# WILDFIRE CRISIS STRATEGY INDUSTRY ROUNDTABLES

## REGIONAL SUMMARIES

**PREPARED BY THE U.S. ENDOWMENT FOR FORESTRY AND COMMUNITIES**

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Disclaimer: The statements in this report do not reflect the view and position of the U.S. Endowment for Forestry and Communities but are the perspectives of roundtable participants.

U.S. Endowment for Forestry and Communities

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# EXECUTIVE SUMMARY

The U.S. Forest Service (USFS) 10-year Wildfire Crisis Strategy requires millions of tons of biomass to be removed from our western forests to reduce wildfire risk to communities and infrastructure. There is inadequate industry capacity and markets to utilize much of this material, which often has a non-market value. Piling and burning this material in place is not *the preferred* option due to costs and air emissions.

Two-hour virtual or in-person Regional Industry Roundtables with private sector partners, local and state government, and cross industry sector representatives identified critical barriers and opportunities to remove, transport, and utilize biomass removed from the high fire risk landscapes. Information and commitments developed from the roundtables were used to develop four cross cutting themes that will be used to develop an investment and partner strategy to remove and utilize biomass waste and capture benefits to both communities and the environment.

The cross-cutting themes are issues that affect all regions, with corresponding ideas and solutions. There is a general willingness to continue working with USFS on these ideas and solutions, including sub-committee formation, advisory boards, and implementation. We expect this follow-up work to begin in early 2024. The five cross cutting themes are:

- Road Infrastructure Improvement
- Certainty, trust, and credibility
- Workforce Development
- New use and market development for underutilized biomass
- National Policy

We would like to thank the National Planning Team that consisted of USFS, the Endowment, and Resources for the Future employees for planning and organizing the Regional Industry Roundtables and all the roundtable participants for their valued thoughts and ideas. Without the undivided support and information provided by the roundtable participants the regional and cross cutting themes would not have been identified and generated. The information in this document provides valuable insight into the regional industry that would not have been available in such quick order without your support.

## ISSUE

The USFS 10-year Wildfire Crisis Strategy requires millions of tons of biomass to be removed from our western forests to reduce risk from fire to communities and infrastructure. There is inadequate industry capacity and markets to utilize much of this material which has a non-market value. Piling and burning this material in place is not *the preferred* option due to costs and emissions. Industry roundtables were organized by U.S. Forest Service (USFS) and the U.S. Endowment for Forestry and Communities (the Endowment) in Forest Service Regions to address the challenge of biomass utilization, markets, and waste disposal.

## BACKGROUND

A National Planning Team that consists of USFS, Endowment, and Resources for the Future employees hosted roundtables to represent each region. Regional Offices and Research Stations assisted with the coordination, agenda, timing, and implementation of roundtables. The 2-hour roundtables were virtual, unless an in-person format was requested. Private sector partners, local and state government, and cross industry sector representatives came together to identify critical barriers and opportunities to utilize biomass removed from the high fire risk landscapes. Information and commitments developed from the roundtables will be used to develop an investment and partner strategy to utilize biomass waste and capture benefits to both communities and the environment through carbon capture.

## QUESTIONS

- How robust are current forest markets and processing infrastructure in your area (including state, NGO, and other resources)?
- What are some examples of successful partnerships and/or innovative solutions that overcome bureaucratic and other barriers to procurement from USFS lands, either in this region or elsewhere?
- What is the state of the logging industry in your location, and what critical needs do logging firms have?
- What opportunities are there to expand market potential and access to these markets in state and tribal governments? In underserved communities? What would be critical to making these efforts successful? (Note: by markets we mean both timber/other wood products and other ecosystem services.)

- Under what circumstances do you/would you invest in emerging wood product markets like biochar, biomass energy, biofuels, cross laminated timber, and others?
- How might the Forest Service and your agency/industry/organization work together to grow markets and market potential?
    - What examples of innovation and R&D can you offer that exist, but need to be scaled?
- What factors influence your decisions to invest in new technologies and facilities?
- What are some practical considerations for the ideas generated in the first part of the breakout session? How would we go about implementing the solutions and ideas discussed? Who needs to be involved?
- What priority research needs do you have in supporting new product development?
- What types of assistance (can be Federal, State, Tribal, organizational, NGO, or otherwise) are you using to support facility modernization or expansion, market development, research and innovation?

# CROSS-CUTTING THEMES

These are issues that are affecting all regions, with corresponding ideas and solutions. There is a general willingness to continue working with USFS on these ideas and solutions, including sub-committee formation, advisory boards, and implementation.

- **Road Infrastructure Improvement**
    - Stakeholders want to decouple road building/rebuilding/maintenance costs from timber sales.
    - Many stakeholders are asking why Inflation Reduction Act (IRA), or Great American Outdoors Act (GAOA) money cannot be spent on Forest Service road rehabilitation.
    - Stakeholders note that recreation users and other non-industry stakeholders are similarly impacted by poor road conditions and might also support reconstruction costs.
    - Evaluate immediate decommissioning to allow for additional post-harvest economic activity (residual gathering, firewood, nontraditional forest products, etc.).

- **Certainty, trust, and credibility**
    - Stakeholders are encouraged by the Forest Service's commitment to get hazardous fuels work accomplished, but concerned large scale action is not evident.
    - There is little to no certainty in Forest Service management activities private partners can rely upon to make investments in their businesses.
    - The Forest Service has an inconsistent reputation with management crews, federal timber purchasers, mill operators, banks, and small business development agencies.
    - Lack of certainty makes investment in these businesses and communities difficult.
    - Certainty was defined as a guarantee of timber supply for a **minimum of 10 years** (ideally closer to 20) regardless of changes in personnel and administration. Price flexibility is also desirable in these longer-term agreements.
    - Trust and credibility would improve if commercially viable sales were available to offset the costs of removing lower value material. Many purchasers are not merchandisers and have difficulty finding economically viable solutions for low value material.
    - Good Neighbor Authority (GNA) is viewed as a successful mechanism to build trust, and some regions wonder if this model can be implemented at a county-scale. Others would like to further engage tribal nations.

- **Workforce Development**
    - There is a lack of quantity (number of workers) and quality (skill sets needed) among managers, loggers, truck drivers, and other supporting sectors to adequately address USFS restoration and fuels reduction goals. There may also

be cultural and economic issues that impact motivation to enter this sector among younger generations.
    - A research assessment of workforce capacity in priority landscape areas may be needed, depending on the region, including equipment availability.
    - Each region identified new training programs to help meet workforce shortages. These programs can and should be expanded, replicated, and supported.
    - The minimum cost of entry for a management crew is $3 million and financing is a challenge for small (and large) businesses due to the point above on certainty. Financing is particularly problematic for young and underserved communities.

- **New use and market development for underutilized biomass**
    - Promising new technologies and markets (e.g., mass timber, nanocellulose) may provide economic incentive to remove materials from these landscapes.

- **National Policy**
    - Strong signal to work with Environmental Protection Agency (EPA) and Department of Energy (DOE) on regulatory barriers for biomass and bioenergy, including Renewable Fuels Standard.
    - Addressing National Environmental Policy Act (NEPA) issues would build back trust between Industry and USFS.
        - Third-party to help with applications.
        - Categorical Exclusions for vegetative fuel breaks and biomass removal in priority landscapes.

