



**DEPARTMENT OF  
NATURAL RESOURCES**

**OFFICE OF THE  
COMMISSIONER OF PUBLIC LANDS**  
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October 23, 2024

The Honorable Bernard Dean  
Chief Clerk of the House  
338B Legislative Building  
Olympia, WA 98504

The Honorable Sarah Bannister  
Secretary of the Senate  
312 Legislative Building  
Olympia, WA 98504

Dear Chief Clerk Dean and Secretary Bannister:

Please accept the enclosed legislative report on the Biochar Pilot Project, submitted on behalf of Department of Natural Resources (DNR), as required in SSB 5961 (Chapter 293, 2022 Laws). The bill directed DNR to implement a pilot project to evaluate the costs and benefits of marketing and selling forest products to a biochar facility. The report is due to the appropriate committees of the Legislature by November 1, 2024.

Should you have any questions, please contact me at 360-486-3469 or [Brian.Considine@dnr.wa.gov](mailto:Brian.Considine@dnr.wa.gov).

Sincerely,

Brian Considine  
Legislative Director  
Office of the Commissioner of Public Lands

Enclosure: Legislative Report – Biochar Pilot Project

cc: Members of the Senate Agriculture, Water, Natural Resources, and Parks Committee  
Members of the Senate Ways and Means Committee  
Members of the House State Government and Tribal Relations Committee

# Sourcing Forest Biomass for Biochar Production – A Pilot Project

A Report to the Legislature in Response to SSB 5961

Prepared by  
Washington State Department  
of Natural Resources

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October 23, 2024



WASHINGTON STATE DEPARTMENT OF  
**NATURAL RESOURCES**

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# Executive Summary

This report provides the appropriate committees of the legislature with a summary of how the Washington State Department of Natural Resources (DNR) initiated a pilot project to determine the feasibility of using forest biomass from lands managed by DNR for the manufacturing of biochar. As described in SSB 5961, the pilot project must:

- (a) Determine if revenues cover the costs of preparing and conducting the sales;*
- (b) Identify and evaluate factors impacting the sales, including regulatory constraints, staffing levels, or other limitations; and*
- (c) Evaluate the feasibility for sourcing forest products for the manufacture of biochar.*

Although DNR entered into an agreement with a Washington company to develop biochar from forest product sales in the Olympic Region, changes to their business model and location delayed the project and prevented completion within the legislature's timeline. Still, DNR made significant progress in understanding and addressing the challenges with sourcing forest biomass for biochar and other wood products. This report provides a timeline of activities, a feasibility analysis of long-term supply agreements and leases, and recommendations for future state investments and support.

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# Background



*Creating slash piles to reduce fuels in overburdened Washington forests.*

Following the passage of SSB 5961, "Incentivizing the Use of Biochar", the Department of Natural Resources (DNR) engaged with the private company, Myno Carbon (Myno), to develop a pilot project. This public-private partnership explores the feasibility of utilizing biomass residuals from state-managed lands on the Olympic Peninsula for the purpose of creating biochar.

Forest biomass include the treetops, limbs, and brush that remain after a timber harvest or thinning. Often these are not removed from the landscape because they are difficult to transport and have low economic value. Instead, biomass is often left on site, burned, or chipped, eventually decomposing and releasing carbon dioxide. An alternate use for this biomass includes biochar, a solid, charcoal-like product made from the combustion of carbon materials in an oxygen-limited environment. This process creates a product that provides long-term carbon sequestration and can be used in agriculture, stormwater management, and other soil restoration and environmental remediation efforts. The creation of biochar can also result in electrical production as a secondary by-product.

Although both the supply and technology exist to create biochar at scale, there remains logistic challenges within the supply chain and market adoption. This pilot project sought to identify and overcome these barriers with the hopes of replicating efforts in other forested areas across the state.

Myno's business model centers around the creation of a carbon-removal facility, which provides 1) carbon-negative biochar materials, 2) renewable energy, and 3) certified carbon removal credits. Although this project was initially conceived and planned for the Olympic Region, which met the requirements of SSB 5961, Myno relocated their project to Kettle Falls in NE Washington. DNR remained engaged with Myno and worked with its Northeast Region staff to develop a memo of understanding (MOU). The Commissioner of Public Lands signed the MOU in 2023, committing the agency in two primary areas: development biomass supply agreements and exploring opportunities for biochar utilization with DNR's agricultural lessees.

