



Oregon Juniper and Biomass: Status and Proposed Approach

For Consideration in Conjunction with the AOC Juniper-Use Project Inquiry

**Revised DRAFT
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Status

There is general agreement that overstocked juniper needs to be removed from both public and privately-owned lands to improve grazing, discourage the spread of invasive weed growth, improve water supply, and to protect and restore available habitat for sensitive species like the Sage Grouse. In addition, many feel that juniper treatment as a key component of rangeland restoration has tremendous potential to create jobs, provide additional economic opportunities to struggling timber and forest product businesses throughout Oregon, and provide a plentiful resource for biomass energy production in the near to mid-term.

During the summer and early fall of 2011, Oregon Solutions conducted an assessment of the current status of juniper in Oregon and perceived challenges and opportunities to successful utilization of the available juniper resources. The assessment included discussions with key stakeholders and on September 7 Oregon Solutions convened a small planning group to discuss the identified issues and opportunities, current Juniper utilization efforts, new and emerging opportunities and to brainstorm potential pathways forward. Based on the outcomes of this meeting and on-going discussions with key stakeholder groups, Oregon Solutions has drafted the following summary of priority issues to be addressed and a proposed approach for moving forward.

Issues and Challenges

Based on interviews, literature reviews, discussion at the September 7 meeting and subsequent conversations, the issues and challenges seem to align into three categories:

- supply,
- technical information and related key-person knowledge, and
- market development.

Supply

The issue of supply has consistently arisen as a primary concern for parties interested in utilizing juniper resources in Oregon. At present there is not a comprehensive detailed inventory of where

juniper is located and at what densities on either public or privately-owned lands. A new method for a comprehensive study was completed in 2007 and focused on juniper in the vicinity of Prineville (see Phil Chang, *Western Juniper Commercialization Feasibility Study for the Prineville Area* <http://juniper.oregonstate.edu/coic/>).

This type of detailed information will be crucial to provide supply “security” for juniper business ventures including biomass-to-energy opportunities.

Supply availability needs to be considered in the context of state and federal agency rangeland restoration goals on both private and public land. Tribal interests in juniper and where it is found also need to be included and considered as well.

Federal funding for rangeland restoration has accelerated in recent years through the USDA and the Department of the Interior (BLM). State efforts to address juniper-related issues have also received more attention in recent years from OWEB and the Department of State Lands. Landowner, state and local government concerns for Sage Grouse protection and rangeland enhancement have been at the center of this increased attention. In the coming years, mitigation areas for large scale infrastructure projects, particularly renewable energy projects and related facilities, are expected to result in significant rangeland restoration projects that will include removing invasive juniper. Whether funding originates with the NRCS Sage Grouse initiative, BLM range restoration efforts, state-owned rangelands restoration projects, or mitigation for energy-related development, priority areas identified for restoration actions may result in opportunities for responsibly removing juniper off the land (as opposed to leaving or pile burning) and new opportunities for juniper-utilizing businesses to leverage cost sharing opportunities.

In order for these opportunities to be clearly understood and acted on, the appropriate federal, state, local, private and non-profit parties will need to work together to agree on restoration practices and standards. This type of shared understanding, reflecting environmental considerations and driving the prioritizing of restoration actions at an appropriate landscape level (watershed, county, BLM district, and considering soil type, slope, etc), will help define an available juniper supply (or “levelized” supply over time) for business planning and investment purposes.

Enhanced Technical Information and Key-Person Knowledge

From a rangeland restoration and potential juniper supply perspective, considerable information is needed. There is a need for existing knowledge to be made more readily available and more broadly shared. Supply data is limited despite its great value for both value-added juniper businesses and biomass facilities. It is important to understand the extent of juniper supply information available, and to establish uniform data collection methods that apply across agencies and jurisdictions. An identified, perhaps single, repository of integrated juniper information and key contacts for technical assistance may be needed. This may involve an updating and expansion on the information currently available through the Western Juniper website maintained at OSU and/or another approach.

Technical information needs include:

- Planned and anticipated resources available for rangeland restoration (*funding, technical assistance*).
- Estimates of *acres to be treated annually* through state and federal programs.

- *Priority restoration areas* (location, juniper stocking, proximity to existing roads, location of businesses/facilities).
- *Threshold juniper density* for a business to economically utilize the material consistent with meeting rangeland restoration goals.
- Stakeholder agreement on criteria or *guidelines for identifying when and how to remove juniper* cut in conjunction with restoration projects
- *Specialized equipment* – what’s available, new equipment needed, maintenance issues.
- *Transportation methods*, cost effectiveness of various options.
- *Environmental impacts* associated with various juniper removal techniques.