There were varying assessments of regional industry capacity and 'health.' Some regions felt that their existing infrastructure and markets were very robust, while others felt that industry was on the brink of collapse. Several regions (3, 4, 5, and 6) said some parts of the region were robust while other counties and landscapes lacked infrastructure, *coverage, markets*, or some combination.

**Table 1: Region-level synthesis of industry robustness, market interest, and critical needs indicators**

| Region Number | Robustness (existing infrastructure) | New market interest (or expansion interest) | Critical needs |
|---|---|---|---|
| 1 | High | Bioenergy | Infrastructure - roads and sort yards, streamline NEPA |
| 2 | Low | Biogas | Trucking capacity, Decouple appraisals and valuation |
| 3 | Medium (AZ - medium, NM - low) | Firewood | Community sort yards, de-risked investments (supply certainty) |
| 4 | Medium | Bioenergy | Workforce development |

| | | | |
|---|---|---|---|
| 5 | Medium | Bioenergy and Biochar | Streamline NEPA |
| 6 | Medium | Mass timber - affordable housing, biochar | Supply agreements, build trust with Environmental Non-Governmental Organization (ENGO)community |
| 8 | High | Mass timber (particularly hardwoods) | Marketing and transportation |
| 9 | Low | Pellets, pharmaceuticals, decoratives | Non-stationary equipment, incentives |

## RESEARCH & DEVELOPMENT NEEDS

There were a few R&D needs articulated by participants, but most regions felt that direct investment in infrastructure, capacity building, and policy change was more important than additional research. Specific research requests (by region) are highlighted below.

- Region 1: Landscape-scale analysis of biomass.
- Region 2: Micro-inventory data on priority landscapes.
- Region 4: If we were to make industrial pellets in Idaho, who would buy them and what is the market?
- Region 5: 1) Research is needed to quantify the precise magnitude of the problem so we can track progress: how much do we need to move out of each forest? 2) National economic study of wood products markets including infrastructure.
- Region 6: 1) Labor geography: where are the potential labor force participants located in relation to the landscapes where the work is needed? 2) Community-scale biomass feasibility studies.
- Region 8: Use of hardwood in mass timber.
- Multiple: Review of log sort yard concepts.

## INTERNAL USFS RECOMMENDATIONS

- Bid premiums are viewed as a sign USFS didn't have the sale appraised right. Industry recommends USFS advertise at minimums and then the market will price the timber. The current system incentivizes them to get higher appraisals because they can "bank" on receipts for K-V or Stewardship retained receipts. *The Forest Service should align incentives toward restoration priorities.*
- A participant joked that we need an "Academy Awards" for risk-taking in the USFS to encourage out-of-the-box thinking. They elaborated that the need to ensure the government isn't 'cheated' out of revenue gets in the way of real work getting done.

Moreover, the cost to preventatively treat acres (even if it's a cost) is likely cheaper than the cost of fighting fire on that same acre. *Can this mindset be institutionalized?*

- *Could GNA be expanded to allow private companies and county-scale implementing partners to participate?* For example, private consulting forestry companies assisting in marking and monitoring timber sales.
- USFS struggles to maintain a message as information flows from the top down to the individual forests and districts. Size and turnover *contribute* to this. Turnover challenges trust and cooperation (e.g., details and reassignments). *Consider stabilizing positions that liaise regularly with industry.*
- Continue convening Industry on a regular basis, but also include conservation groups to spread the 'gospel' of forest management.
- Consider hiring someone from private industry to help navigate the constraints that USFS policy, contracting, and pricing have on industry. Having someone with private industry experience would be extremely beneficial to the agency.
- Investing additional resources in the Timber Products Output (TPO) program to bring staffing up to levels that allow additional analysis and service to states for special analysis requests.

## WHAT SEEMS TO BE WORKING?

1. Wood Innovations Grants are perceived as critical to success. Expansion of this program and flexibility in requirements was mentioned in almost every region.
2. Good Neighbor Authority, when occurring, was held up as a major success. Some regions thought expanding GNA to the county-level would inspire more success.
3. Partnerships with community colleges and other educational institutions. There were examples in many regions of programs to address critical workforce gaps. More partnership opportunities could exist for USFS involvement, such as guaranteed employment/apprenticeship matching programs, investment in programs with a track-record of success, or investment in training equipment.

# NORTHERN REGION 1 SUMMARY

*Region 1 described a reasonably robust industry that needs certainty in supply, additional workforce, and investment in roads and equipment to tackle fuels reduction.*

***Region 1 Table of Key Themes***

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Infrastructure | Roads are insufficient for chip vans | Improve roads; larger landings; sort yards |
| Supply Certainty | Assure supply and investment will follow | Address FMP and NEPA bottlenecks; Provide certainty of supply; look at Superfund legislation as a model for priority landscapes; |
| Workforce | Aging workforce | Operations training programs (University of Idaho) as an example of success |
| Regulatory | Air quality standards limit biomass utilization | Interagency partnership to address these issues and promote woody biomass as a renewable energy source |

***Supporting Details***

Road infrastructure does not support equipment needed to densify wood in the woods (e.g., chip trucks.)

  - Haul distance is a big barrier unless there is a steady supply.
  - Rail has plenty of other business and retooling to provide necessary cars will carry a very high cost; They would want to see a long-term program before investing in cars; no rail in W. Idaho.

- Industry requests larger landings and investment in sort yards that will help efficiently move material to different markets.
- Industry believes certainty in fiber supply must come **before** new product development. If new products are developed, ROI needs to happen within 5 years at a minimum.
- Noted a $3,000 - 3,500/acre cost for the treatments the USFS seeks.
- Fire Management Plans (FMP) and NEPA are limiting what harvest technology makes possible.
- Industry requests for assistance to clear red tape and incentivize and invest in small operators that are more nimble and flexible.
- Logging industry is perceived as stable but foresee future workforce issues.
    - University of Idaho Forest Operations training program as an example of potential success.

    - Primarily compete with construction and trucking that are sometimes more competitive with wages and benefits packages.
    - Significant cultural gap - labor force for logging was a family business.
    - Find a way to create confidence in the future of logging being a successful career.
- Interagency partnership building to address air quality standards issues and continue to support and promote woody biomass as a renewable energy source.
- Suggestion to look at Superfund legislation as a model for these priority landscapes to mitigate NEPA and Endangered Species Act (ESA) red tape.
- Cost of a cogeneration plant is now a ~$25 million investment.
    - Montana and Northern Idaho would be ideal for biofuels.
- Currently, the average federal sale includes 30% non-sawlog materials, which are going to existing markets for firewood, pulp, tiki pole plants.
    - Adding new markets (e.g., biomass or CLT) would require additional (certain) supply as currently all material is being used.
    - Biochar was perceived to have no secure market and there are water limits in this region.
- More certainty in fiber supply is needed before investing (10 years minimum).
- Interest in moving fire-impacted wood out of the forest but needs to happen quickly.
- Use timber sale contracts to clean up biomass.
- Need a landscape-scale analysis of biomass to meet the long-term certainty goal.
- Encourage regional staff to pay attention to air quality standards and how they apply to forest management and industry.
    - Assurance that biomass will be considered 'renewable energy' and carbon neutral.
- Industry is interested in investing, but the wood has to break even or pay its way.
- Lack of trust in USFS - need promise and availability of supply.
- Most frustrating element is appeals and litigation that stop timber sales.
- USFS does not need to focus on developing markets but rather on supplying the fiber.
- Partner with the recreation community.
- Ability for financial institutions to secure performance contracts.

