

## **Building Community Biomass**

*Turning timber's trash into a community's treasure.*

Jarrod Olson, Conor Wall, Andrew Spaeth, Shaoahan Liao, Mariana Amorim, Jennica Vincent, Sally Duncan

### **Social Problem Addressed**

Low-income families pay a disproportionate amount of their income in energy costs, a concept known as fuel poverty. An aging, energy inefficient housing stock and a median per capita income 20% below Oregon's median exacerbates this problem in the Coos Bay/North Bend area. Weatherization provides a straightforward solution to this problem. The U.S. average savings for a weatherized household is \$437 per year, with some local families reporting a *monthly* reduction in energy bills of up to \$600. Unfortunately, families most exposed to fuel poverty do not have the capital to fund household weatherization. Agencies like Oregon Coast Community Action in Coos Bay have stepped in to provide assistance through public funding. Community Action has served over 3,000 families since the 1980's, but demand is outpacing public funding and has led to a weatherization wait list of 2 years. Each month they wait, families are losing money they do not have, representing a total of over \$4 million transferred out of the local economy. The key constraint on eliminating fuel poverty is a lack of resources for supporting household weatherization, both in household disposable income and in public service organizations like Community Action.

### **Proposed Solution**

To make up this shortfall in funding, reduce fuel poverty and increase community circulation of dollars, we propose a social business that generates enough revenue to leverage results across the whole community. It converts the timber industry's trash into high-value charcoal soil amendments and fuel oil. The timber industry discards branches, tree tops and other non-merchantable components of harvested trees and then burns it all in massive bonfires. The mobile biomass-processing unit, working on site in the forest, will convert the timber slash into biomass products worth an estimated \$4.9 million of revenue per year. Capitalizing on the natural resource tradition in the Bay Area and emerging biochar technology, this enterprise will provide living wage jobs, capture carbon emissions, and increase community financial resources. All resulting profits will be re-invested in a quality working environment, associated business development, energy efficiency education and expansion of weatherization assistance through community partnerships. The community will benefit from its image as a resilient, sustainable community in other campaigns as well.

### **Market Analysis and Strategy**

Our analysis shows that a highly lucrative market exists for woody bio-mass based biochar and bio-fuel, even at a small scale. A single mobile processing unit with three employees is profitable with biochar priced at \$130 per ton and fuel oil priced at \$1.59 a gallon. We estimate that 25-pound bags of biochar can be sold at \$1500 per ton, undercutting today's organic soil amendment options. The bagged biochar will be marketed to environmentally-conscious gardeners, homeowners, golf courses, small-scale farms and community gardens. Portland, San Francisco and Seattle represent markets within easy shipping reach and with a high demand for organic, socially-conscious products. Additionally, bio-oil is a substitute for number-2 fuel oil, which is a popular energy source for government buildings, industry, home-owners and businesses in the Bay Area. The fuel oil will be marketed locally at approximately half the cost of petroleum-based fuel oil, which re-directs energy spending into a local, carbon-neutral renewable resource.

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### **Launch Strategy and Requirements**

Launching this enterprise requires acquisition of a mobile processing unit; facilities and equipment for distribution; partnerships with woody biomass suppliers; trained employees; a partnership with Oregon Coast Community Action; and a marketing campaign. The mobile processing unit is available at a cost of \$3.46 million dollars from Renewable Oil International. The workforce will be recruited locally and operators of the unit trained by the vendor. Facilities and distribution costs are estimated at \$286,000 per year and can be acquired locally. Sustained, affordable access to biomass feedstock is crucial, so mutually-beneficial relationships with the local timber industry are necessary. The local timber industry has expressed interest in a long-term partnership to dispose of logging waste. Finally, a strong marketing campaign must raise awareness of the environmental, social and productive impacts of Building Community Biomass products. Several non-profit and research groups like the Pacific Northwest Biochar Initiative are already working in this area and represent potential partnerships. Public awareness campaigns with local gardening experts, news organizations and small-scale farmers will increase public exposure to the benefits of biochar and the social benefits of Building Community Biomass

### **Financial Plan and Sustainability**

The key objectives of this enterprise will be social, economic and environmental sustainability, making the joint financial stability of the community and the enterprise a fundamental component of the business strategy. Funding will be sought from diverse sources, including traditional bank and credit-union financing, grant money for environmentally friendly industry, crowd-funding, and local and regional investment. The estimated annual profit is \$3,000,000, accounting for costs and robust to a range of best and worst-case scenarios. Thinking towards the future, Building Community Biomass will work to sustain a pool of local workers and to open the potential for growth. Approximately 5 percent of profits will be granted yearly to the Coos Bay Community College for socially-conscious entrepreneurship-focused degree programs. This funding will allow other socially-conscious entrepreneurs to build on the business model throughout the region to continue innovating and educate a workforce to sustain the community in a rapidly evolving economy.

### **Impact Summary – Social Benefits**

Reducing fuel poverty through biomass processing will extend benefits well beyond the immediate impact on households, deeper into the community. The project will fully fund weatherization for over 400 homes per year and increase local circulation of cash by up to \$8.8 million dollars over 10 years, creating multiplier effects on local income and employment. Moreover, it will help attract young people and new businesses to the area with more opportunity and a community image of sustainability, making it not only a great place to live, but a great place to make a living. Converting slash piles into biochar and bio-fuel will increase carbon sequestration, improve the sustainability of forestry and improve air quality. The use of biochar and bio-fuel reduces dependence on petroleum-based fuel and agricultural products and sustainably enhances soil. Finally, the social impacts will include a stronger, more resilient community, with increased ownership in the benefits of natural resource extraction and decreased poverty. Building Community Biomass builds on and reinforces a strong community identity based around industry, entrepreneurship and a sustainable natural resource economy.