

Loyalton Biomass Cogeneration & EcoTech Campus Case Study

Steve Frisch, Sierra Business Council

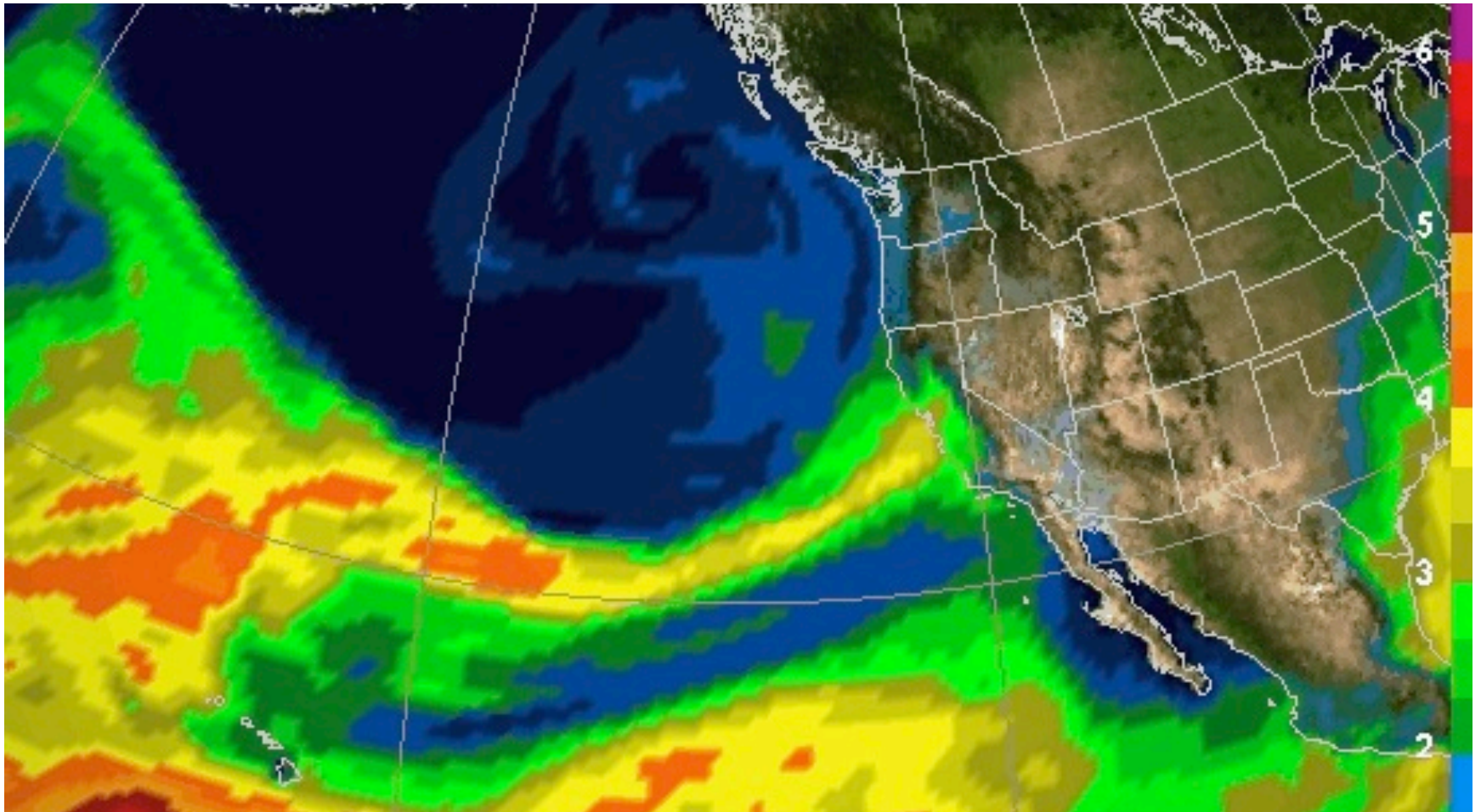








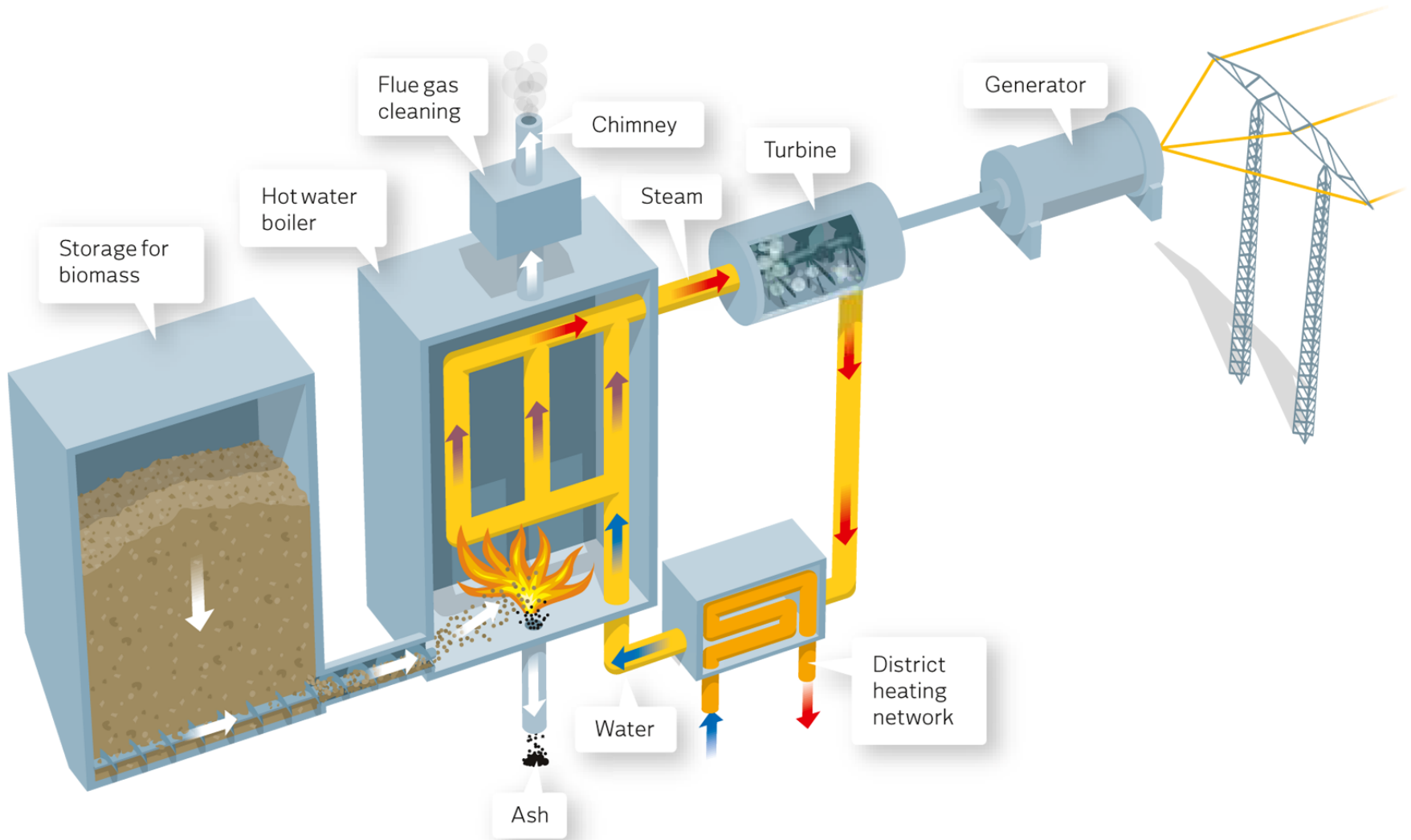








How Does a Biomass Power Plant Work?