# ROCKY MOUNTAIN REGION 2 SUMMARY

*Region 2 described an industry on the brink of collapse that needs investment in road and equipment, certainty in supply, and suggests that other forest beneficiaries should be engaged to adequately address fuels reduction.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Infrastructure | Road conditions limit ability to remove material; shortage of trucks | Other beneficiaries of healthy forests could help pay and maintain (water, utilities, insurance, Wildland Urban Interface (WUI) dwellers, recreation); community-scale sort-yards and equipment; Improved roads should remain open after timber sales for these other stakeholders |
| Research | Limited data on the resource and potential partners | A gap/needs assessment could show what areas need new mills, and new and creative stakeholders who would also benefit from fuels reduction; micro-inventory data is needed |
| Innovation | Support existing industry or use new markets to drive improvement down value chain | Need marketing and stronger consumer base for biochar (commodity subsidy); consider biogas and mass timber/CLT; add 'wildfire prevention' as a rate adjustment on power generation |
| Administrative | Cheaper to pay for preventive treatments than firefighting | USFS should pay for appraisals and valuation separately, get rid of the word subsidy, and pay market price at the gate (even if that means taking a loss) |
| Social acceptability | Lack of risk-taking in the USFS | Address social acceptability and social license to harvest in and around priority landscapes |
| Policy | Lack of capital investment without supply certainty; Observed that banks and industry have a true partnership while industry and the USFS have a subservient relationship | Small business loans and programs (Sustainable Business Development Council (SBDC), Small Business Administration (SBA), Office of Economic Development and International Trade (O-EDIT) - let the communities fix themselves; mill levy on sales tax to pay for fuel mitigation and to have personnel do outreach and education |

| | | |
|---|---|---|
| Grants and Agreements | Lack of grant writing experience among industry partners | Capacity building; Eliminate as much of the 'this grant cannot be used for...' restrictions as possible; cost-share up front rather than through reimbursement (equity component) |

## Supporting Details

- Acquisition of sites for new facilities may be a challenge and could benefit from USFS-industry partnership.
- There isn't much industry infrastructure left in the region.
  - Industry has always been nimble and able to respond but needs a secure wood supply from federal lands.
  - Industry relies on 5-year plans but needs 10-year plans to encourage private investment. The longer your forecast, the more you can prepare.
  - The remaining industry is small, but vocal, and wishes to expand.
  - Industry has conceptual knowledge, but lacks 'star alignment'.
- The road network is sub-par.
  - Focus should be on the entire network from priority landscapes and consider how roads could be improved to accommodate chip vans and other equipment needed to densify material in the woods.
  - Identify other beneficiaries of healthy forests to tackle road improvement and maintenance (e.g., water utilities, insurance industry, WUI dwellers, recreation users).
  - Roads should remain open after timber sales.
- Entities like Biochar Now and other firewood companies will utilize the whole tree but need to acquire material in a cost-effective manner.
  - Currently firewood producers are paying over sawmill price to get materials.
- Logger shortage.
  - Loggers coming in from Montana and other adjacent regions.
  - Aging workforce (includes truckers).
- We must have a healthy mix of purchasers and producers in the region.
- Region has fairly diverse markets.
- Consider a community-scale sort-yard to aggregate and spread all the wood.
  - Could a community shredder or chipper benefit multiple players?
- A more expansive definition of the Wildlife-Urban Interface (WUI) would help bring other lands and partners into solution-building.
- Wood residuals can be turned into biofuels (high market value).
- Contracts with pole purchasers may help subsidize transportation costs.
- Consider attaching pellet production to existing facilities.
- Subsidized power generation and a set rate for bioenergy.
  - Will need to deal with the Renewable Fuels Standard.
- Move from conceptual to tangible - USFS needs the political will to work with industry in a meaningful way.

- Stressed the need for funds to be directed towards infrastructure rather than additional research, case studies, and proof-of-concept.
- See the Denver Forests 2 Faucets as a case study for recruiting forest ecosystem services beneficiaries to be part of the solution.
- Timber sale planning staff need to build out certainty, trust, and training opportunities with industry partners - prioritize this in priority landscapes.
- Small business associations should be leveraged to host workshops and help build grant writing capacity.
- Building back the ‘social license to harvest’ has to be a continual effort among a broad stakeholder network, with a particular focus on ENGOs that typically fight this message.
- Look at other successful private-public partnerships. Programs like O-EDIT and SBDC as alternative solutions for investment.
    - Let communities fix themselves, focus on favorable loan terms for small businesses and for equipment.

## SOUTHWESTERN REGION 3 (NEW MEXICO) SUMMARY

*Region 3 (New Mexico) described plentiful timber, but lack of USFS accommodations for on-the-ground conditions, including poor road conditions, the need for fast turnarounds on salvage harvesting, and need for consistent supply from USFS land.*

| **General theme** | **Concern or Barrier** | **Potential Solution(s)** |
|---|---|---|
| Infrastructure | Roads in need of repair | Archaeological clearances, more blading equipment; companies willing to help if equipment is provided; Great American Outdoors Act; Partner with Bureau of Land Management (BLM) and National Wild Turkey Federation (NWTF) |
| Supply stability | Weather, lawsuits, rail | Need certainty of at least 10 years |
| New markets | Demand | Training to meet Environmental Quality Incentives Program (EQIP) biochar certification rule; expand markets for mulch; community sort yards; carbon credits; payment for restoration |
| Partners | Utilities face slow permitting time | New rules for right-of-ways; Categorical exclusions; Look at new legislation in Bipartisan Infrastructure Law (BIL)/Inflation Reduction Act (IRA); Engage conservation organizations |
| Communication | Lack of trust | Work on internal communication so all USFS personnel are working towards same goal |
| Workforce | Skilled labor is lost, and housing is a major issue | Supply certainty would keep people in the workforce; rural housing infrastructure from (free) federal wood? |
| Investment | Funds are used to band aids solutions and should be allocated to fund long-term strategies | Rural Energy for America Program; Business and Industry Guarantee Loan Program - commercial lender for financing and approval |

### Supporting Details

- USFS needs to find other (or new) organizations to act as financial vehicles for projects.
    - A huge issue is dysfunction in the System for Awards Management (SAM) process. Local people are shut out of the process because new security

provisions do not recognize rural New Mexico addresses. So, unless you had a SAM number prior to April 2022 - you've been pretty much shut out of the process.

