

# Prineville Renewable Energy Project

*Where the Future Meets the Frontier*



Department of Public Works  
ENGINEERING DEPARTMENT  
[www.cityofprineville.com](http://www.cityofprineville.com)

PHONE (541) 447-2357 FAX (541) 447-5628 EMAIL [eklann@cityofprineville.com](mailto:eklann@cityofprineville.com)



## Introduction

The City of Prineville was originally built by timber, ranching, and the railroad. But it was also built by a pioneering spirit that continues today. Where many Pacific Northwest towns have withered away due to dwindling resource industries and a lack of living wage jobs, Prineville found a way to turn obstacles into opportunity. Prineville has always had an important relationship with the land. *It's no different today.*

Over the past decade, the City of Prineville has gained recognition as a national leader in its innovative approaches to environmental protection and conservation. With an eye on the future, city leaders are focused on developing a renewable energy facility with significant environmental, community, and economic benefits. The city will be able to diversify energy supplies, reduce CO2 emissions, reduce the risk of severe fires, reinvent jobs in the natural resources/forest products industries, and reinvigorate the community and local economy, all while offering a clean, renewable energy source.

*City and County leaders are committed to creating long-term solutions that balance the needs of a healthy environment while ensuring a sustainable energy solution that meets growing community demands.*



*Before (left) and after (right) treatments by thinning and burning in ponderosa pine. By almost all measures, the treated plot is ecologically healthier and more resilient to fire. The photos are not of the identical scene but representative examples from the same site.*

## Overview

The City of Prineville and Crook County have plans to build and operate a 20-megawatt biomass power plant facility.

Biomass power is carbon neutral electricity generated from renewable organic material that would otherwise be left as a fuel hazard. Sustainable forest biomass utilization can provide environmental, economic, and social benefits. Forest restoration, thinning and fuel hazard reduction activities, which generate biomass for energy use, create more resilient forest stand conditions. These actions can reduce the amount and severity of wildfires, damages to life, property and natural resources, air quality and public health impacts from wildfire smoke, and fire suppression costs. They also encourage more rapid growth on the remaining trees, resulting in bigger and more robust trees.

*The City and County are committed to working with a broad range of stakeholders to restore healthy forest conditions while creating a reliable renewable source of energy.*

The power plant will directly create **15** permanent, full time, living wage jobs and indirectly create **100** jobs<sup>11</sup>.

In addition, over **200** jobs will be created over the course of construction.

*The re-invented forest products industry will provide additional jobs in Prineville.*

# Advantages of Biomass Energy

## 1 ABUNDANT:

Biomass is available in large quantities all over the world.

## 2 CLIMATE CHANGE MITIGATION:

Use of biomass energy in lieu of fossil fuels reduces greenhouse gases. Biomass utilization also provides a disposal alternative to open burning and landfills for forest treatment wood wastes. PREP's local fuel supply will also reduce greenhouse gas emissions and usage of fossil fuels compared to traditional fuel supply resource areas. Diesel consumption per bone dry ton is expected to be cut in half.

## 3 CONTRIBUTIONS TO RURAL ECONOMIES:

Biomass utilization can create jobs in rural economies that were once dependent on traditional resource-based industries. These include natural resources and forestry jobs.

## 4 FOREST HEALTH AND WILDFIRE PROTECTION:

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resources, air quality and public health impacts from wildfire smoke, and fire suppression costs. They also encourage more rapid growth on the remaining trees, resulting in bigger and more robust trees.

## 5 HABITAT PROTECTION:

When conducted appropriately, biomass harvesting has a negligible impact on wildlife and watersheds, improves the growth of larger trees, and can protect habitats by enhancing the resilience of forest stands and individual trees.

## 6 RENEWABLE GREEN ENERGY:

Biomass power is renewable energy and reduces reliance on fossil fuels. Forests store substantial amounts of carbon. Forests generally go through cycles of growth and death, sequestering and releasing carbon. The value of forests and trees in sequestering carbon and reducing carbon dioxide emission to the atmosphere is being recognized increasingly the world over. Well-directed carbon sequestration projects, along with the provision of sustainably produced timber, fiber, and energy, will yield numerous benefits, including additional income for rural development and prospects for conservation.



# Active Forest Management

## *Preparing for the Inevitable*

The USDA Forest Service is progressing from a land management strategy built on timber extraction towards one oriented around maintaining healthy forested lands.

