

STATUS UPDATE OF CALIFORNIA'S BIOENERGY SECTOR



Forest Vegetation
Management
Conference

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TSS Consultants



PRESENTATION OVERVIEW

- Brief history and overview of California's biomass power sector
- Governor's 2015 proclamation and its implications
- Current status
- BioRAM I
- BioRAM II
- Community Choice Energy
- SB 1122
- Additional Resources
- Value Add Options
- Questions



ABBREVIATED HISTORY OF THE CALIFORNIA BIOMASS POWER SECTOR



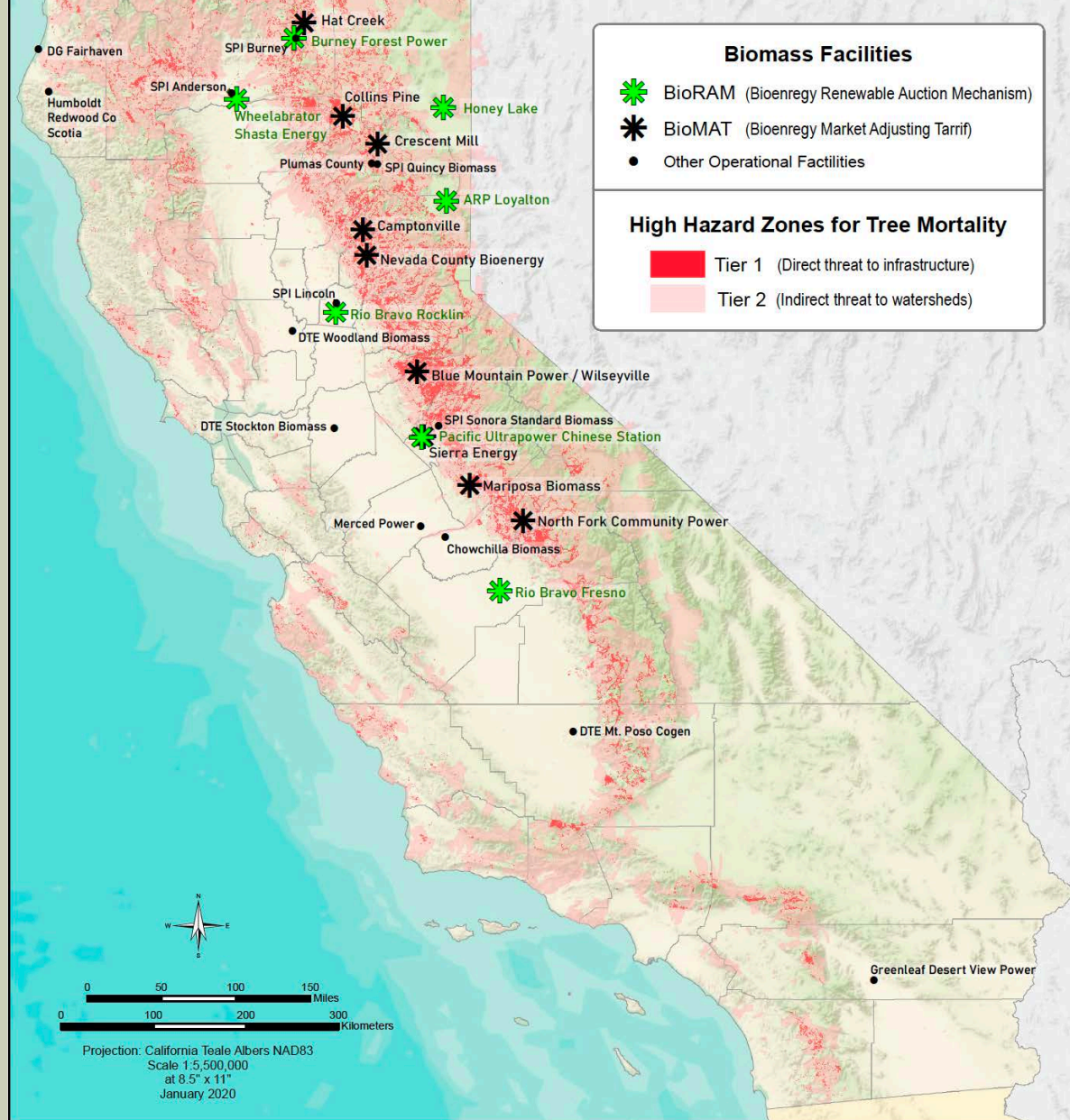
- Forest products sector was an early adopter.
- Public Utilities Regulatory Policy Act of 1978 (Federal).
 - Market response – 60+ new biopower plants (approx. 900+ MW of generation capacity).
- Power contract buyouts.
- CA Renewable Portfolio Standard – 60% renewable by 2030 and 100% carbon free by 2045.
- Senate Bill 1122.
- Gov's Proclamation results in SB 859 and BioRAM PPA contracts. (Bioenergy Renewable Auction Mechanism)
- SB 901
- Currently 22 operating plants (approx. 560 MW of capacity).



