



Biomass Heat in Plumas County, California

Biomass Working Group

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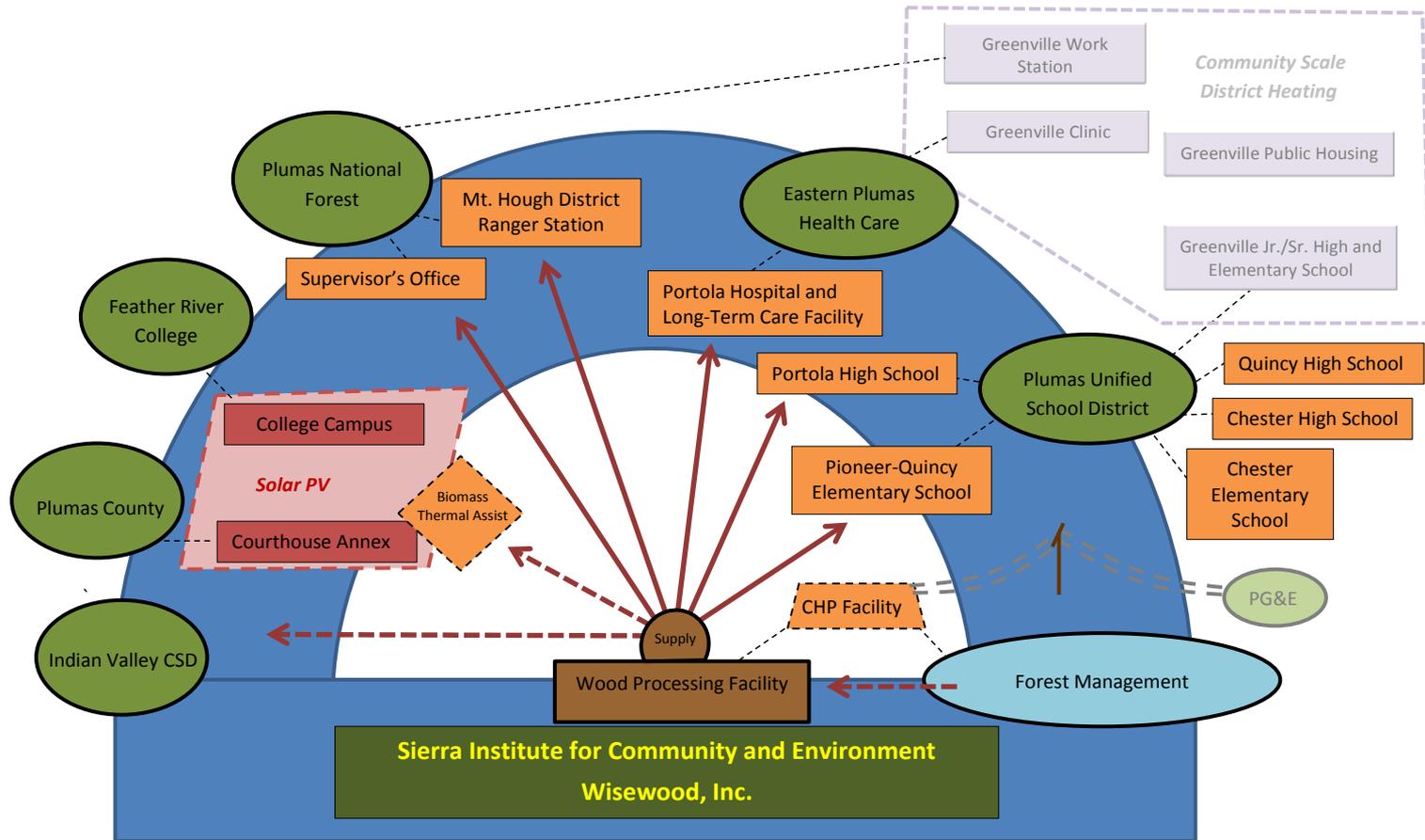
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The 40,000 foot plan