- Road infrastructure issues
    - Authority
    - Financial
    - Equipment
        - All roads need to be bladed once a year (there is currently only one blade in the entire state)
    - Archaeological evaluation every 15 years is prohibitive to maintaining supply; archaeological clearances would help.
    - Need an act of congress to correct some of these issues.
    - All road funds are bundled into a timber sale project, but no long-term plan exists to provide general road maintenance.
    - Could we partner with BLM and NWTF for equipment and road maintenance?
    - Great American Outdoors Act for road funding?
    - Companies will help maintain roads but don't always have correct equipment.
- Look at California forest practice rules related to burn areas - easier to get fire-damaged material out of the woods under those rules.
- Timeline is short to salvage fire-damaged wood (e.g., blue stain is 2-3 months post-fire)
- Funds are used to band aid solutions and should be allocated to fund long-term strategies.
    - Long-term governance arrangements should accompany short-term funds.
- Inter-agency communication is an issue that affects stakeholder perceptions and trust.
- Keep this momentum going (after this meeting)
    - Provide regional case studies that are relevant to people: Can I see myself doing this? What are the costs and benefits?
- Utilities are ready to address forest management but wait over two years to get permits.
    - New rules on right-of-way
    - Better communication with USFS
    - Change in legislation from BIL/IRA
    - Line clearing for national forests - may require a lot of categorical exclusions.
- Bring biomass to a central place.
- Bring back Civilian Conservation Corps concept.
- Small business grants and assistance with business plans
    - Rural Energy for America Program
    - Business and Industry Guarantee Loan Program - commercial lender for financing and approval
- Big supply issues are weather, lawsuits, and rail.
    - Stability is a cross-cutting issue - looking for supply certainty of 10 years.
- There is a biochar refinery where the whole tree is utilized, but demand has been a challenge.
    - Demand from Marijuana industry

    - Return on Investment (ROI) on biochar is excellent.
    - Biochar training - limitation in EQIP that producers must be certified.
- Perceive carbon credits, biomass energy, and restoration as emerging opportunities.
- Plenty of timber, but very few sales
    - No charge timber sales would be helpful.
- Expand markets for mulch.
- Feasibility studies will help rebuild forest industry.
    - Prototype systems
- Logging industry is almost dead.
    - Attributed to over-regulation in 1980s and 1990s and lawsuits/injunctions that stopped harvesting activities and a profound lack of coordination (one-off purchases for operator equipment will not solve the problem)
- There is/was an abundance of grant money for equipment (e.g., Collaborative Forest Restoration Program (CFRP)) but a lack of workforce to get work done.
    - Logging jobs are not as attractive because companies are often shut down for weather, lawsuits, etc.
    - Skilled people are often lost due to this uncertainty.
- Rural housing infrastructure needs to be addressed - could this be rebuilt from federal wood?
    - Industry leaders admit we could throw endless amounts of financial resources at them, and it still would not fix the problem because there is not skilled and reliable labor available - every community lists housing as an issue.
    - This has led us to pivot from a supply chain approach of building infrastructure to a focus on community-level economic recovery.
- Conservation partners should be engaged more frequently.

## SOUTHWESTERN REGION 3 (ARIZONA) SUMMARY

*Region 3 (Arizona) described an industry that needs investment in existing road and equipment - rather than develop new technologies and or incubate new businesses. Partners focused on supply stability, potential for incentives, and a balance of collaboration and competition.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| New markets | Current industry has breadth, not depth - if one element fails, the whole system is at risk | Focus on improving current infrastructure; Stabilize opportunities to get firewood to vulnerable communities; Affordable timber will help small companies (who are more nimble) |
| Partnerships | | Empower local districts to complete treatment plans; The Recreation Work Group facilitated by Diablo Trust could be an example; link local municipalities with companies |
| Communication and Framing | The issue is restoration | Separate economic and Payment for Ecosystem Services markets; clearly communicate the cost of NOT treating these acres |
| Biomass | Renewable Fuels Standard is a critical regulatory barrier | Roads maintained for chip vans; Align on message 'biomass is good for Arizona' |
| Operations | How do we prioritize treatment, even in Wildfire Crisis Strategy (WCS) National Priority Lists (NPL)? | Decision-support tools must include operational feasibility constraints (and should be used by USFS) |
| Workforce | Access to skilled labor is increasingly an issue | Training programs for drivers and sharpeners; See Ecological Restoration Institute (ERI) survey for more detailed information (link below) |

### Supporting Details

- The USFS would benefit from hiring someone from private industry to help them navigate the constraints that USFS policy, contracting, pricing, etc. have on industry. Having someone with private industry experience would be extremely beneficial to the agency.
- USFS road engineering specifications must adapt to the types of material (biomass) is being removed from the forest and the type of vehicles. Currently, the road specs are the same as from the 1970's.
    - This is also a safety issue for the public as many haul roads are too narrow and do not have sufficient pull-out areas to allow trucks and public vehicles to pass each other.

- There may also need to be a discussion around temporary closures around logging/restoration operations.
- USFS should be able to enroll lands in carbon markets.
- Renewable Fuel Standard should be addressed with EPA and states; this is a critical regulatory barrier.
- Consider reframing the issue and problem as 'restoration' based on money generated for ecosystem services.
    - Economic markets and Payment for Ecosystem Services markets should be separated.
    - Cost of not doing this work has environmental justice/societal implications.
- USFS has a duty to the landowner (taxpayer) to treat the acre and a duty to partners (e.g., sawmills) to ensure economic viability.
- Focus on the markets we do have in the state (but don't ignore encouraging new technologies)
    - New markets with large demand may not work in the state.
    - Companies are explicitly not trying to develop new technologies or incubate new business.
    - Use today (at scale) what works today.
    - Have breadth but not depth: if one element goes down, the whole system is at risk.
- The decision to invest is based wholly on certainty - USFS should focus on de-risking investment.
- Find the balance between collaboration and competition.
    - Arizona has more than enough wood
- Empower local districts to implement treatment plans.
    - Working with local communities is going to be key, especially to help them access new federal funds.
- Expand the public-private partnerships by linking local municipalities with companies.
- Wood for Life example: people are lining up to fill a truck full of firewood.
    - Can we scale this and make it an actual business model?
    - Stabilize opportunities to get firewood to vulnerable communities.
    - https://www.nationalforests.org/get-involved/wood-for-life
    - https://www.nationalforests.org/get-involved/wood-for-life/northern-arizona-wood-for-life-partnership
- The USFS appraisal system is designed to maximize asset value rather than to minimize liabilities.
- The scale and timeframe for the forest restoration industry is at least 10 years.
- "No one within the USFS feared losing their job this winter." - stakeholders in Arizona were concerned about surviving, given the difficult winter conditions.
    - The winter has been challenging, but not all logging operations or mills/processing facilities have closed/laid off personnel.
- Consider tax incentives to reduce costs for utility customers.
    - "We should not be letting the commissions across the west off the hook on the issue of using biomass as a legitimate option. These conversations need to be had