On the production side, greater access to new research, new market development, lessons learned and the technical knowledge regarding how juniper is best processed resting with individual operators may be helpful. Questions remain on how best to best to dry, saw, and slice juniper logs, as well as how best to turn “waste” material (limbs, slabs, chips, sawdust) into additional products (e.g. firewood, bedding, “bio-bricks”, pellets) or otherwise make the material more readily available for use at biomass-to-energy facilities. It is also worth noting that many juniper businesses are small, entrepreneurial efforts that could benefit from business management and planning assistance. Most of these small businesses also need funders that understand the emerging opportunities with juniper and that will provide timely and reasonable access to financing for start-up, expansion and related equipment needs.

It has been suggested that a “sort yard” approach may be immediately beneficial. A well sited sort yard (or a number of sort yards in strategic locations in juniper country) that can hold significant volumes of both saw and chip logs could buffer against supply and demand cycles. Such a facility seems best co-located with a primary utilization facility, a co-gen or biobrick manufacturing facility or in conjunction with a wood products “campus” (similar to what is emerging in Wallowa County).

Market Development

There are questions related to both the supply of juniper and the potential demand for juniper products. New markets (e.g. California, Seattle area) and new products are believed to hold significant potential for market development. Yet many of these opportunities remain relatively unexplored for a variety of reasons. Some Oregon Solutions spoke with suggest that supply constraints have been the biggest impediment to wood product companies and biomass facilities aggressively pursuing significant juniper market development. There have been instances where a business over-promised juniper product delivery and were subsequently unable to deliver due to supply constraints coupled with the inherent difficulties of processing juniper (e.g. access to juniper with desired characteristics, equipment maintenance issues). This seems to have damaged past efforts to grow a market demand for juniper.

Infrastructure, market research and financing issues need to be better understood and explored to support developing markets including biomass-to-energy. These include:

- Understanding the opportunities for a vertically integrated approach that includes/demonstrates existing and new specialized equipment in the field and equipment for transporting, sorting, milling and processing juniper.

- New and updated market research, especially for use of juniper as a substitute for treated wood fencing and landscaping products, use as a component in “bio-brick” and pressed log products, and as a retail, storefront firewood product.
- Developing viable business plans reflecting the current reality of juniper supply from the accelerated pace of rangeland restoration on public and private land.
- How to access capital financing.

The pragmatic approach may be to provide reliable estimates of juniper available (based on the considerations outlined above) in the next 10-20 years that will better allow private sector investment at appropriate size and scale at the most economically viable locations across Oregon.

Proposed Approach for Further Discussion

A Coordinated Inventory:

The potential to coordinate restoration, business and funding priorities through a comprehensive inventory of juniper exists, but as yet is uncoordinated and possibly beyond the scope of available resources. A step-wise approach is proposed to make demonstrable progress in addressing key issues related to predictable supply, enhanced processing knowledge, and market development for juniper.

Potential Pilot Projects:

Oregon Solutions was recently asked to consider how best to assess juniper supply within the geography of SE Oregon in relation to expanding business opportunities. An approach to address this request is being mapped out now.

A related next step involves the successful development of a juniper pilot project(s). A pilot project(s) designed for learning and replication in additional communities and regions, and the scaling up of production to an appropriate and sustainable scale seems timely. This interest in a pilot project is being discussed with the Association of Oregon Counties. AOC is currently working to identify potential pilot project sites. The goal of a pilot project, or perhaps concurrent pilot projects, might be one or more of the following: assess available supply in a local area; work to align rangeland restoration goals into predictable supply expectations; determine the best methods for extraction and processing (considering economic, environmental, community perspectives); focus research; and/or support for developing juniper products and markets.

As potential pilot projects are identified, Oregon Solutions will consider whether to conduct a more detailed assessment with local partners to understand the project in more detail – the desired outcome, resources needed, partners to involve and likelihood of success. The core stakeholder group members from September 7 meeting may form a network and sounding board for a pilot project.

A Juniper Communication Network:

Concurrent with the efforts on pilot project development the “core stakeholder group” will continue to consider opportunities to connect with additional key stakeholders from across the state. Based on the feedback at the September 7 meeting, the core group plans to continue discussions, involve additional key stakeholders (including key private sector, market development, and environmental

groups) and consider a “state of the juniper” summit. To date Oregon Solutions has identified approximately 100 individuals that seem interested in participating in a “state of the juniper” summit. A gathering of this type might serve to bring together current information and framing of the opportunities with the diverse stakeholders and often small, geographically dispersed business operations.

In addition to a summit, other next steps may include:

- Developing an updated summary of the current technical and market information related to juniper development in Oregon, and how to access this information, for use by a broader audience.
- Providing an online forum for information sharing between key landowners, restoration professionals, environmental and conservation groups, and businesses working with juniper in Oregon,
- Discussing potential pilot projects suggested through AOC and others, and
- Identifying opportunities to leverage additional resources for these and other related purposes identified by the group.
- Initiating discussions on identified technical issues and data needs.

