on MammothLakes thermal project. They just completed the fuel availability assessment and there is not enough fuel for CHP so they are now looking at 8 different sites for thermal projects. There is quite a bit of seasonal load and they are expecting to report on that within the year. Thus far, each facility is standing alone for ownership.

The Watershed Research and Training Center is releasing an RFP this week for engineering services for a biomass district heating system in Alturas, CA.

REGULATION AND POLICY / FBI / BLODGETT FIELD TRIP

FBI (Forest Bioenergy Initiative) was originally formed to take advantage of ReMat. Crista has been a key player in helping this group navigate the . Workshop at Blodgett is the 3rd in conjunction with USFS, BLM, UC and others with lectures on forests, forest health, fuels management techniques and biomass waste to energy protocol information. There was a field trip in the afternoon with three stops, the 3rd was a grinding operation with waste diversion to a biomass gasifier and Buena vista power plant. Emissions at both operations were to be monitored while those fuels are consumed. Ash and biochar from each facility will also be monitored.

Blodgett research center did thinning a year ago. The logs were milled and slash was prepared to burn. One of those piles will be burned in October and emissions will be monitored. The air quality district paid the difference to support energy . The costs and emissions are being monetized and compared to the alternative (pile burn costs). This project is allowing the research station to evaluate external benefits for utilizing the biomass as fuel. 3 gallons of diesel is needed to move one bone dry ton, which is really promising. This project helped us avoid 209 tons of GHG.

Missoula Fire Lab and Rocky Mountain Research lab is doing the emissions monitoring for pile burn. Region 9 is also really interested in Black Carbon and The Air Quality District knows that it won't be monitored but know that it would be important. EPA was on the Blodgett Field Trip, so maybe if we just ask them.

California Air Pollution Control Officer's Association (CAPCOA) exchange Crista is summarizing that the California something putting together an "exchange" but really a register of credits from Air Districts that have been approved for CEQA mitigation. There is a memo out that is related to how credits work in relation to other state programs and GHG emissions. More to come.

SB 1122 update from the FBI viewpoint. Crista has given a few updates in the past about the continuation of the Bioenergy Association of California to ensure that the comments that they are submitting are consistent with ideas from the sector and hopefully will be taken into consideration by CPUC. CAL FIRE and SNC have information about how the proceeding is working and details as related to other bioenergy groups. Two issues: 1) there is potential for improvement on the program with concerns about cost and the solution might be a cost share mechanism among the three IOUs created by CPUC 2) Making sure that the definitions within the PPA and program do not cause a problem with other activities

Chairman of the board of forestry lead a conversation in which Mary Nichols both determined that we need to continue the conversation in a formal place. She also suggested that we come up with short term and long term solutions- the short term solutions need to be tangible. The FBI has a list of options that resulted from an air board meeting on Sep 17: Cap and Trade revenues, SB1122, biomass to energy protocol, EPIC \$ for research and development, Implementation of bioenergy workshops, Outreach with legislators etc. These will be ranked and reported back as opportunities next month.

It is absolutely essential that the definition of disadvantaged communities include rural communities. C&T investment plan does mention disadvantaged rural communities, and we also need to include the definition in the Cal Enviro plan. This is most important because this definition may be picked up and used by other agencies in for other legislation. The unit of analysis is not the problem, the methodology being used is too narrow, and doesn't even look at some of the indicators. Many of the indicators are air quality but those things aren't even measured in

some rural areas. Anti-mountain rural bias is unintentionally captured in the methodology. There are many indicators that can be utilized that don't miss mountain rural communities.

INTERNAL STRUCTURE GROUP

Meeting with WEIT on Oct 7 at 3 pm.

PETER:

Workshops are upcoming in Merced (10.22), field trip at Phoenix Energy the day before, Chester (10.24), with field trip the following day, and Eureka (11.7) with field trip going to Blue Lake and forestry operation on Green Diamond land the following day. The agendas are being finalized, they are working on speakers and they are trying to make them relevant to the areas they are in so they are bringing in local agencies and others to identify local challenges and opportunities that may or may not be there. Peter will be bringing in more information about them through the BWG list serve.

EXISTING INFRASTRUCTURE

Existing power plants are coming to the end of their PPAs or the end of their 30-year PURPA contracts and the low cost of energy is making it challenging for these plants to come online. If we are going to keep existing infrastructure going, we are going to have challenges when their PPAs expire. Especially for forest managers that have grown accustomed to having operating plants, these will be important to retain.

FS has 2.2 million BDT of biomass inked to facilities that help maintain the unit cost of public lands management, risk reduction, fire cost, GHG, public health and safety, water quality, etc. 680,000 BDT of biomass from FS lands have been stranded when these plants close. The public benefits of retention are huge as are costs of closure.

USFS and UC Berkeley have put together a tool for evaluating where the wood utilization facilities are in relation to public forests. They are very useful for looking both at salvage opportunities but also for looking at places that we could have treated.

ROUND ROBIN ON PROJECT UPDATES

MIK:

Sierra Institute is moving forward with many thermal projects in Plumas County. They have completed 4 feasibility analysis and will complete one more.

NORTHFORK:

Still going through CEQA process. The planning approved the County's negative declaration. CBD appealed the negative declaration. The County began negotiating with CBD and then ended those negotiations.

CABIN CREEK

ER was approved. They are going through project development right now, looking for private funding.

WILSEYVILLE/CHIPS OUTSIDE OF JACKSON

TSS is doing engineering design study for this. PGE interconnection is looking very positive, there is room for 3 MW on that distribution line

Next meeting is October 22, the same day as the UC Merced workshop.