California Biomass Facilities

BioRAM / BioMAT Program Participation

as of January, 2020



CURRENT OPERATING FACILITIES

- 22 biomass plants in commercial service – about 560 MW capacity.
- Utilize a blend of urban, ag and forest feedstocks. Urban feedstock is the low price leader, then ag, with forest biomass as the highest priced.
- 15 idle plants with about 260 MW capacity.
- Most recent entry is ARP Loyalton at 20 MW.



RESPONSE TO GOVERNOR'S EMERGENCY PROCLAMATION

- CA Legislature Response:
 - Senate Bill 859 is signed by the Governor in Sept 2016.
- CA PUC and Utility response:
 - Directed investor owned utilities (PG&E, SCE, SDG+E) and publicly owned utilities (SMUD, LADWP, IID, MID, etc.) to procure power from facilities that source forest biomass using the Renewable Auction Mechanism.
 - BioRAM only applies to IOU's and POU's with at least 100,000 customers.
 - Target allocation is at least 180 MW.
 - Applies only to biomass power plants on line before June 1, 2013.
 - Power Purchase Agreements for BioRAM facilities (six) term out by 2027 & 2028.



BIORAM I AND BIORAM II DETAILS

- Power Purchase Agreements are a minimum of five years duration targeting 180 MW (minimum).
- BioRAM I fuel Requirements:
 - At least 80% from HHZ.
- BioRAM II fuel Requirements:
 - 80% from “sustainable” forest management with at least 60% from HHZ.
- Fuel tracking protocols require plants to report quarterly to the IOU’s.
- If BioRAM plants do not meet minimum fuel sourcing requirements then the energy price drops to \$89.23/MWh (down from about \$120/MWh).
- SB 901 allows BioRAM plants to request a five year PPA extension (if not located in a federal severe nonattainment airshed).





BIORAM FACILITIES

FACILITY	SCALE (Net MW)	ANNUAL FEEDSTOCK USAGE (BDT/YEAR)
BIORAM I FACILITIES		
Pacific Ultrapower Chinese Station	18	144,000
Rio Bravo Fresno Biomass	24	192,000
Rio Bravo Rocklin Biomass	24	192,000
Burney Forest Power	29	232,000
BIORAM II FACILITIES		
Wheelabrator	34	272,000
Greenleaf Power / Honey Lake	24	192,000
ARP Loyalton	18	144,000



BIORAM FACILITY FUEL MANAGERS

FACILITY	Fuel Manager	Email address	Phone
Pacific Ultrapower Chinese Station	Dennis Serpa	dserpa@chinesestation.net	209.984.4660
Rio Bravo Fresno Biomass	Hector Lara	hlara@rbfresno.com	559.264.4575
Rio Bravo Rocklin Biomass	Scott Pedersen	spedersen@rbrocklin.com	916.645.3383
Burney Forest Power	Jeff Oldson	jeffo@crcforestry.com	530.921.3219
Wheelabrator	Alan Jacobson	alanj123@aol.com	530.339.7600
Honey Lake Power	Steve Kozlowski	skozlowski@greenleaf-power.com	530.260.0252
American Renewable Power Loyalton	Jim Turner	jim.turner@amerpower.com	530.941.2796

