# A Case Study: Warm Springs

Cal Mukumoto

Warm Springs Forest Products Industries

# Warm Springs Indian Reservation of Oregon

# Warm Springs Forest Products Industries (WSFPI)


- Enterprise of the Confederated Tribes of the Warm Springs Reservation of Oregon
  - Operates a large and small log mill producing over 70 million board feet.
  - Provides 138 full time jobs
  - Annual logging of 42 million board feet
  - Wood fired power plant
  - FSC Certified

# Current Biomass Plant

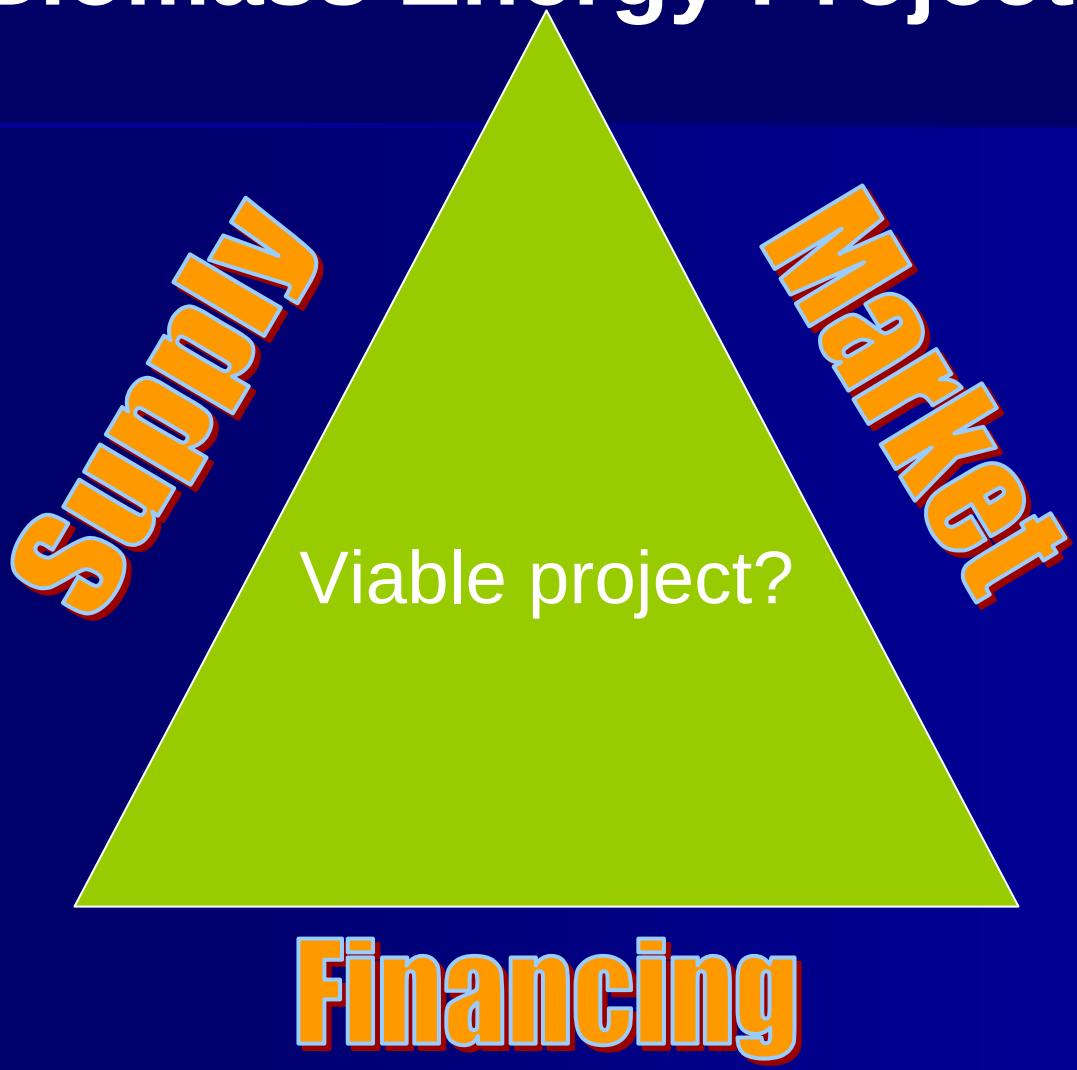
- 80,000 lb per hour Boiler
- 3 MW per hour production


# A Market Pathway to Forest Restoration

# New Biomass Power Plant

- In 2008 provided PTCs are extended, the Tribes plan to collocate a biomass energy generation plant at the Warm Springs sawmill site
- The plant will produce net 15.5 MW of renewable power for sale on the grid
- That is enough electricity for 15,000 homes

# Three Major Sides of a Viable Biomass Energy Project



# Other Important Considerations

- Transmission
  - How easy is it to connect to the Grid?
  - Is there capacity?
- Permits
  - Do you have all the permits?
- Land
  - How close is the plant location to the fuel source?
- Co-generation
  - Can you collocate with a user of steam and producer of fuel?


# A Market Pathway to Forest Restoration

# Fuel Supply

- Questions
  - What are the sources of fuel?
  - How long can the fuel sources be supplied?
  - How certain is the fuel supply?
  - What is the back up plan, if your source does not come through?
  - How will fuel supply be delivered to the plant?
  - Will this fuel require new roads?