at the federal level to force the hand of state service commissions to put a higher value on biomass." Build local financial capacity to local jurisdiction (raise tax cap on local flood control districts, maybe counties, maybe create forest restoration districts).
    - Should be aligned on the message: "Biomass is good for AZ."
- USFS struggles to maintain a message as it flows from the top down to the individual forests and districts. Size and turnover contribute to this. This creates turnover which challenges trust and cooperation.
- We need confidence in the availability of fiber and compensation for restoration services.
- AZ has done a good job in increasing weight capacity on the roads so more fiber can be hauled at once. Finding loggers to do the job varies across the state; manufacturing facilities to process the fiber is an even larger challenge.
- Recognize that biomass material removal has to be through chip vans, not log trucks.
- The Recreation Work Group facilitated by Diablo Trust and focusing on the Coconino does discuss shared needs for road maintenance across user groups at times and could be a potential forum for further discussion.
- The ERI conducted a survey of forest contractors in the SW and identified a number of challenges related to the workforce. There is a white paper here: https://cdm17192.contentdm.oclc.org/digital/collection/p17192coll1/id/1119/rec/1 and also a fact sheet that summarizes the survey findings: https://cdm17192.contentdm.oclc.org/digital/collection/p17192coll1/id/1120/rec/2.
- Affordable timber is essential. Small companies that are driving forest restoration in AZ are currently being priced out of the market.
- One challenge that we are working through in R3, and especially in WCS NPLs, is how to best prioritize and optimize treatments in the acres that are available to maximize fire risk reduction and other goals. There are a number of decision support tools that do this, but they do not always include operational feasibility constraints.
- Consider all solutions - multiple spatial scales and many technologies.
- Access to skilled labor is increasingly an issue.
    - Short on drivers and specialized needs (e.g., sharpeners)
    - ERI, Coconino County, Coconino Community College and Yavapai Community College have developed a Forest Operations Training program/curriculum, however, funding has not developed to move this forward. Dr. Han-Sup Han has information on this program.

## INTERMOUNTAIN REGION 4 SUMMARY

*Region 4 described an industry with strong markets, but with market gaps for low quality materials. They identified the Good Neighbor Authority (GNA)agreement with Idaho Department of Lands (IDL) as a successful partnership to create consistency and build trust.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Certainty | (Lack of) Assurance that timber is available and guaranteed has eroded trust | Mechanism for agreements that last at least 10-years regardless of staff turnover |
| Workforce | Aging and declining workforce | Apprenticeship programs, grants, and tax credits to stand up programs |
| Bioenergy | Lack of markets | Need long-term strategic planning in the region; consider pellet demand |
| Scale and Timing | | Invest in assets that will last a long time; Agreements (e.g., GNA) with counties is ideal scale |
| Administrative | Mandate to remove pulp results in no-bid contracts; | Try starting bids at 1 penny/ton to get biomass out; invest in community sortyards; low-interest loans for small businesses |

### Supporting Details

- Idaho has good markets statewide, but it is challenging to find markets for lower quality material like biomass.
- Idaho GNA is a successful partnership that has been able to create consistency and increase harvest levels in forests.
    - GNA has been able to create consistency and increase harvest levels, but changing the perception of the industry will take time.
    - First GNA agreement with a county - this is seen as a critical success.
- Long-term strategic planning is necessary for biomass-related projects, and investments should be made in assets that can last a long time.
- Nez Perce tribe has created new relationships with the USFS and is looking to use funds from the 2024 Farm Bill to sustain ventures in ceded territories.
    - GNA with the Nez Perce Clearwater NF was finalized.
    - Finally moving towards a relationship with USFS where the tribe can dictate how they would like to work in their ceded territory and won't be quarreling about on-reservation work.

- Senior firewood program includes 175 elder seniors, single parents, and disabled folks to supply them fuelwood in perpetuity (90% use woodstoves)
    - Pay logging contractors and have funding from BIA to buy a self-loader.
- Workforce development is crucial, and apprenticeship programs, grants, and tax credits can help to stand up training programs and find workers to do the work in the woods.
  - Timing is crucial to hold on to contractors.
  - Idaho department of labor workforce development council - grants for specific companies or industries to stand up training programs.
  - Workforce Opportunity Tax Credit - have to pay employees a certain amount per hour but is ideal for those transitioning back into the workforce (e.g., Veterans, chronically unemployed, Correctional, stay at home parents).
  - State of Idaho has small business development centers and a matchmaking service to connect Idaho companies with federal contracting opportunities.
  - Try not to disrupt the local workforce. Don't "bust into their town and steal their workers."
  - Contractors leave for four months in the summer to fight fires.
- The term of wood availability is a significant challenge, and there is a substantial distrust of the Forest Service in the west due to declining harvest levels and infrastructure.
- Investing in large-scale projects is challenging due to a lack of trust in government and the Forest Service.
- IRA/BIL should invest in things the government can subsidize for a few years - think strategically and long-term.
  - Anything related to biomass takes time; by the time the facility is made, USFS priorities will shift.
  - Fund assets that will last
- There should be increased staff capacity for every hazardous fuel mitigation project.
- Support masticator operators and chipping in the woods but will need to upgrade road infrastructure accordingly.
- Commented that 4FRI in Arizona promised future wood availability but still couldn't attract investment. This was attributed to distrust of government and distrust of the USFS.
  - Must build back trust AND guarantee supply.
- Noted an increasing demand for pellets.
  - Best place to locate is by a sawmill.
  - Need to be near ports to export (unless demand increases in U.S.) but there could be opportunity for inland (Idaho)
- Interest in community sortyards
  - There is 'ground to build a sortyard' and divert material based on quality and markets.
- It costs more to get low-value material out of the woods but the cost of doing nothing is higher - who bears this cost? Whoever bears the cost of doing nothing should pay to do something.
- Research question: If we were to make industrial pellets in Idaho, who would buy them and what is the market?

- Open to research and development on biochar, jet fuel, and gasification. There is no silver bullet, we should look at everything (energy demand isn't going to decrease)
- Most USFS lands are 50, 75, hundreds of miles from development, so programs fail trying to connect the resources (e.g., fuels for school)
- North central Idaho basically shuts down for 3 months a year (winter shut down): need to move 12 months of production in 9 months.
- When a contract is over, the road is put to bed, meaning small operators can't get in using it.
    - Temporary roads – skidding to the temp roads, piling up the slash, then taking the road out. As timber purchasers, they are buying it and are on the hook for any requirements. There would have to be changes to how that sale is managed.
    - Contract needs to be long enough to allow them to do something. Factors impacting: money, distance to markets, slope, riparian areas, etc.
- Tried to get a product going – erosion control sock. Works well to open and close a road. Filters the water, holds all the soils back. Use technological solutions to protect watershed/erosion rather than completely closing the road.
- Mandate to pull out pulp has resulted in no-bid sometimes.
- Working on two different outputs for biochar…not your fathers concrete, not your fathers asphalt. Biochar and cold rolled asphalt may be technologies the FS can help roll out. It's fairly cheap compared to hot asphalt and is being used in Australia for mining roads.
- Can the government provide low interest loans?
- If the USFS is trying to get rid of materials, try starting bids at 1 penny per ton.