Plumas Energy Efficiency and Renewables Management Action Plan (PEER MAP)



○ Participating Organizations

□ Potential Facilities

WISEWOOD^{inc}

www.wisewood.us

- Experts in biomass energy technology and public-private partnership finance
- Premier design and development company of community-scale biomass energy projects in the Pacific Northwest
- Committed to excellent customer service and dedication to functional design

Biomass work to date

Planning Phase:

- Steep slope
- Transportation study
- Biomass supply assessment
- CEC funded PEER MAP
- USDA funded WBUG
- Relationship building
- Community outreach
- Feasibility studies
- Partner commitments
- SWET and BWG

Design and engineering phase:

- Eastern Plumas Health Care
- County Health and Human Services Facility
- Chip processing facility
- 3 MW CHP facility



Why biomass heat works

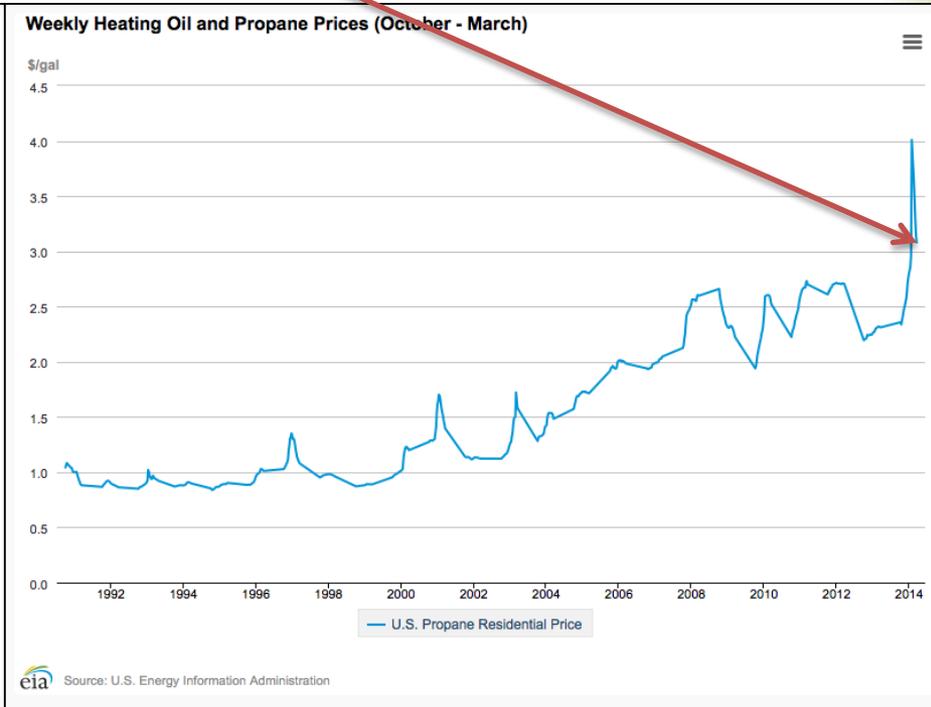
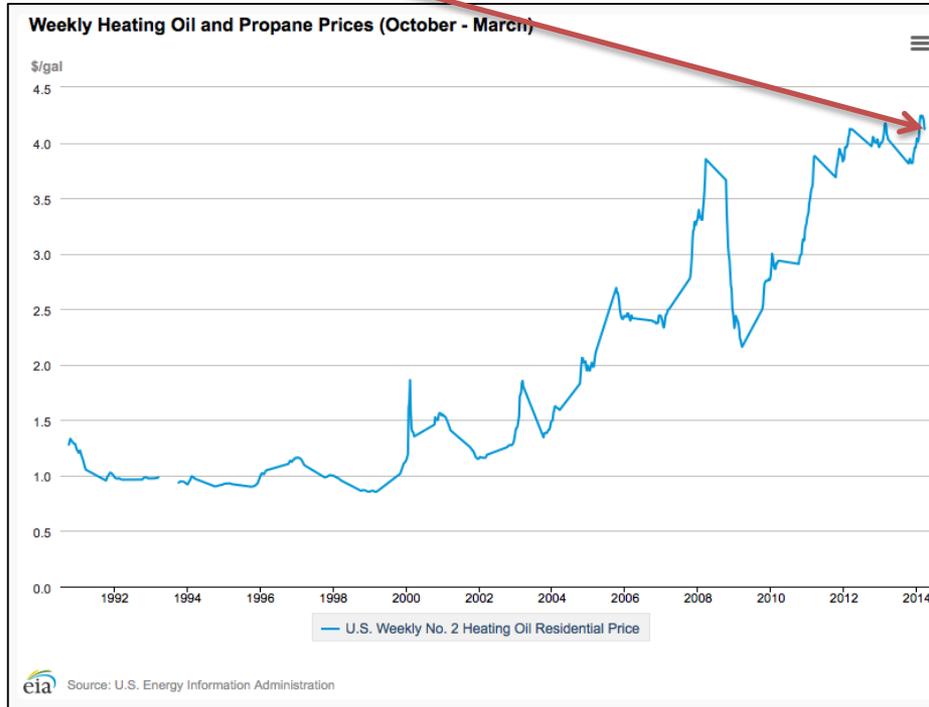
- No NG in Plumas County
- Abundant, local resource
- Institutional knowledge
- Ecological benefit
- Economic benefit