COMMUNITY CHOICE ENERGY

- Also known as Community Choice Aggregation (CCA). Currently authorized in CA, OH, MASS, NJ, NY and RI.
- Allows communities to procure power on behalf of residents – both residential and commercial. Power is still delivered using existing infrastructure provided by the existing utility provider.
- Currently 19 CCA's in CA. Marin County was the first to adopt this business model (2010). 11 communities are now considering CCA.
- Most CCA's focus on procuring power (primarily renewable) from a variety of sources.
- Some procure biomass power (Redwood Coast Energy Authority).

SB 1122 BIOENERGY MARKET ADJUSTING TARIFF (BIOMAT)

- Signed into law Sept 2012.
- Bioenergy specific carve out for 250 MW of small-scale (3 MW or less) distributed generation.
 - Urban sourced – 110 MW
 - Dairy and other Ag sourced – 90 MW
 - Forest sourced – 50 MW
- Designed to address waste diversion and air emissions reduction goals of the CA Energy Commission, CalRecycle, CA Air Resources Board and the State's Bioenergy Action Plan.
- Administered by the CA Public Utilities Commission.
- BioMAT Category 3 auction currently underway.

SENATE BILL 1122 FEEDSTOCK REQUIREMENTS FOR FOREST BIOMASS

- At least 80% sourced as byproducts of “Sustainable Forest Management”
 - Sustainable Forest Management as designated by CPUC
 - Verified by third party

- Other 20% of feedstock:
 - Byproducts of agricultural operations
 - Clean urban wood waste

- Annual Reporting to the CPUC
 - Volume by feedstock type





Phoenix Energy 500 kWh Gasification Unit at Merced, CA

COMMUNITY-SCALE BIOPOWER FACILITY EXAMPLE – NORTH FORK COMMUNITY POWER

- 2 MW project being considered at North Fork, California.
- New plant construction cost around \$15 million.
- Will consume about 46 BDT/day (approx. 1BDT/MWh burn rate).
- Biomass transported approx. 30 - 40 miles (one way).
- Achieved financial close on 12/31/19.
- EQTEC is strategic partner and will supply gasifier technology.
- Commercial operations should commence Q2 2021.
- Energy price with BioMAT PPA: \$199/MWh



SB 1122 CATEGORY 3 PROJECTS IN DEVELOPMENT

Facility	Scale (MW)	Annual Feedstock Usage (BDT/Year)	Location
North Fork Community Power	2	16,000	North Fork
CHIPS Value-Added Product Yard	3	24,000	Wilseyville
Burney Hat Creek Bioenergy	3	24,000	Burney
Crescent Mills Wood Utilization Campus	3	24,000	Crescent Mills
Collins Pine	3	24,000	Chester
Camptonville Community Partnership	3	24,000	Camptonville
Nevada County Bioenergy	3	24,000	Grass Valley
Mariposa Biomass Project	2	16,000	Mariposa
Totals	22	176,000	

OTHER VALUE-ADDED USES

- District heating and power
 - Quincy
 - Bridgeport
- Transportation Fuels
 - Red Rock Biofuels
- Fuel pellets
 - RCRC initiative
- Animal bedding
 - American Wood Fiber
- Landscape cover
- Soil amendment
 - Mulch
 - Biochar
- Firewood
- Post and poles



ADDITIONAL RESOURCES

California CCA

<https://leanenergyus.org/new/california/>

Statewide Wood Energy Team

<http://ucanr.edu/sites/swet/>

Placer Co Air Pollution Control District

<http://www.placer.ca.gov/departments/air/apcdbiomass>

CA Biomass Energy Alliance

<http://www.calbiomass.org/>

Bioenergy Association of California

<http://www.bioenergyca.org/>

UC Division of Ag and Natural Resources

<http://ucanr.edu/sites/WoodyBiomass/>

CA Biomass Collaborative

<http://biomass.ucdavis.edu/about/>

QUESTIONS or HECKLING REMARKS?



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