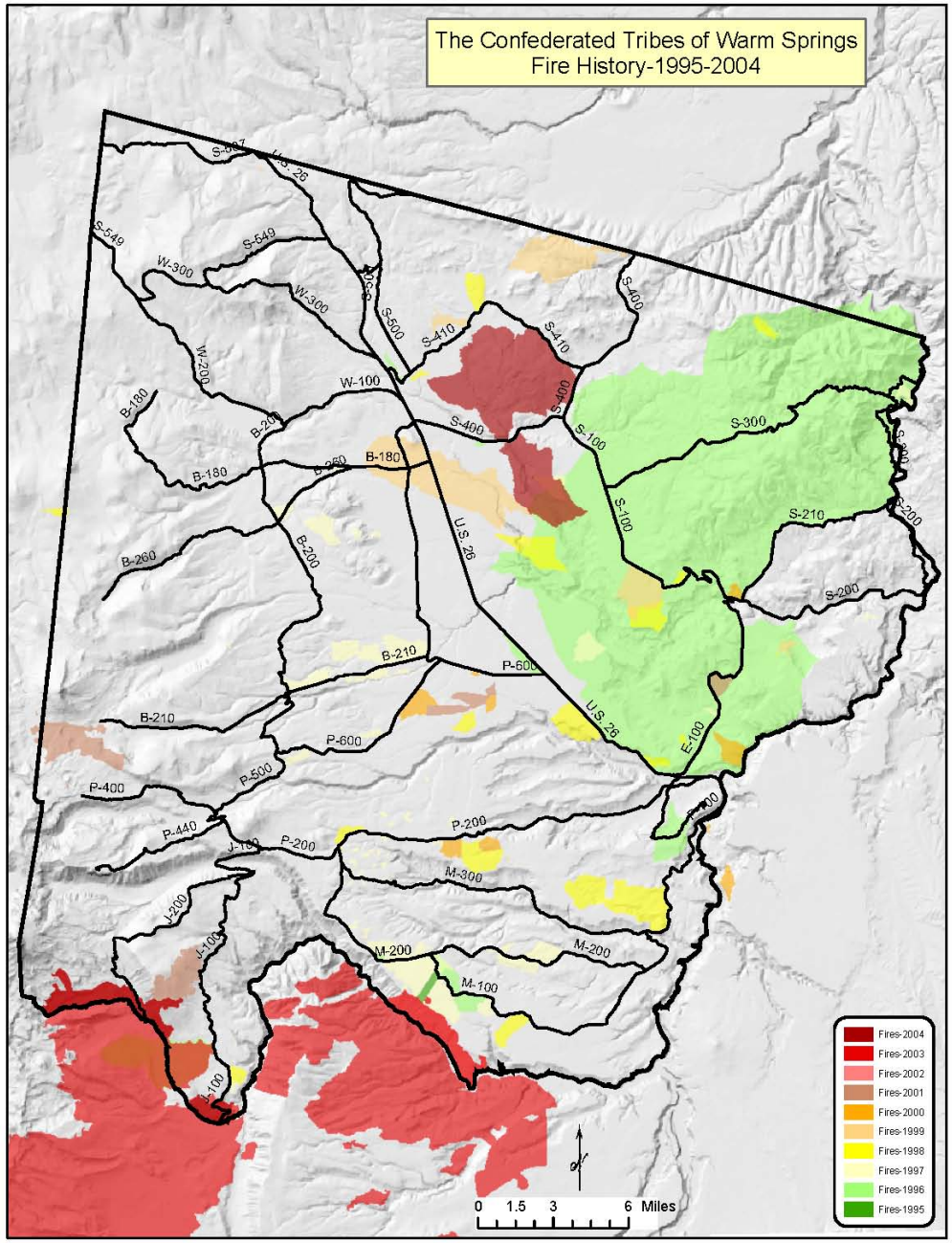
# A Growing Problem

- There are increasing volumes of small wood and biomass on and off the reservation, fire adapted ecology
- Central Oregon Intergovernmental Council (COIC) reports "...500,000 acres (31%) of the Deschutes National Forest was at 'abnormally high risk from large stand replacement insects, disease outbreaks and wildfires,' predominately in the ponderosa pine, mixed-site species, and lodgepole pine plant associations."
- COIC reports estimates over 740,000 acres in Deschutes, Jefferson and Crook Counties are in condition class 2 and 3.

Since 1996, five fires have crossed the borders of the Warm Springs Reservation and the US Forest Service.

10,000 acres have burned on the Reservation from these fires.

Three originated on the Forest Service, one was the result of combined lightning on Forest Service and the Reservation. The fifth fire started on the reservation.