## PACIFIC SOUTHWEST REGION 5 SUMMARY

*Region 5 described an industry with a mix of successful and unsuccessful communities, barriers at the state-scale, and the need for certainty in supply coupled with external assistance handling the NEPA aspect of fuels reduction.*

| General theme | Concern or Barrier | Potential Solution |
|---|---|---|
| Administrative | NEPA can prevent timely and necessary work | Task implementing entities with larger scale NEPA work; 3rd party Non-Governmental Organizations (NGO) to complete NEPA; partnering with indigenous communities that own land |
| Supply Stability | Financiers need to see that USFS lands are a secure investment, banks will only work with industry if they have 5–10-year (minimum) purchase agreements in place | Landscape-scale fiber plan; long-term master stewardship agreements |
| Workforce | A generation of labor has been lost | Partner with community colleges to stabilize the workforce pipeline |
| Regulatory | Biomass and air quality restrictions prevent facility expansion | Address Renewable Fuel Standard restrictions; approve bioenergy facilities |
| Infrastructure | Barracks shortage | Create barracks from USFS timber |
| Policy | Lack of information and market incentives | Carbon market incentives for agriculture to expand biochar markets |
| Scale | Implementing partners are not always matched to scale of funding | Resources given directly to counties (GNA or other); Grant-writing capacity development |
| Business Investment | Funds aren't available to prove commercial viability | Allow funding for demonstration of viability, endow or set aside money for facility and equipment maintenance |
| Social | De-risking potential investment | Outreach and Education internally and externally on the social license to remove material from USFS lands; focus on benefits to wildlife via wildlife organizations; reframe low-value material disposal as "protecting a watershed" and "protecting a community." |

## Supporting Details

The Region 5 roundtable focused on administrative barriers, supply certainty, regulatory and policy issues, infrastructure, scale, business investment, and social issues like stakeholder awareness and acceptance of federal forest management. Summary points from the large and small group discussions are below:

- Task implementing entities with larger scale NEPA to move projects across the finish line.
  - Non-federal partners can then be more nimble with workflow.
  - Biomass facilities could seed fund NEPA to secure supply.
  - Third-party NEPA team so that partners can move material from sites to end-users.
- Financiers need to see the security of a USFS investment. Can they guarantee a steady supply over time? USFS has a mandate and a will, but markets need to develop with capital and facilities. Banks want to know if there's certainty. We need to show the federal timber supply can be bankable. This could be through a failsafe clause. Stewardship agreements contain too much uncertainty, largely due to budgeting and funding cycles at the USFS.
  - At least 20 years of guaranteed supply is necessary before a large investment can occur.
  - Can appropriated funds be 'invested' in new infrastructure?
  - Longer master stewardship agreements and an easy streamlined process to get master stewardship agreements off the line.
- Education and workforce development needs to start at the high school level, when many may track into vocational, 2-year, or 4-year programs.
  - More funds to community colleges
- USFS grants & agreements need to be streamlined and accelerated.
  - More capacity for administration
  - More staffing within NFS
- Work towards policy changes that allow categorical exclusions to seriously burned areas.
  - Reforestation isn't possibly until a site has been prepped.
  - Address safety issues (during fire salvage) to move habitat and restoration work forward.
- California regulations are a barrier (CalRecycle as an example, who won't fund anything related to biomass)
  - Mobile equipment
  - Federal investment in sawmills so that they meet all air quality emission criteria.
  - Rebuild industry sustainably - focus on existing industry.
- There is a shortage of barracks. Can we create barracks for the USFS from federal timber. For example, can barracks in Nevada be built with California wood?
- Biochar producers cannot get traction because of the agriculture industry.

  - Need carbon market incentives for agriculture to use biochar, or other incentive policy tools.
  - Scaling issues with biochar
- Bioenergy plants lack funding to demonstrate commercial viability.
- Counties may be a better scale for project implementation. An example was given of a county having capacity to create fuel breaks but need a mechanism to get resources directly to counties. County grant-writing capacity isn't always available (e.g., county development, public works coordinators, etc.).
  - Shared stewardship and GNA at the county level could be highly effective.
- Identify groups with key coordinating experience and allow for more autonomy within collaborating teams.
- Need mechanisms to endow government grant funds for maintenance.
- Research is needed to quantify the precise magnitude of the problem so we can track progress: how much do we need to move out of each forest?
- Practical issues with equipment and infrastructure (aging, more efficient options out there)
  - Private foundation money was used to buy a skidder for one area.
- Fear of litigation and internal issues with the 'social license to remove material' remains a critical challenge.
- Stewardship agreements and NGO engagement increases capacity to multi-stream materials.
- Consider lobbyists to help with NEPA exemptions.
- Our messaging has failed us. We have solid science, but often the environmental community and natural resource community are at odds.
- Consider partnership with the Metrolab network out of Washington D.C.
- Recycling Market Development Zone (RMDZ) needs to be engaged in understanding forestry and forestry practices.
- Partnering with indigenous organizations that own land has been effective. The air quality requirement is the same, but the process can be reduced to 1-2 years instead of 5-10 years.
- Improving transportation infrastructure is needed but there is pushback against this kind of development.
- Logging industry needs to be rebuilt. Currently have active logging in multiple areas, but only a few mills, so huge trucks are driving ridiculous distances to get to a mill.
- We have the money to treat forests but no place to take materials. In the Tahoe basin they are facing a million burn piles that need to be removed but there's nowhere to bring it. There are not the materials reduction processing facilities needed.
  - Biochar/biomass etc. facilities need to be approved much faster.
- Rather than characterizing as waste disposal (low-value wood), but also it's a cost of "how do we protect a watershed" "how much is clean water valued" "how much do we value protecting a community."
- We need a national level economic evaluation of market conditions.
  - This includes connecting railroads and improving road infrastructure.

# PACIFIC NORTHWEST REGION 6 SUMMARY

*Region 6 described a lack of biomass markets, wood price volatility, and a need to examine and use 'unrelated' legislation to implement the wildfire crisis strategy.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Biomass | Lack of markets and regulatory barriers | Return the tax credit for producers; Internal outreach to producers; Include federal fiber in Renewable Fuels Standard; community-scale biomass feasibility studies; NEPA categorical exclusions for district-scale biomass; don't decouple biomass from sawlogs for timber sales |
| Legislation | Links were broken during the "Timber Wars" | Renewed look at 1947 Materials Act to use Federal fiber for affordable housing and biochar for farms and restoration work |
| Biochar | Many producers are stuck in the Valley of Death | Plant or reforest areas that have been degraded (use biochar in nurseries); Agriculture/orchard applications; Ensure that Natural Resource Conservation Service (NRCS) has incorporated biochar into conservation practices and is sharing this information with farmers |
| Other new markets | | Consider regional firewood coordinators; Urban abatements; Monetize ecosystem services - water crisis; Biochar in compost |
| Trust | Trust has eroded | Forest Stewardship Council (FSC)/Sustainable Forestry Initiative (SFI) certification; transparency; shared messaging; |
| Administrative | Bureaucracy prevents treatment | Allow grants with minimal matching requirements; allow equipment purchases |

## Supporting Details

- Lack of biomass markets, but high volume of low value sawlogs
  - Biomass fiber transportation support is deemed crucial.
  - Federal and state regulations are prohibitive concerning biomass plant siting, emissions, permitting. Participants agreed this must be tackled.
  - Returning the tax credit for producers to manufacture biomass in the woods might revive the program: https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/19032/WP_32.pdf?sequence=1