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Biomass Power Plant

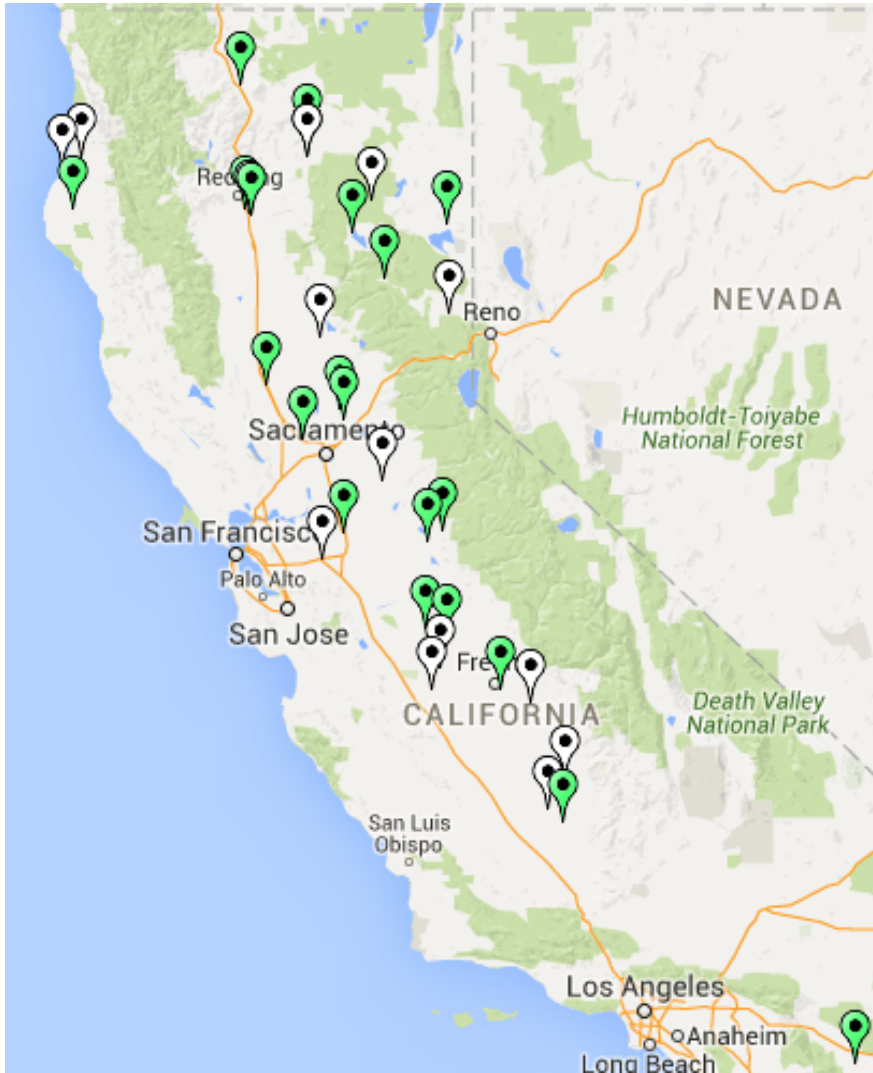


Forest Thinning Agricultural Waste Urban Waste





Biomass Facilities



The biomass power industry helped dramatically reduce the air pollution from open-burning in California.

Biomass Facilities 2000

Total Fuel Tons:

6,718,000

Plant Name	Fuel Tons	Plant Name	Fuel Tons
Diamond Walnut	33	Buena Vista Biomass	150
Wheelabrator Martell	120	Desert View Power	375
SPI - Susanville	100	Rio Bravo Fresno	180
Sierra Forest Products	90	DTE Stockton	360
Soldedad Energy Partnership	95	Pac.-Ultrapower Chinese Station	150
Delano Energy	375	DTE Woodland Biomass	175
Mendota Biomass	180	Rio Bravo Rocklin	180
Tracy Biomass	150	SPI - Lincoln	150
Pacific Oroville Power	140	Wadham Energy	175
SPI - Loyalton	140	SPI - Quincy	350
Mount Lassen Power	100	Collins Pine	70
Burney Mtn Power	100	Honey Lake Power	205
Shasta Renewable	80	SPI - Burney	140
Dinuba Energy	70	Burney Forest Power	240
Eel River Energy	250	Wheelabrator Shasta	425
Fairhaven Power	108	SPI - Anderson	220
Madera Power	175	SPI - Standard	90
Blue Lake Power	100	Roseburg Forest Products	110
		DTE Mt. Poso Cogen	400
		El Nido Energy	100
		Chowchilla Biomass	100

FUEL TONS

6,718,000

Biomass Facilities 2016

Total Fuel Tons:

4,195,000

Plant Name	Fuel Tons	Plant Name	Fuel Tons
Desert View Power	375	Honey Lake Power	205
Rio Bravo Fresno	180	SPI - Burney	140
DTE Stockton	360	Burney Forest Power	240
Pac.-Ultrapower Chinese Station	150	Wheelabrator Shasta	425
DTE Woodland Biomass	175	SPI - Anderson	220
Rio Bravo Rocklin	180	SPI - Standard	90
SPI - Lincoln	150	Roseburg Forest Products	110
Wadham Energy	175	DTE Mt. Poso Cogen	400
SPI - Quincy	350	El Nido Energy	100
Collins Pine	70	Chowchilla Biomass	100
		Fuel Tons	4,195,000

- 5 plants closed and demolished
- 14 more plants idled
- 6 plants shut down in 2015 alone

Biomass Facilities 2020

Plant Name	Fuel Tons	Plant Name	Fuel Tons
Desert View Power	375	SPI - Anderson	220
DTE Stockton	360	SPI - Standard	90
DTE Woodland Biomass	175	Roseburg Forest Products	110
SPI - Lincoln	150	DTE Mt. Poso Cogen	400
Wadham Energy	175	El Nido Energy	100
SPI - Quincy	350	Chowchilla Biomass	100
SPI - Burney	140	Fuel Tons	2,745,000