Juniper Background

Due in part to fire control and grazing practices Western Juniper has become an invasive species covering extensive portions of Eastern and Southern Oregon. Particularly hard hit are Crook, Lake, and Harney counties, followed by Klamath and Grant counties. In *The Biology, Ecology and Management of Western Juniper* (Miller et al. 2005), the authors state that western juniper woodlands now occupy about 3.7 million acres in Oregon, a ten-fold increase in the last 130 years.

More about Dr. Rick Miller and his research on juniper expansion, along with related information about the biology and management of western juniper, can be found online at The Oregon Explorer:

<http://oregonexplorer.info/deschutes/EcosystemRestoration/UplandRestoration/JuniperEncroachment>

The Western Juniper website, maintained by Scott Leavengood, Director of the Oregon Wood Innovation Center at OSU, provides additional background on the characteristics of juniper and research efforts to develop its potential for commercial uses. <http://juniper.oregonstate.edu/index.php>

Information regarding juniper products and markets including sources of raw material (e.g., if you want to buy or sell western juniper products) can be found at [The Western Juniper Manufacturer Home Page](#)

Selected Juniper Links:

BLM

Stewardship Contracting, Biomass

<http://www.blm.gov/or/resources/forests/programs.php>

Building Markets for Western Juniper
<http://biomass.forestguild.org/Case-Studies/1008.html>

USDA NRCS – Sage Grouse Habitat Improvement Initiative
<http://www.or.nrcs.usda.gov/programs/sage-grouse/>
<http://blogs.usda.gov/2011/03/21/what-do-cows-and-birds-have-in-common/>

Oregon Department of Forestry
http://www.oregon.gov/ODF/AGENCY_AFFAIRS/Juniper_Story.shtml

Oregon Department of State Lands
Firewood cutting: In an effort to find a suitable use for increasing populations of juniper... many areas open for firewood cutting with a permit. See current newsletter for more info:
http://www.oregon.gov/DSL/LW/docs/range_news_2011.pdf?ga=t

Oregon State University - Western Juniper additional links
http://juniper.oregonstate.edu/bibliography/source.php?source_id=6

State of Oregon Western Juniper Legislative Report Resource and Commercialization Status, Trends, and Issues
http://juniper.oregonstate.edu/bibliography/documents/phpyKXSaq_status7-00.pdf

Oregon Watershed Enhancement Board
Juniper Management & Monitoring
http://www.oregon.gov/OWEB/MONITOR/monitor_juniper.shtml

Western Juniper Management Field Guide
<http://www.oregon.gov/OWEB/MONITOR/docs/WesternJuniperManagementFieldGuide.pdf>

US Geological Survey
Western Juniper Field Guide: Asking the Right Questions to Select Appropriate Management Actions
<http://pubs.usgs.gov/circ/1321/>

Forest products, Manufacturing – Various

Western Juniper.org
<http://www.westernjuniper.org/index.php>

Oregon Forest Industry Directory
<http://www.orforestdirectory.com/>
<http://www.orforestdirectory.com/companies/profile/2050>

Sustainable NW Wood
<http://www.snwood.com/product-list/Decking-Landscaping/Juniper-Decking-1>

Neil Kelly Cabinets
<http://www.neilkellycabinets.com/naturallynorthwestpress>

Juniper Mill at Reach (JMAR)
<http://www.juniperwoodproducts.com/>

OSU Department of Forest Engineering, Resources and Management
<http://ferm.forestry.oregonstate.edu/facstaff/kellogg-loren>

Western Juniper Drying Project Summaries, 1993-96. Scott Leavengood and Larry Swan
http://juniper.oregonstate.edu/bibliography/documents/php2Mlanx_drying.pdf

Biomass-to-Energy:

Oregon Department of Energy: Biomass Home Page
<http://www.oregon.gov/ENERGY/RENEW/Biomass/BiomassHome.shtml>

Oregon Department of Energy: Biomass Working Group
http://www.oregon.gov/ENERGY/RENEW/Biomass/forest_biomass_working_group.shtml

Oregon Business: The audacious plan of Hiroshi Morihara
<http://www.oregonbusiness.com/articles/102-august-2011/5587-the-audacious-plan-of-hiroshi-morihara>

Consultants - Examples (additional website info and links to out of state projects)
<http://www.tssconsultants.com/index.php>
http://www.renewablesolutionsllc.com/project_solutions

Please contact us with any suggestions, corrections, clarifications or omissions noted in regard to this draft.

Oregon Solutions:

Pete Dalke
dalke@pdx.edu
503 341-5547