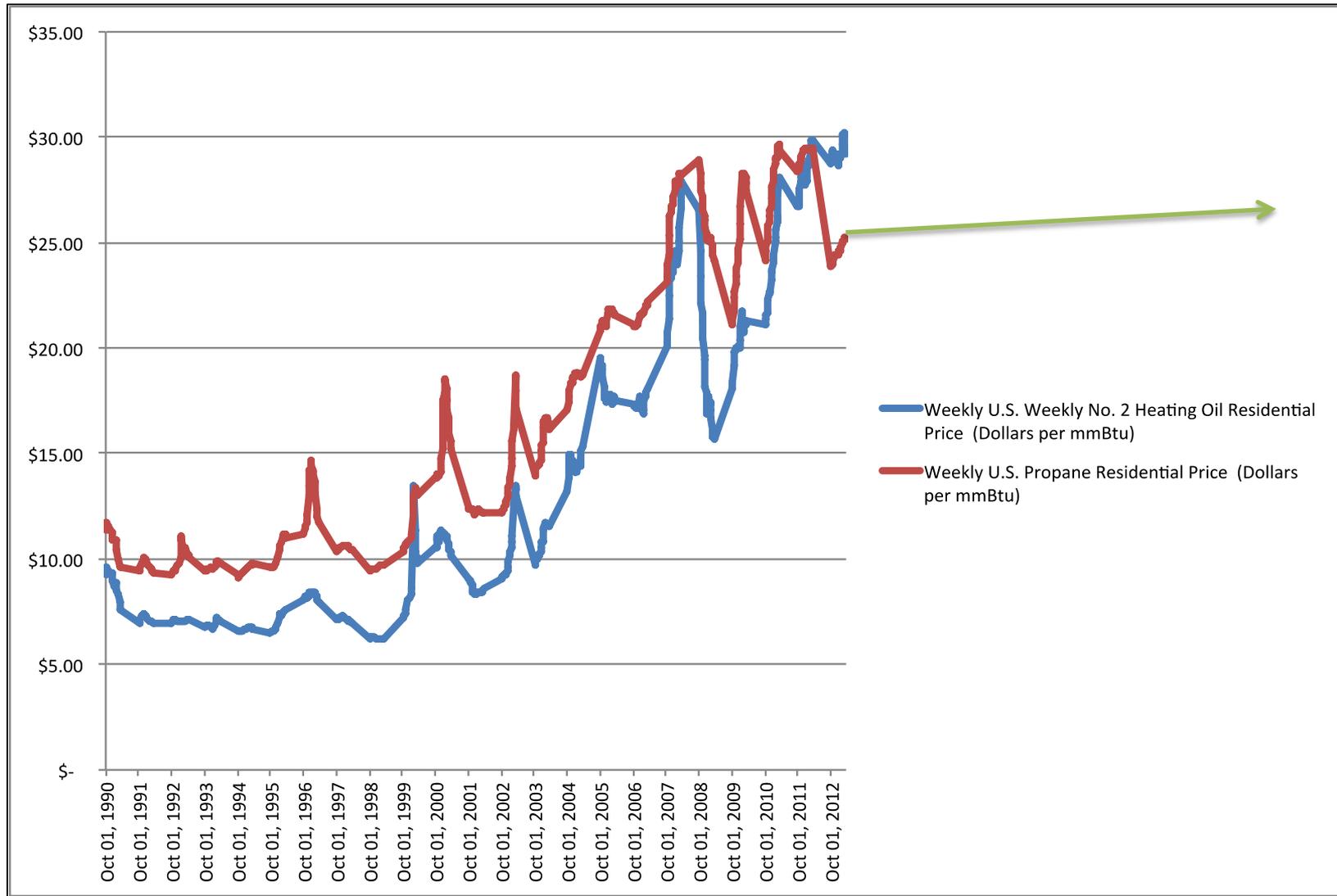
Heating oil and propane prices

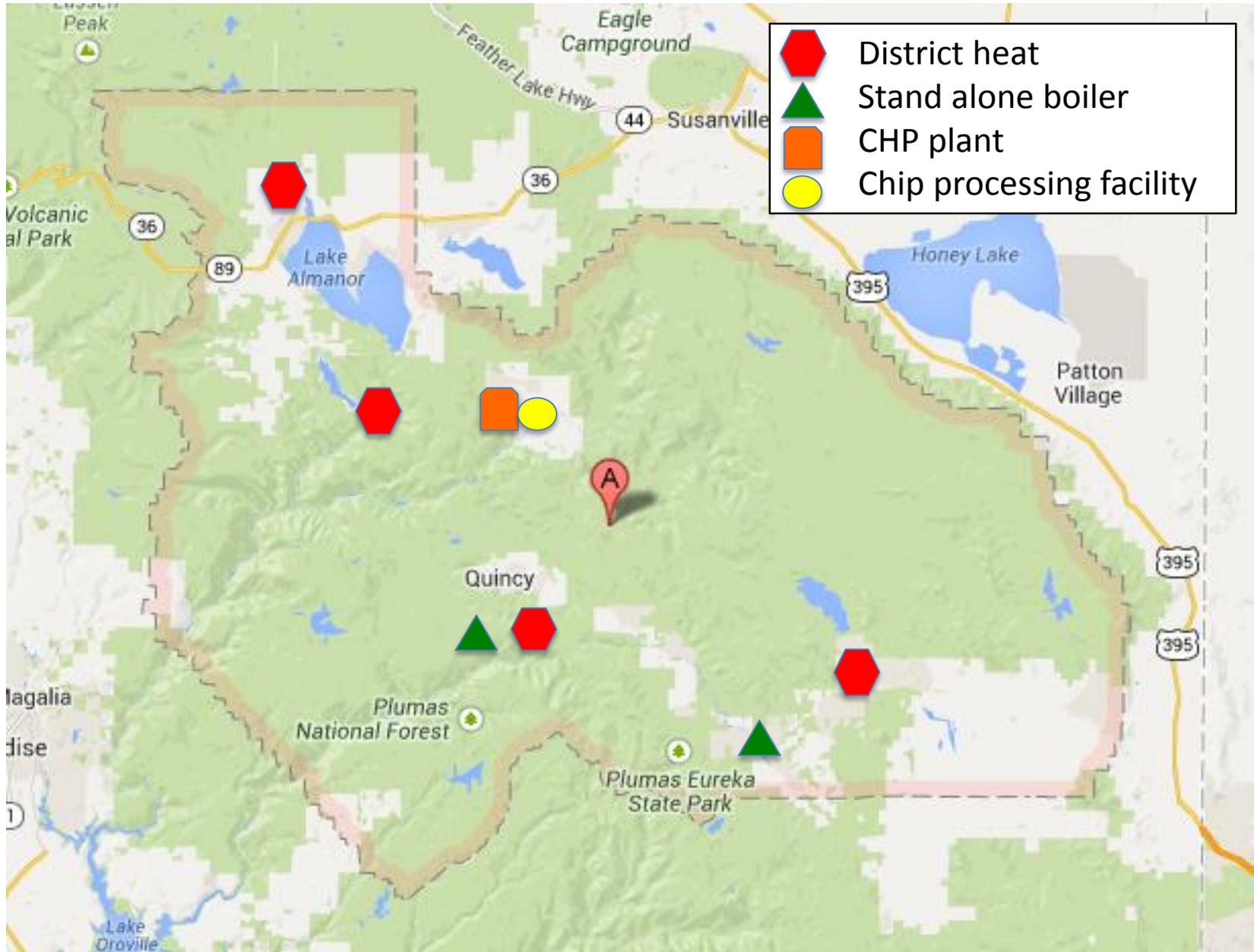
3/17/2014: \$4.123 per gallon

3/17/2014: \$3.079 per gallon



Price of propane compared to heating oil measured in dollars by energy content





Portola High School



Summary of PHS Feasibility Study

Current Situation:

- 22,640 gallons of heating fuel in 2011-2012
- Cost approx. \$80,000
- Pending \$450,000 purchase of new boiler

Feasibility recommendation:

- Purchase boiler spec'd for conditioned chips
- ESP for air quality
- Cost of \$1.28 million
- Consume 208 BDTs/year
- Meet 92% of heat needs
- Annual fuel cost of approx. \$21,000
 - Plus 5k in heating oil

Ten year payback period

Eastern Plumas Health Care



Summary of EPHC Feasibility Study

Current Situation:

- 37,000 gallons of fuel oil in 2011 for heat
- Cost approx. \$145,000
- Distinct need to replace existing boilers (\$200k avoided cost).