# Hazardous Forest Fuels

- Hazardous Forest Fuels Threaten:
  - People
  - Cultural Resources
  - Tribal Forest Assets
  - Wildlife habitat
  - Watersheds
  - Air sheds

# The Issue

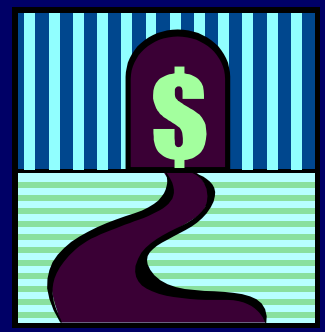
- Federal Land surrounding the Reservation threatens Tribal Forest Lands
- The Tribes have legally protected treaty hunting, fishing, pasturing and gathering rights on BLM and USFS lands.
- There are more acres requiring treatment than appropriations to treat them

# A Market Solution

Warm Springs proposes to develop a "Market Pathway" solution for the forest fuels issue

- A Win/Win Demonstration to Reduce Forest Fuels
- A Way to Protect Cultural Resources, Improve Habitats and Protect Watersheds

# Market Pathway




- Provide a solution to overstocked forest stands by thinning small diameter trees and biomass
- Thinning will increase resiliency of the forest, improve habitats, and protect cultural resources!
- Provide forest restoration through biomass thinning

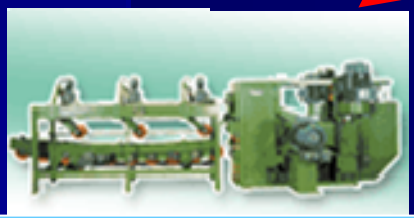

Sell Products for Revenue $$$$
Use Revenue to Thin Forests
Market Pathway
Burn biomass or convert small logs into Products: Energy Lumber

# Warm Springs Strategy

Unhealthy Stands

Thin

Healthy Stands



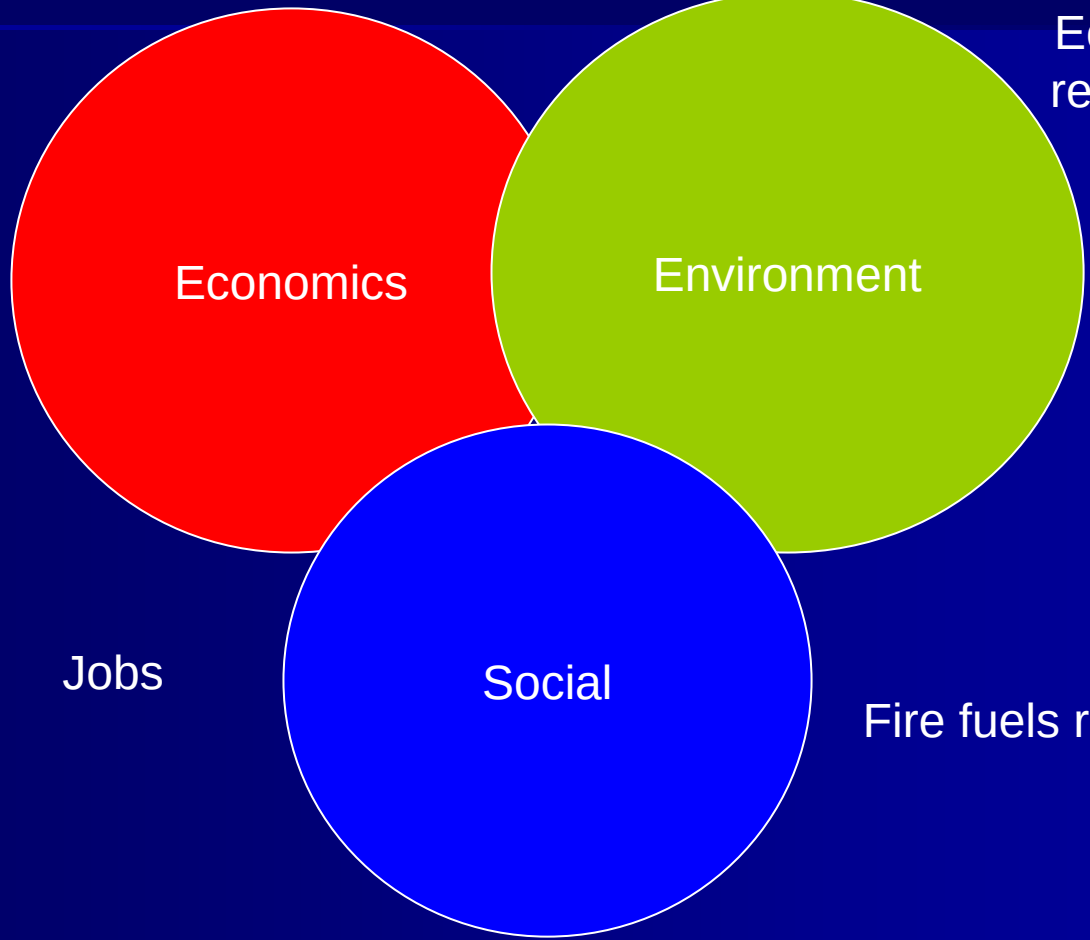
Small log processor

Hog

# Benefits of a Market Solution

- A New Biomass plant can provide over 70 new or retained jobs
  - 4.9 jobs per MW produced
- We believe we can significantly reduce or eliminate the cost of forest restoration in Central Oregon by
  - Creating energy from biomass
  - Creating products from small logs

# Sustainable Trifecta



# Implement the Trifecta ☻

Implement economic solutions that are socially and environmentally sound.

# 100 Years of Fire Suppression has lead to a high level accumulation of Small Diameter Trees

# Supporting Collaboration

"Setting the stage"

- CROP Initiative
- COPWRR
- Metolius Stewardship
- Glaze meadows
- MOU with Agencies
- Others

# Benefits of Collaboration

- Trust with Industry and Conservation Groups
- Greater understanding of project within the community
- Development of Agency Understanding and Support

# Old growth, new partnership
# Restoration project unites conservation industry, environmentalists

By Erin Foote Marlowe / *The Bulletin*

5/20/06

**Tim Lillebo, of the Oregon Natural Resources Council, explains why the Glaze Restoration Project is an ideal opportunity for collaboration between conservation groups and Warm Springs Forest Products, on Thursday.**

BLACK BUTTE RANCH - There's nothing unusual, officials said, about the U.S. Forest Service thinning trees, removing undergrowth and performing controlled burns in old-growth forest.