    - Include federal fiber in the Renewable Fuels Standard; USFS and EPA likely have more common ground now to tackle this issue.
    - USFS could focus on internal outreach to prove to timber producers that biomass can be merchantable, holding more value than being open air burned.
    - Oregon Department of Environmental Quality (DEQ) leads a cross agency biomass utilization workgroup that works mostly on forestry work that has an air quality intersection.
        - EPA has ambient air quality thresholds, so maybe biomass utilization is a way to address air quality concerns.
        - Workgroup is working on regulations, permitting help, workforce development.
    - Invest in community-scale biomass feasibility studies.
    - Blanket NEPA Categorical Exclusion that recognized the need to remove biomass (district scale) and includes vegetative fuel breaks.
    - Hydrogen fuel cell technology could be an opportunity for biomass.
    - Focus on biomass as an end product, examining competitive rates for renewable energy.
    - Make it mandatory that biomass is removed during harvest.
        - Equivalent investment on infrastructure side for biomass
        - Don't decouple biomass from sawlogs. If valuable and non-valuable fiber is connected, the private market can dictate removal; separate at a sort yard.
    - Additional analysis on understory biomass would be beneficial in timber sale areas.
- Wood price volatility (example given that a 1x2 is worth more than a 2x4)
- Changes in construction typology
- Desire for pulp & paper supply agreements
- Value in convening meetings (like this one), particularly if we can use NGOs to spread 'the gospel' of forest management as a wildfire crisis solution.
- Use unrelated legislation to problem solve (e.g., compost and other USDA practices, state revolving funds, water crisis)
- Renewed look at the 1947 Materials Act
    - Can this model be used to get wood off the land and into 1) Affordable Housing, 2) Biochar?
    - The wood would be 'free' (subsidized by the Federal government) but used in projects that have clear and widespread public benefit.
    - Recreate a link that was broken during the 'Timber Wars.'
- Build large-scale demand for biochar.
    - Many producers are stuck in the Valley of Death
    - Plant or reforest areas that have been degraded.
    - Agriculture/orchard applications
    - Nurseries that grow seedlings for federal land plantings
    - Ensure that NRCS has incorporated biochar into conservation practices and is sharing this information with farmers.

- Environmental groups need to stop suing.
- Use FSC/SFI and other certification mechanisms to build back trust.
- Monetize ecosystem services.
- Example of success and ongoing collaboration: https://www.mybluemountainswoodland.org/about
- Grants with no required match for rural communities or nonprofits; allow grants to purchase equipment with wheels.
- Labor geography: where are the potential labor force participants located in relation to the landscapes where the work is needed?
- Transparency will help with the social license.
    - The messenger matters - shared messaging is key.
- Helping existing businesses grow is easier than starting up a brand-new business.
- How can urban abatements be used in fiber supply issues?
- Sort yards can benefit air quality by reducing need to burn material.
- Access to supply and certainty are critical.
- The USFS should emulate the private sector.
    - Private landowners find ways to make sales economically and socially viable.
- Firewood coordinators could exist at a state or regional scale; could be an NGO; helps stand up commercial enterprises.

## SOUTHERN REGION 8 SUMMARY

*Region 8 described a mix of robust infrastructure and critical challenges. The region is transitioning from a pulp and paper focus to a mix of markets. The greatest need was to focus on marketing forest products and national policy changes like the Renewable Fuel Standards to strategically enhance biofuels production.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Mass Timber | It has not proliferated, despite national enthusiasm | Address lingering building code issues; Better marketing and communication strategies for decision-makers |
| Transportation | Access to some landscapes is limited | Investments in river port facilities on navigable rivers for loading barges with chips, or access to rail terminals in closer proximity to National Forests and rural areas in interior states would greatly facilitate access to existing markets for pulpwood and other low value wood products. |
| Biochar | Value not always communicated well | Outreach to farmers to encourage widespread adoption |
| New markets | Transition from pulp & paper to other markets may be necessary | Consider resins, adhesives, coatings and nanotechnology; Current marketing of many products is underwhelming and ineffective; Desire to see more University-Industry-USFS partnerships to develop new products and markets for residuals |
| Regulatory | EPA Renewable Fuels Standards is a barrier for bioenergy | USFS-EPA partnership to loosen restrictions to get roundwood to feed biorefineries and to address the Renewable Fuels Standard barriers |

### Supporting Details

- Mass Timber
    - Regional stakeholders are working on mass timber study to determine why it has not proliferated in the region, despite national-scale excitement and demand.
    - A mass plywood shortage was identified, Oriented Strand Board (OSB) (cheaper alternative) may be what is preventing industry from expanding plywood production.

    - There are great examples of wood innovation in mass timber including low grade logs to produce structural grade Cross-Laminated Timber (CLT) panels for buildings.
    - We need to ensure these are in building codes region-wide (believed this was close to complete)
    - Many successes attributed to wood innovations grants.
    - Need better marketing.
    - Given that people do not make decisions based on data and science, we need to influence decision-makers in other ways.
- Transportation
    - Deepwater ports would allow access to more landscapes (unless rail barriers are removed)
    - Consider roads and route implications for underserved communities - both how they affect communities (noise and other issues) and how they open opportunities (or leave behind) communities - research from Dr. Conrad at University of Georgia to inform this.
    - Investments in river port facilities on navigable rivers for loading barges with chips, or access to rail terminals in closer proximity to National Forests and rural areas in interior states would greatly facilitate access to existing markets for pulpwood and other low value wood products. The Georgia Port Authority's (Savannah) Appalachian Rail Terminal (https://gaports.com/facilities/inland-ports/appalachian-regional-port/) is an example of a highly effective investment in rail infrastructure, but is still too far for many of Tennessee's sawmills and producers in East Tennessee. Nashville's rail terminal is seen as a bottleneck due to road congestion, time required to access the terminal, and cost. There are few barge loading facilities in Tennessee, and most of them on the Mississippi, 8 to 12 hours' drive from 2/3 of the state. Other states have similar issues.
- Industry investments have focused on optimization technologies to increase efficiency, improve lumber yield (get more out of the logs that they buy) and reduce need for additional workers, particularly for low barrier-to-entry work; the workforce contracted correspondingly. We now need to add capacity back.
    - Continued support for stationary sawmill infrastructure investments would be very helpful for supporting modernization of current sawmills. Most medium and small sawmills still operate using virtually the same technologies and procedures as in the 1970's. The result is that about 50% of the log volume continues to be lost to kerf and low yield. No one is doing outreach and education on technologies and procedures that can improve sawmill efficiency, except maybe a few states.
- Re-integrate (vertically), companies may need to hire logging crews associated with their sawmills to optimize efficiency.
    - Some noted many companies will still prefer contractors to reduce overhead and liability.