Feasibility recommendation:

- Purchase boiler spec'd for hog fuel (50% mc)
- ESP for air quality
- Cost of \$1.19 million
- Consume 400 BDTs/year
- Meet 85% of heat needs
- Annual fuel cost of approx. \$20,000
 - Plus ~\$14k propane

Seven year payback period



Google earth

feet
meters



2000

800



Summary of Portola District Energy

Current Situation:

- 63,000 gallons of fuel oil in 2011-2012 for heat
- Cost approx. \$236,000
- Need to replace existing boilers at both facilities

Project Economics:

- Purchase boiler spec'd for clean chips (35% mc)
- ESP for air quality
- Cost of \$3.27 million
- Consume 680 BDTs/year
- Meet 94% of heat needs
- Cost approx. \$34,000
 - Plus ~\$14k propane

Variable payback period

PCE Wood chip processing facility

Physical Attributes:

- Former LP mill
- Zoned heavy industrial
- Access off HW 89
- Water and power on site

Due Diligence:

- Community/County support
- Phase I enviro. assessment
- Contract with landowner

Centrally located

- Produce and store “refined” wood chip



Moving biomass heat forward

Opportunities

- Community support
- CEC and USFS support
- EPIC funds
- Technology is proving itself
- Rim Fire
- Drought
- State and federal policy
- Local events
- Time

Challenges

- Support ≠ buy in
- Capital costs
- Past failure
- Distrust of unknown
- Questions about fuel supply
- Scale of project

Plan to apply for CEC EPIC funds to help reduce the capital costs of installing biomass boilers at EPHC and Plumas County HHS facility

Plumas Community Energy: Increase biomass utilization

- Stabilize heating costs
- Reduce fossil fuel use
- Create local jobs
- Potential to reduce direct labor
- Utilize abundant, local resource
- Reduce fire risk
- Improve forest health



Thank you & Questions?



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