It is unusual when a conservation group and a forest products company come together to independently recommend such a project, said Maret Pajutee, of the Deschutes National Forest's Sisters Ranger District.

That's exactly what's happening at the 1,200-acre Glaze Old-Growth Area next door to Black Butte Ranch.

And Tim Lillebo of the Oregon Natural Resources Council and Cal Mukumoto of Warm Springs Forest Products want to make sure their collaborative effort here is the first of many....

# Memorandum of Understanding

- In addition, the Confederated Tribes of Warm Springs, the Pacific Northwest Region Forest Service and the Bureau of Land Management in the State of Oregon have developed a framework for a long term resource management program on FS and BLM lands.
- MOU entered in January, 2006

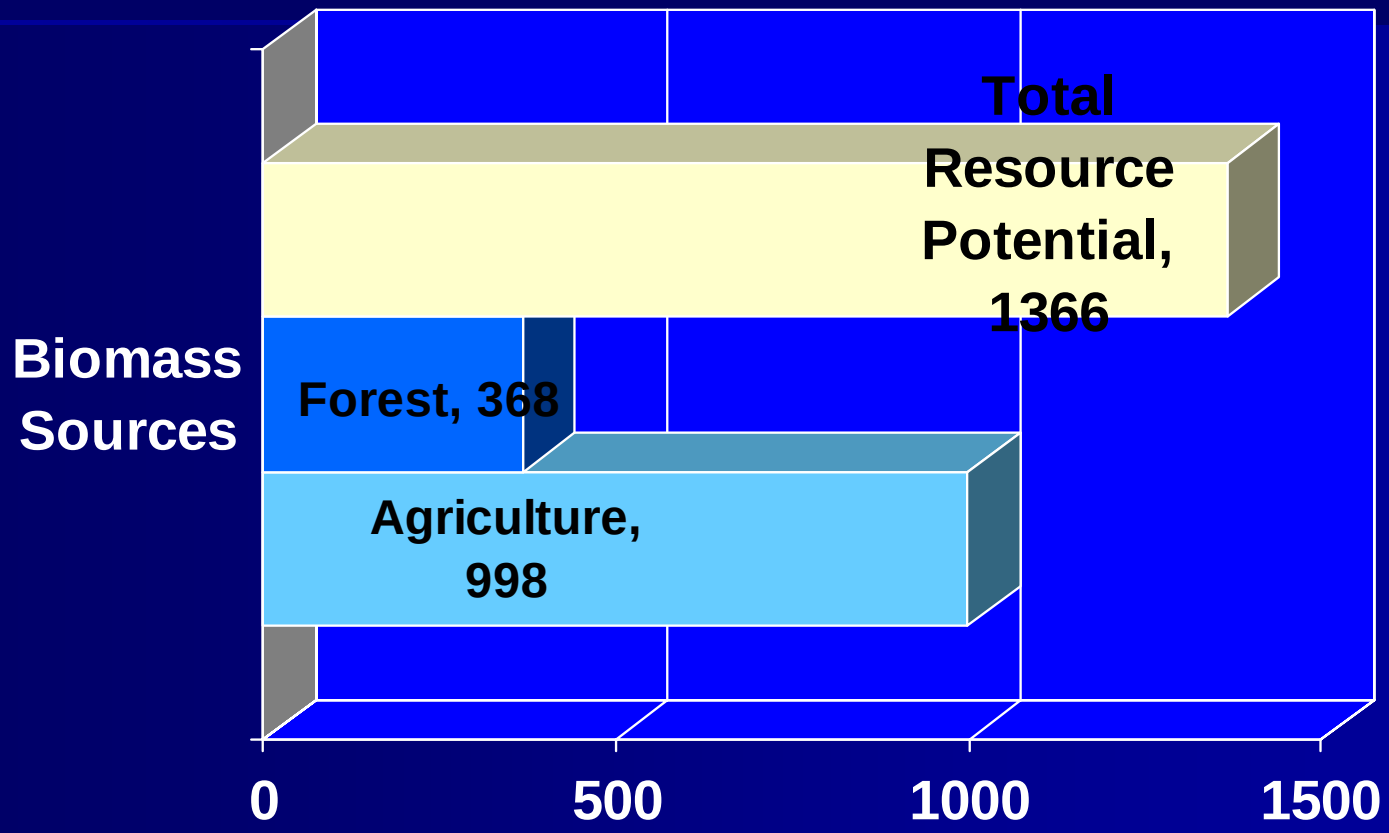
# Merchandising – An Example in Oregon

- Harvest Costs -$550 per acre (includes delivery of logs)
- Piling $300 per acre
- Burning $50 per acre
- Total $900 per acre
- Thin up to 12” -1 MBF per acre
- Thin up to 16 “ DBH – 2MBF per acre
- Delivered Log Price:$325

Utilizing Biomass can eliminate up to $350 per acre cost

Log sales can provide $650 per acre

# Potential Annual Biomass Resources of 1.3 Billion dry tons per year! The 2005 Billion Ton Report




Source: BIOMASS AS FEEDSTOCK FOR A BIOENERGY AND BIOPRODUCTS INDUSTRY: THE TECHNICAL FEASIBILITY OF A BILLION-TON ANNUAL SUPPLY April 2005

# Challenge

GAO has identified 190 million acres of forest land in the west at risk to lost by fire

- There is a lot of fuel out there!
  - 368 Million dry tons of Forest Fuels =
  - > 2,600 Warm Springs projects
- Let's get on with it!