The Healthy Forest Initiative promotes the idea of broadscale forest thinning and fuel treatments as an effective means for mitigating hazardous fuel conditions and, by extension, fire risk. Fuels mitigation is proactive, while fire suppression is reactive and expensive.

Treating forest fuels is more cost-effective than suppressing forest fires on untreated lands. In addition, forest thinning is potentially profitable, or at least can recoup the cost of thinning, and may also produce safer conditions for those living in the wildland-urban interface zones.



## *Elevating the Community:*

- Resurrecting Prineville's forest products industry
- Local base load generating asset, 24/7 operation
- Regional economic impact
- Sustainable management of the Ochoco Forest
- Innovative forest products hub of Central Oregon



## *South Canyon Fire*

### 25 YEARS LATER, PRINEVILLE REMEMBERS

A 1994 wildfire seven miles west of the resort town of Glenwood Springs in central Colorado changed Prineville, Oregon forever. The South Canyon fire on Storm King Mountain became one of the worst wildland firefighting disasters in 45 years. Fourteen people died, including nine members of the Prineville Hotshot crew.

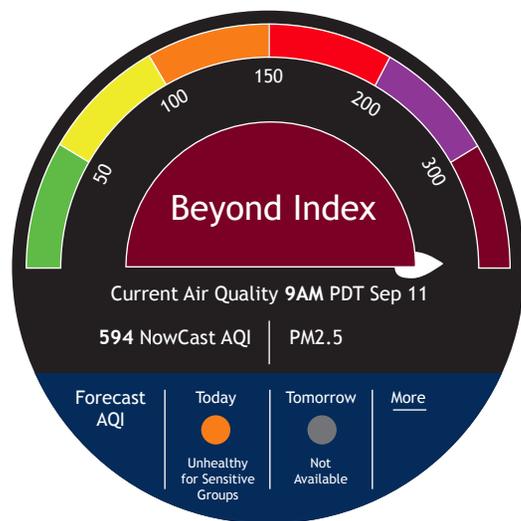
*2019 marks the 25th anniversary of the deaths of the 14 firefighters.*

South Canyon fire sparked scrutiny of fire officials' decision-making and strategies in battling deadly fires and forest management practices. Significant changes in land management over the past several decades has resulted in catastrophic wildfires. Declines in timber production on federal lands, particularly in the Northwest, not only meant the death of a once vibrant industry, but also an end to thinning, controlled burns and other activities meant to keep forest growth in check.

*Prineville has experienced firsthand how allowing forests to grow unchecked by proper management results in catastrophic wildfires.*

# Positive Impacts on Air Quality

Biomass plants generate clean energy due to advanced technologies that “scrub” the air of particulate matter and other contaminants. Particulate matter is the principal health concern associated with the public’s exposure to wildfire smoke and is reduced by over 99% with these technologies when compared to open burning<sup>4</sup>.



Oregon’s 2020 fire season has demonstrated just how at risk our forests are to catastrophic wildfire and how the smoke from these fires presents a serious public health hazard. The fine particles in the smoke, known as PM 2.5, pose the greatest risk. The EPA’s air quality index, which measures PM 2.5, categorizes the air quality on a scale from good to hazardous. In September of 2020, the air quality in Central Oregon was so hazardous it was beyond the top threshold of the index. Those most at risk to effects from poor air quality include children, pregnant women, older adults, and individuals with heart or lung disease, or diabetes<sup>5</sup>.

Use of biomass in lieu of fossil fuels reduces greenhouse gases and provides a disposal alternative to open burning and landfills for forest treatment wood wastes. Woody biomass offers a sustainable, dependable supply that typically emits 90% less CO<sub>2</sub> compared to fossil fuels<sup>6</sup>. Regenerating forests can also result in net carbon sequestration (which is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants) in wood products and new forest growth<sup>1</sup>. The approximate 8.6 million<sup>7</sup> acres that burned could have also sequestered an estimated 7.3 million tons of carbon<sup>8</sup> per year.



**Exposure to open burning** is associated with reduced lung function, bronchitis, exacerbation of asthma and heart failure, and premature death. Fine particles are also the main cause of reduced visibility in parts of the US, including many of our treasured national parks and wilderness areas<sup>5</sup>.

Other contaminants such as carbon monoxide and nitrogen oxides are reduced by approximately 99% and 70%, respectively, when compared to open burning<sup>6</sup>.





Since the 1880s, juniper range has increased tenfold in the Central Oregon area and the species elbows out native sagebrush and grasses and sucks up more than its fair share of water.