Start-up companies often change as they develop their product and business model, and in late 2023 Myno determined that the Kettle Falls project was no longer feasible. They returned their focus to the Olympic Peninsula in 2024, securing local partners and additional funding. Myno is now slated to build their first carbon-removal facility in Port Angeles. Although this pilot project did not come to fruition within the legislature's reporting period, it generated recommendations (see below) that will increase the likelihood of this and other biomass projects in the future.

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# Feasibility of Biomass Supply Agreements

Feasibility of facilities and biomass supply agreements depends heavily on the combination of location of a facility, availability of supply within the working circle for a facility, costs of transportation and infrastructure, and producer costs. So far, these factors have weighed highest in potential projects moving forward.

DNR has been involved in biomass contracts near Port Angeles since 2013. Biomass was primarily used in cogeneration facilities at a price of \$1 per green ton in smaller scale one-off sales where location and transportation infrastructure made this feasible for the purchaser. Generally, the feasible working circle from a facility is around 50 miles before transportation costs become a barrier for producers.

DNR offers a limited number of timber sales based on a decadal sustainable harvest calculation within any given area in a single year. This requires a project within a specific geography to utilize a mix of state, federal, and private lands given the forest residual volume requirements that potential projects have requested. Such spatially explicit requirements exceed availability on DNR-managed land.

The 10-year average harvest in the Straights District, for example, is just over 900 acres per year; with an estimated 8 tons of biomass per acre, this could provide around 7,200 tons of biomass each year in this district.

DNR receives 25-31% of revenues to pay for management of trust lands. Based on the estimates of biomass in Straights District of 7,200 tons of biomass, at \$1 per green ton this would result in \$1,800-\$2,232 in annual funding from a contract in that geographic area. This level of funding does not cover DNR's costs. The costs of drafting, administering, and complying the contract on an annual basis would far exceed this amount.

However, it costs DNR around \$9 per ton to burn slash piles. Thus, biomass sales on the same 7,200 tons discussed above could result in a savings of \$71,100 if slash piles would otherwise have to be burned. Since there was not a pilot project available to complete the total costs of a biomass sale contract at this scale is still not known. This additional information is necessary to understand whether the total revenues and avoided costs make this kind of project economically viable for both DNR and biomass purchasers.

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# Recommendations

Based on this pilot project and other forest biomass efforts, the legislature could continue to provide support in the following ways.

- **Funding for Staff to Implement**

Although DNR requested additional funds and 1 FTE to implement the pilot in the 2023-2025 biennium, it did not receive any from the legislature. There remains no DNR employees dedicated to forest biomass efforts. Given the continual and increased interest for DNR to utilize forest biomass, dedicated staff are needed to problem-solve and continue to explore this topic.

- **Financing for Specialized Processing and Transport Equipment.** The physical properties of slash piles, a tangle of interwoven branches and brush, creates masses that quickly fill up truck beds. Without a way to densify (e.g., chipping, bundling), transporting materials off-site can become inefficient and uneconomical. Capital investments and matching loans could help small businesses purchase equipment specifically designed for processing slash on-site and navigating rough terrain. This could include chippers, grinders, portable kilns for biochar, and specialized trucks and containers. The target audience for a financing program could include new entrepreneurs just getting started or existing small businesses looking to expand current operations.

- **Public Perception:** Although forest biomass is defined in statute as by-products from timber and does not include saw logs, there are fears that supplying forest biomass would lead to industries that harvest whole trees exclusively for energy production. Funding to develop education materials could help address those concerns and dispel myths about utilizing forest biomass. Education materials could also help staff at state and local agencies understand the procurement requirements described in SSB 5961 regarding the use of biochar in government-funded public works projects.

- **Biochar Utilization Pilots:** While the supply and technology exist to convert forest biomass into products like biochar and biofuels, the market demand is limited and hard to predict. Biochar trials on farms show promise, but there isn't yet widespread adoption. A metanalysis on the existing trials could help guide future recommendations. DNR could build on its partnerships with academic institutions, federal research agencies, and conservation districts to utilize biochar on DNR-managed land (and other public lands). These include agricultural leases, mine remediation, and stormwater management on forest roads.

- **Expanding Support Beyond Biochar** – Future initiatives could look at other products derived from forest biomass. The logistics challenges of developing biochar from DNR-managed lands are the same for other products, such as biomass for energy production, compost, biofuel, wood chips, and other emerging bioproducts. Tackling any of the barriers,



like transportation, storage and processing, public support, workforce development, and market development, would unlock opportunities for the forest products sector beyond biochar.