## Woody Biomass Recovered as Fuel by Vegetation Cover Type and Harvest Method Within the Warm Springs Market Area

| Vegetation Type and Harvest Method | Conifer Fuels Treatment | Conifer Commercial Sawlog Harvest* | Western Juniper Range Improvement |
|---|---|---|---|
| BDT/Acre | 8 - 13 | 2 – 4 | 6 - 8 |

•Assumes a sawlog harvest removal rate averaging 4 MBF/acre and a biomass fuel recovery factor of 0.9 BDT/MBF.

** BDT = Bone Dry Ton = 2,000 pounds of biomass material at 0% moisture content. Forest sourced biomass material should average around 50% directly from the forest. 1BDT equates to about 2 green tons. A truck load of biomass fuel should have 25 GT net on board, or the equivalent of 12.5 BDT net on board assuming 50% MC.

# Other Fuel Sources

- Sawmill residuals
  - Warm Springs will provide ¼ of the supply need of a net 15.5 MW plant
- Logging residuals
  - Landing piles etc.
- Clean Urban Wood
  - Greatest potential of fuel outside of Forest Fuels
- We believe there is 3 to 6 times the amount of fuel available to supply our plant


# A Market Pathway to Forest Restoration

# Revenue: Power Sales Agreement

- The facility is seeking a long-term Power Sales Agreement (PSA) with a major utility like Pacific Power or Portland General Electric.
- The Power Sales Agreement will specify the sales price, quality and quantity of electricity, and other key factors over at least a 10 year period.

# Revenue: Steam Generation

- The facility will generate large quantities of heat that will be transmitted in the form of steam to the adjacent Warm Springs Forest Products Industries (WSFPI) facility.

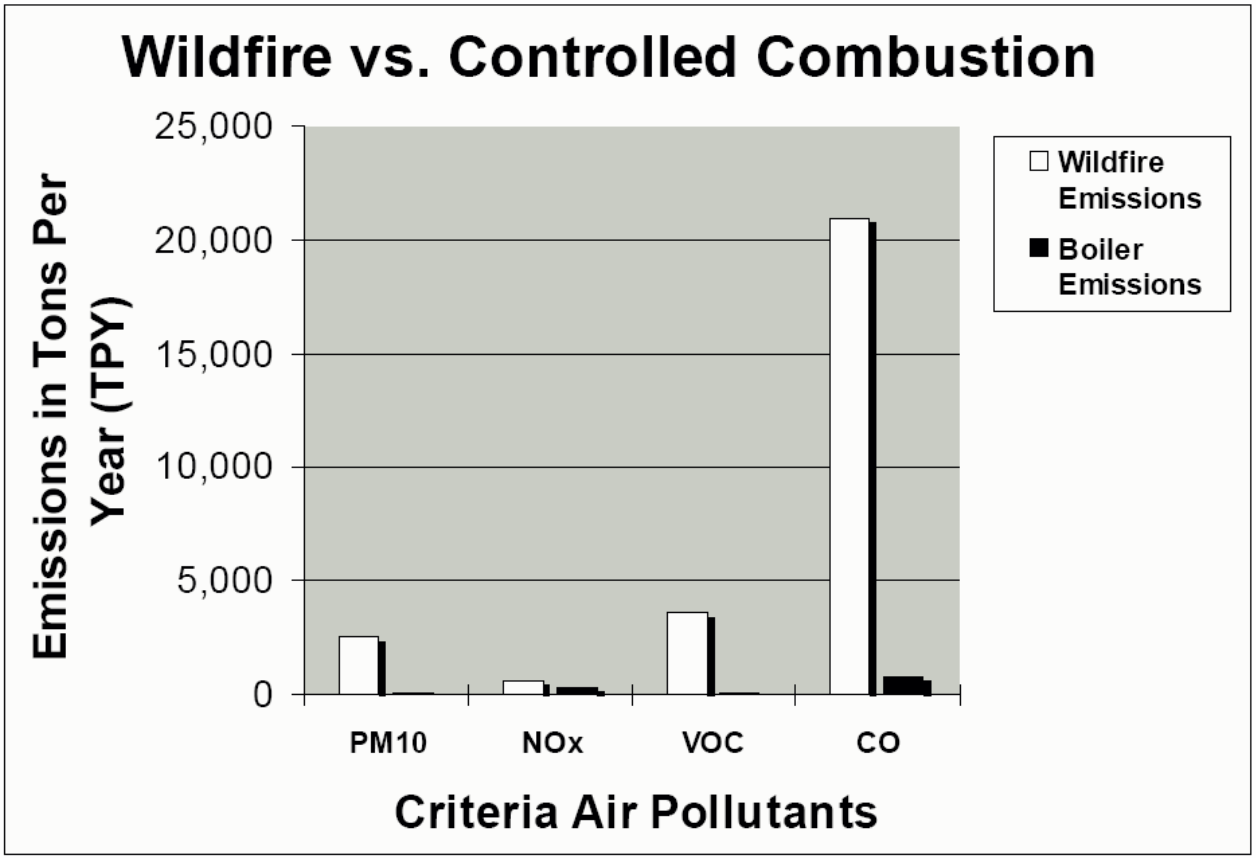
# Revenue: Green Benefits

- Biomass is a very “green” source of electricity because it produces no net carbon dioxide emissions when fuel sources are considered over long periods of time.
- These green benefits can be offered to utilities (e.g. Portland General Electric), non-profits (e.g. Climate Trust), or green power marketing companies (e.g. 3 Phases Energy Services).