Research has determined that up to 70% of rainfall is intercepted by the juniper canopy and never reaches the ground<sup>3</sup>.

## Improving Local Water Quality and Quantity

The Prineville Renewable Energy Project would generate biomass for energy use and provide significant benefit to watersheds by **improving the quantity of water available and enhancing ecosystems with improved soil and water quality<sup>1</sup>**.

These improvements would be made by employing sustainable forestry practices, such as thinning and forest restoration. These efforts would also help to protect key watersheds from catastrophic damage, which ensures that sustainable quantities of high-quality water for both domestic and agricultural uses continues to flow.

An extensive, long-term study in the Prineville area confirmed that removal of Juniper and subsequent re-establishment of historical native shrub/ grass plant community, improved soil and water infiltration, reduced overland flow and soil loss making more water available for plant growth, groundwater recharge and sustained spring flow<sup>2</sup>. Additionally, these activities reduce the amount and severity of wildfires, helping to protect watersheds from severe devastation.



Next Step:

## A Public Private Partnership

The City of Prineville is seeking customers to purchase renewable attributes created by the PREP via PacifiCorp's Schedule 272 Blue Sky Select program and legislative action that supports market electric rates/schedules that accurately value those biomass baseload, renewable attributes.

**PHASE 1** Feasibility Study

**PHASE 2** Permitting

**PHASE 3** Construction

### Works Cited

- "Biomass and Bioenergy." CA.gov, 10 June, 2019, <https://www.energy.ca.gov/data-reports/california-power-generation-and-power-sources/biomass>.
- "Local Renewable Energy Benefits and Resources." United States Environmental Protection Agency, 11 June, 2019, <https://www.epa.gov/statelocalenergy/local-renewable-energy-benefits-and-resources>.
- Stone, Carter; Hudak, Andrew T.; and Morgan, Penelope, "Forest Harvest Can Increase Subsequent Forest Fire Severity" (2004). USDA Forest Service / UNL Faculty Publications. 199. <http://digitalcommons.unl.edu/usdafsfacpub/199>
- <sup>1</sup> "Carbon Sequestration." United States Forest Service, 17 September, 2019, <https://www.fs.fed.us/ecosystemservices/carbon.shtml>.
- <sup>2</sup> "Increasing Water Availability Through Juniper Control." Oregon.gov, 17 September, 2019, <https://digital.osl.state.or.us/islandora/object/osl:758004/datastream/OBJ/view>
- <sup>3</sup> "Taking the pulse of water in western juniper woodlands." Oregon State University, 20 October, 2019, <http://oregonprogress.oregonstate.edu/winter-2017/taking-pulse-water-western-juniper-woodlands>
- <sup>4</sup> "1.6 Wood Waste Combustion." United States Environmental Protection Agency, 16 October, 2019, [https://www3.epa.gov/ttn/chief/old/ap42/ch01/s06/final/c01s06\\_feb1999.pdf](https://www3.epa.gov/ttn/chief/old/ap42/ch01/s06/final/c01s06_feb1999.pdf).
- <sup>5</sup> "13.1 Wildfires and Prescribed Burning." United States Environmental Protection Agency, 19 October, 2019, <https://www3.epa.gov/ttnchie1/ap42/ch13/final/c13s01.pdf>.
- <sup>6</sup> "Techline, Wood Biomass for Energy." Forest Products Laboratory, 17 September, 2019, <https://www.fpl.fs.fed.us/documnts/techline/wood-biomass-for-energy.pdf>.
- <sup>7</sup> "Wildfires - Annual 2018." NOAA National Centers for Environmental Information, 19 October, 2019, <https://www.ncdc.noaa.gov/sotc/fire/201813>.
- <sup>8</sup> "Greenhouse Gases Equivalencies Calculator – Calculations and References." United States Environmental Protection Agency, 19 October, <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>.
- <sup>9</sup> "Wildfire Smoke A Guide for Public Health Officials." United States Environmental Protection Agency, 16 October, 2019, [https://www3.epa.gov/airnow/wildfire\\_may2016.pdf](https://www3.epa.gov/airnow/wildfire_may2016.pdf).
- <sup>10</sup> "Biomass Provides Air Quality Benefits." California Biomass Energy Alliance, 16 October, 2019, <http://www.calbiomass.org/air-quality/>
- <sup>11</sup> "The Value of the Benefits of U.S. Biomass Power." Nrel.gov, 18 September, 2020, <https://www.nrel.gov/docs/fy00osti/27541.pdf>.