Total Fuel Tons:

2,745,000

- 6 more plants scheduled to close in 2016
- California will have lost 517 MW of Renewable Biomass Electricity
- Biomass electricity used to represent 6 % of our renewable portfolio for California
- Today biomass electricity represents about 1.5% of our renewable portfolio in California

Governor Brown Emergency Proclamation

- October 2015: deal with unprecedented tree mortality
- Requires CPUC to extend contracts for biomass plants that can use forest fuels
- Biomass plants: Focus in high hazard zones in the Sierra.



Bio-Economy Products Make It Work

Value Added Wood Products Low Carbon Alternatives

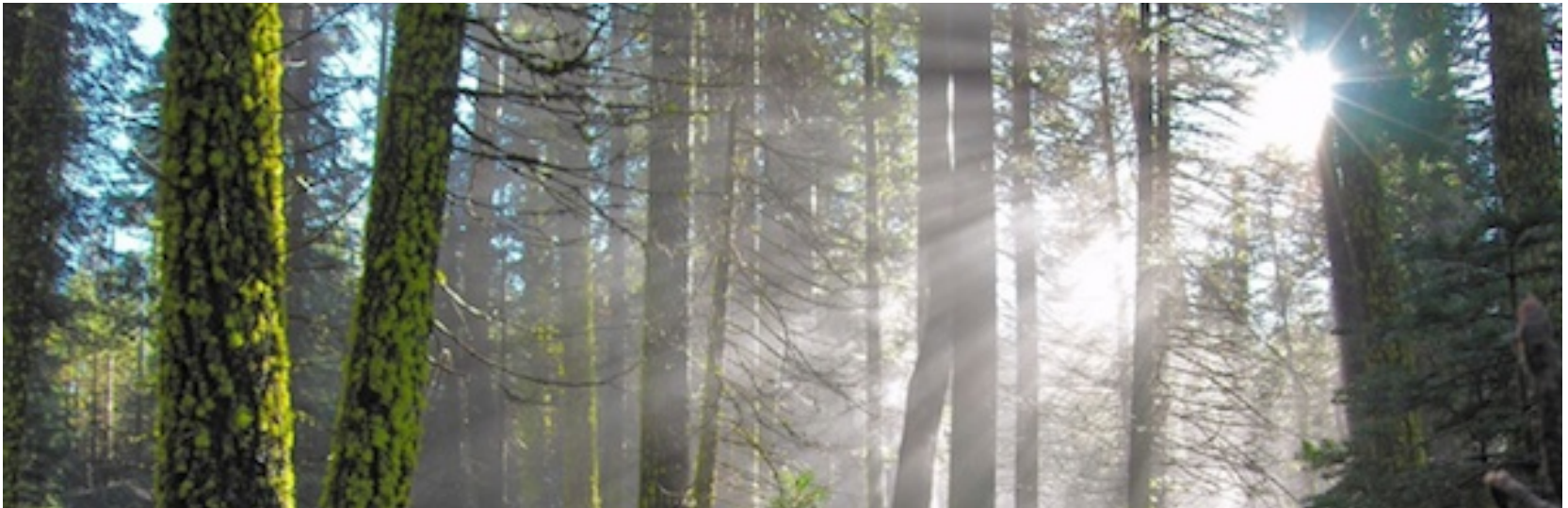
- Electricity
- Heat
- Biofuels
- Pellets
- Compost
- Soil Amendments
- Polymers
- Bio-Chemicals
- Cross Laminated Timber
- Mass Timber Products
- Cellulosic Nanomaterials

Job Creation

- Research
- Technology
- Manufacturing
- Forest Restoration
- Logistics/Supply Chain Management
- Management
- E-commerce
- Trucking
- Construction/Building Trades
- Skilled Labor

Economic Benefits

- 25 – 30 immediate jobs to operate Facility
- 25 – 30 jobs in logistical network
- 125 jobs from uses on the EcoTech Campus
- \$29,575,000 in total annual regional economic benefit
- \$2,661,750 in annual local and state revenue



The Hard Lessons



- Leadership
- Partnership
- Collaboration
- Leveraging Assets
- Diversity
- Values

Hard Problems=Hard Choices

- Leadership—support making hard decisions
- Partnership—means work with those that contribute
- Collaboration/Diversity—means compromise
- Leveraging Assets—means fight for the money
- Values—means making a trade off

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