***Figure 1. WILDFIRE & BIOMASS POWERPLANT EMISSIONS***

**(Based On U.S. EPA AP-42 Emission Factors &**

**Proposed New Oregon Biomass Plant)**




**Over 90% cleaner**

# EPAct of 2005

- **SEC. 203. FEDERAL PURCHASE REQUIREMENT (Biomass included)**
- (a) REQUIREMENT.—
- (1) Not less than 3 percent in fiscal years 2007 through 2009.
- (2) Not less than 5 percent in fiscal years 2010 through 2012.
- (3) Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter
- Double credit for energy produce on Indian lands

# State Renewable Portfolio Standards

- Fair and equitable power price
  - **State Renewable Portfolio Standards (RPS)** require electric utilities to supply a minimum amount of eligible renewable energy and in a given timeframe
  - 20+ states have RPS
  - Biomass is an eligible renewable energy source in all of the RPS
    - States can tailor RFP requirements to:
    - Satisfy electricity market characteristics
    - Accommodate renewable resource potential
    - Meet individual state policy objectives


# A Market Pathway to Forest Restoration

# CapEx

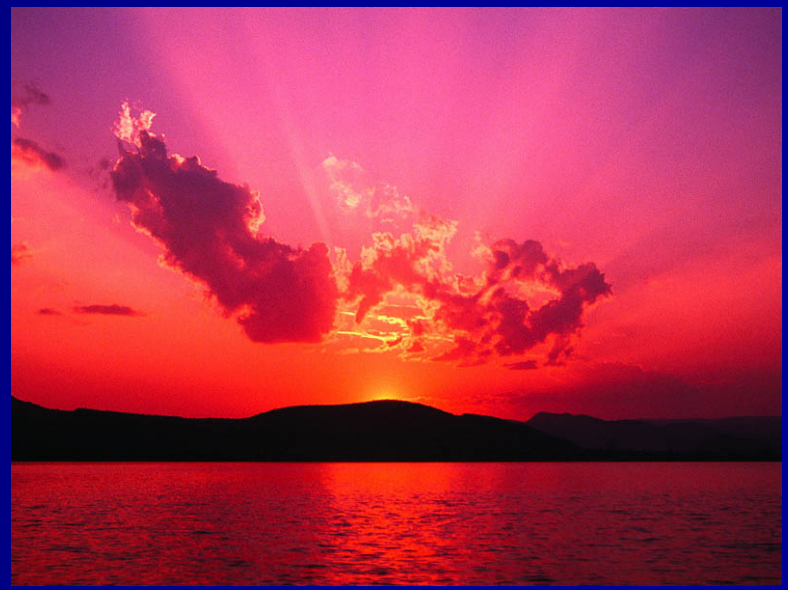
- The new biomass power plant will cost approximately 40 million dollars

# Energy Policy Act of 2005 Woody Biomass Provisions

- **Section 210: USDA *may* issue grants to improve commercial value of forest biomass for electric power, heat etc**
  - Preferred communities can get up to $500K total or up to $20/ton of green forest biomass for forest biomass utilization
- **Section 209: DOE *may* issue grants for Rural and Remote community Electrification**
  - $20 million/year in grants for increased efficiency or use of renewable energy including woody biomass
- **Section 944: USDA *may* issue grants for Small Business Bioproduct Marketing and Certification**
  - Matching grants up to $100K, for a total of $1 million/year

# State Level Benefits

- Public Benefits –
  - Energy Trust of Oregon - $9 Million into Renewable Energy
- Oregon Small Energy Loan Program



# Incentive: Business Energy Tax Credits

- The Warm Springs biomass facility qualifies for Business Energy Tax Credits (BETC) offered by the Oregon Department of Energy.
- These Oregon state tax credits are offered for projects that use environmentally sound technologies.
- These credits can be “passed through” to partners with high state tax liability, with net proceeds directly benefiting the project.
- Proceeds is  worth millions $$ in the case of the biomass facility.
- Current is 35%, proposed by Governor at 50%

# EPAct of 2005

- **SEC. 1301. EXTENSION AND MODIFICATION OF RENEWABLE ELECTRICITY PRODUCTION CREDIT.**
- 2-YEAR EXTENSION to January 1, 2008
- .9 Cents per KW for open loop Biomass

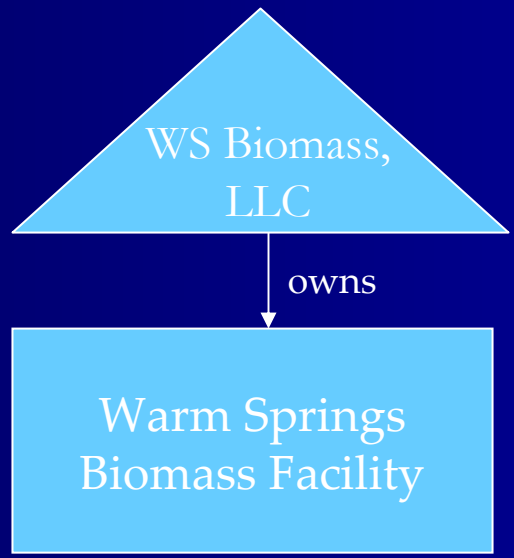
# Incentive: Accelerated Depreciation

- The Warm Springs biomass facility can be depreciated from its book value of approximately $40 million to zero over the first five years of operation.
- This provides a federal tax deduction averaging about millions per year over the six years including the final year of construction and first five years of operation.
- This is an extremely valuable tax advantage for entities that can utilize it.

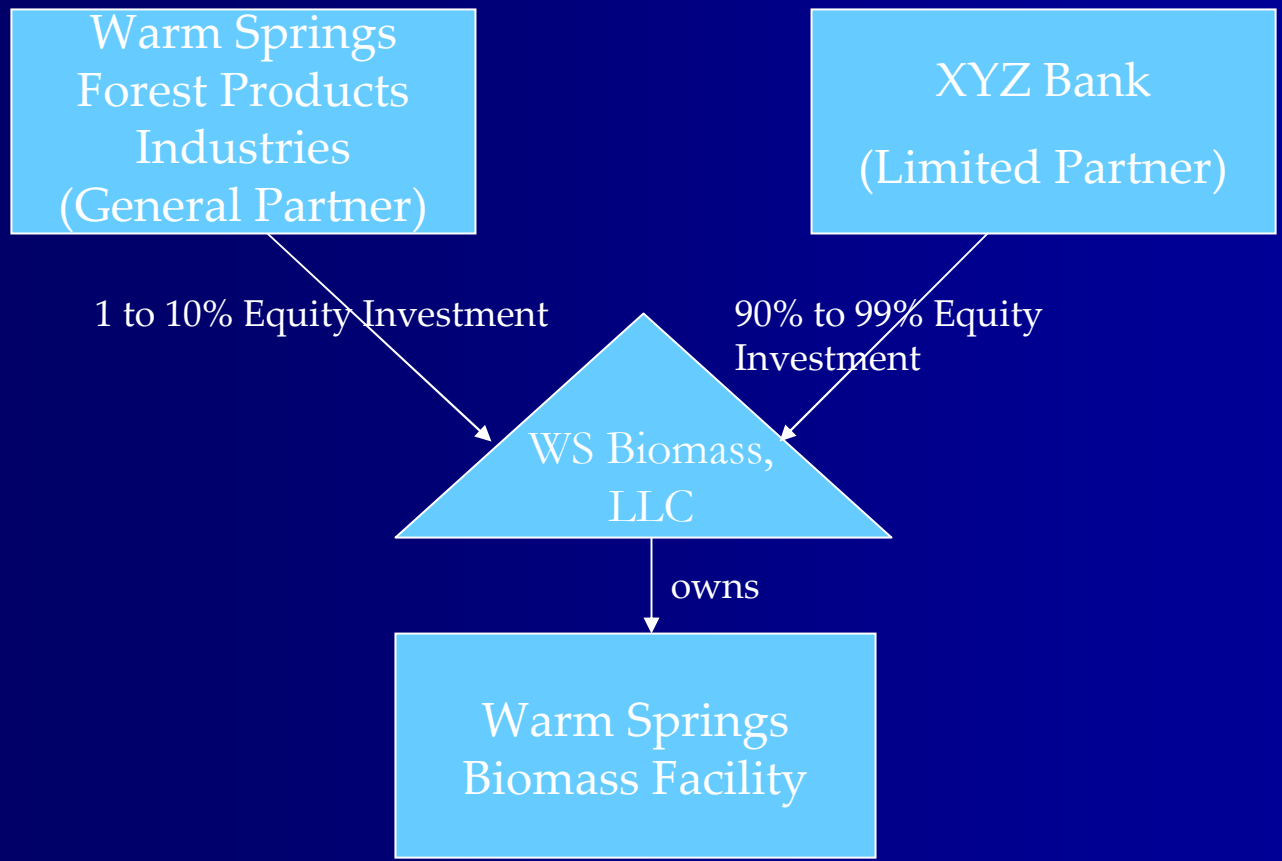
# Harnessing Incentives: The Challenge

- Tribal entities do not have any federal tax liability.
- Unfortunately, although they can use Business Energy Tax Credits, no tribal entities can make use of the federal Production Tax Credits or the massive depreciation tax deductions.
- This is a very common situation in the renewable energy industry.
- Often the facility developer and/or operator does not have enough federal tax liability to make full use of Production Tax Credits and accelerated depreciation.

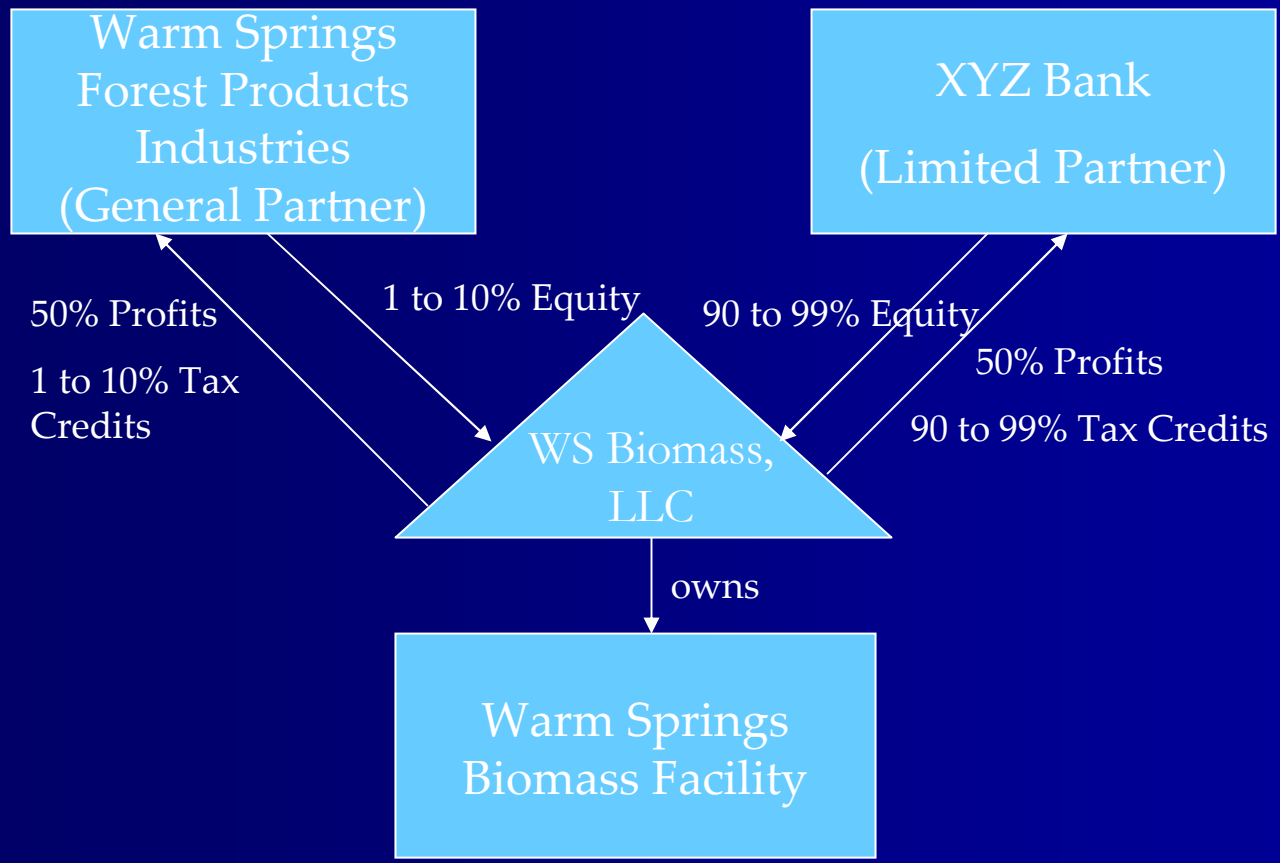
# Sample Partnership:
# WS Biomass, LLC
# (a Tribally or State Chartered Limited Liability Company) owns the Biomass Facility



# Ownership Structure (First Ten Years)

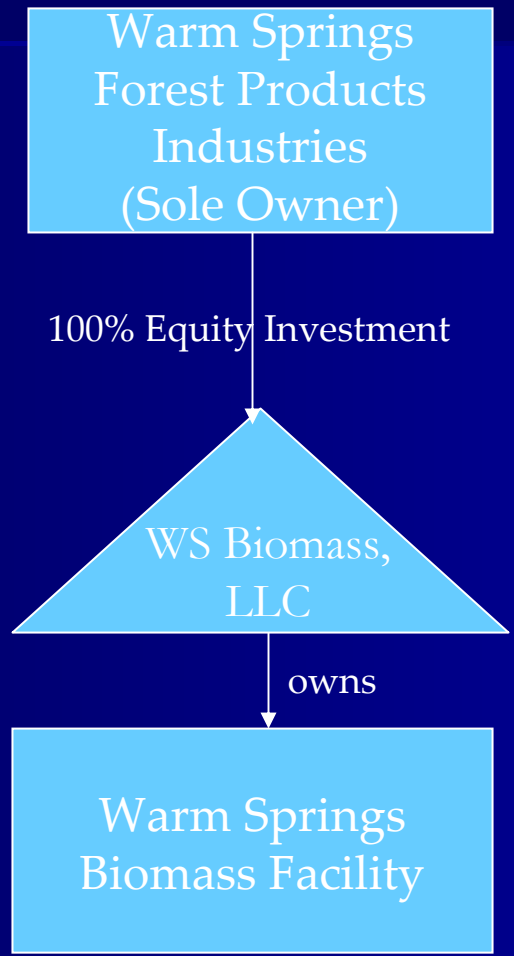


# Project Benefits (First Ten Years)



# Ownership Structure (Starting Year Eleven)

## In Year Eleven, WSFPI Buys Out the Equity Partner



# Responsibility:
# Tribes Live with the Long Term Consequences of Land Management Decisions

# Warm Springs Proposal

- Benefits to the Rural Community By Establishing a Market Solution
  - Tribal assets protected
  - Cultural Resources Enhanced
  - Forest and Habitat Restoration
  - 70 new or retained jobs in the community of Warm Springs and Central Oregon
  - Local contractors employed
  - Improved air quality
  - Improved watersheds
  - A Template for Others

# Thank You