    - Some states (e.g., Mississippi) have a drastic oversupply of wood compared to workforce needed to utilize.
- Some companies wish to eliminate pulp wood and instead add new lines for shorter chip and saw.
- Desire to see more University-Industry-USFS partnerships to develop new products and markets for residuals.
- Biochar as a focus for growing markets and industry but needs to address value and demand.
    - Grant-funded biochar plant in a Region 9 state was successful because the stakeholder interest group was strong.
    - NRCS is slowly adding biochar to practice adoption menus, but industry must outreach to farmers to encourage wider adoption.
    - Identified more supply than demand for biochar in some locations (both agricultural and non-agricultural components) and more demand than supply in others.
- Differentiate between dirty (on-the-ground) vs clean (sawmill residuals) when brainstorming solutions.
- USFS-EPA partnership to loosen restrictions to get roundwood to feed biorefineries and to address the Renewable Fuels Standard barriers.
- Timber Products Output (TPO) surveys are critical to gauge supply when new markets and facilities are considered.
    - Largest consumers of roundwood aren't participating in the survey - opportunities for the state for private industry and FS to work together.
    - Investing additional resources in the TPO program to bring staffing up to levels that allow additional analysis and service to states for special analysis requests. TPO data on mill residues is very helpful for business attraction projects, particularly for biochar, biomass energy, and transportation fuels projects. Continued investment in TPO data collection efforts is key to ensuring accurate data is available to support business attraction and development.
- Investment in products that use high volume of low value wood products is more important for maintaining the supply chain and supporting/enabling forest restoration efforts. Evaluate new products and technologies based on ability to use high volume raw material.
    - Consider resins, adhesives, coatings and nanotechnology as critical products (or by-products) and new markets.
        - During energy and chemical production, nanocellulose is a byproduct and we could invest in piloting products.
- There was a noted transition in the region from pulp and paper to other markets.
    - Marketing to consumers to retain and grow their use of paper packaging (instead of plastics and other materials)
    - Consider diversifying markets to accept hardwood material.
        - Coastal plains/Piedmont vs. upland hardwoods resource
    - Consider additional support for local business development - support for additional Forest Service wood supply analysis services to state economic

    development partners, maybe a Forest Service unit focused on entrepreneurship and wood product incubators?
    - How about looking hard at the Canadian private-public-university partnership model and replicating that kind of model for moving emerging technologies and innovations from research to demo to pilot and commercial scale-up stages?
- Focus on building public trust to accompany an increase in harvesting levels and new markets.
    - Current marketing of many products is underwhelming and ineffective - market to build demand and investment will follow.
- Carbon markets need to include embodied carbon.
    - Don't use carbon credits in business models, but instead offer competitive service contracts to paper mills.

# EASTERN REGION 9 SUMMARY

*Region 9 shared that they have never seen such high levels of stress for loggers and mills. They stressed a need for better and more frequent communication between federal, state, private, and tribal stakeholders.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Biomass | Lack of markets | Pellets are in high demand, but location is critical; bring back incentives for mid-scale bioenergy; renewable fuels standard is a key policy issue |
| Coordination | Differing capacity among stakeholders | Better communication across ownership boundaries and support for grant-writing capacity |
| Byproducts and New Markets | Lack of knowledge and interagency communication about the importance of wood | USDA and FS could be working internally within the federal government to communicate the importance of using wood |

## Supporting Details

- Participants shared that they have never seen such a high level of stress in the logging and wood manufacturing sectors.
  - Cost of equipment has skyrocketed.
  - OSB squeezed out sawmills and the transition to cut-to-length changed industry.
  - Producers are innovating and thinking of every way they can to be profitable (examples given: shavings for animal husbandry, pallets and cants, live edge slabs)
- Need for pellet plants, location(s) dependent on export and transportation costs.
- Incentives led to successful mid-scale bioenergy demand.
- Biomass companies will invest depending on the total package offered by states; if coupled with a federal guarantee these packages would be much stronger.
- Hardwood regions lose out to softwood.
- Sustainability verification programs would help market products outside the U.S.
- Underserved communities and under-developed markets need attention (e.g., Tamarack pharmaceuticals, decorative products)
- Better communication between federal, state, private, and tribal partners was emphasized.
- Some manufacturers have grant-writing capacity, some do not.
  - More applications from hardwood industries (to Wood Innovations Grants) were encouraged.
- States vary in terms of infrastructure and market interest.
  - Pennsylvania had strong interest in biomass utilization, much of it international.

- Governor’s action teams have had successes.
- Missouri hasn’t had market expansion in many years, but rather focused on maintenance of existing markets.
- Wisconsin's processing infrastructure is resilient but facing declines in pulpwood consumption. This has caused challenges for landowners to profitably harvest low value/small diameter hardwoods and some softwood species in certain parts of the state, particularly across the former footprint of the idled Wisconsin Rapids paper mill (>1 million tons lost).

- Risk to utilizing low-value wood is the emphasis on solar, wood, and non-biomass energy generation projects.
- USFS role should focus on de-risking investment.
- Does treating acres and harvesting trees fit within the current narrative for the USFS?
- On the facility side, investment tax credits or renewable energy credits are helpful, and wood attract investment.
- Bioeconomy Development Opportunities (BDO Zones) - international investors are really interested in that.
- We must work towards a different view of wood and wood utilization. How we can utilize byproducts for energy. USDA and USFS could be working internally within the federal government to communicate the importance of using wood.
- Could GNA be expanded to allow private companies to participate? For example, private consulting forestry companies assist in marking and monitoring timber sales.
- Concern expressed about Renewable Fuel Standard on feedstocks for biofuels.

## PUERTO RICO AND U.S. VIRGIN ISLANDS SUMMARY

*PR/USVI stakeholders shared that markets and infrastructure for forest products are lacking, and that a critical barrier is kiln drying and storing wood. A key opportunity is emphasizing the story and value-add of local wood and using lower value material in agricultural applications - while also engaging agricultural and tourism sectors.*

| General theme | Concern or Barrier | Potential Solution(s) |
|---|---|---|
| Infrastructure | Critical to dry wood in PR context | Knowledge transfer from other regions working on urban wood utilization and drying courses |
| Developing markets | Traditional industry is under-developed as are local markets | Focus on the 'story' of local wood and value-add products, including ecotourism partnerships |
| Technical expertise | University and Extension support is minimal | Partnerships with other land-grants and/or increase capacity at local Universities in forestry |
| Stakeholder Groups | Key sectors are not organized and represented | Develop associations for landowners, sawyers, and other critical groups |
| Law and Policy | Political and legal barriers to wood procurement from federal and private lands | Address plantation accessibility for existing sawmills; work on legislation that supports harvesting |
| Mass timber | General taboo against wood buildings given hurricane risk | Research Mass Timber applications that can withstand high winds |
| Forestry data | Poor standing volume estimates | Small-scale inventory data needed to inform landowner management plans |
| Cross-sector engagement | Agricultural, Forestry, and Tourism sectors are not strongly partnered | Develop partnerships and projects that connect these critical sectors |

**Supporting Details**

- Markets for trees are lacking.
  - It is cheaper to buy imported wood than build the infrastructure needed for local wood products markets.
  - Needs: Equipment and Knowledge to cut larger logs
- Hurricanes are primary natural hazard, though there are wildfires as well.
  - Most hurricane damage is in the waste stream rather than utilized for wood products.
  - Utility-based harvesting goes to landfills - a policy is needed that restricts what can be landfilled.
- Some Wood Innovations Grants are operating in PR, but more could be done.
- There are 12 small-scale sawmills - all are opportunistic - when wood is available, they will open in Puerto Rico; USVI has one sawmill on St. Croix to process mahogany.
- Humidity issue: it takes 4-5 years to dry wood.
  - Urban wood utilization knowledge could be transferred from Region 5 (CalFire and WIG funded) focusing on drying capacity: 3-day urban wood drying workshop.
  - Could put together a tropical hardwoods drying course including challenges for business owners.
  - Lack of storage facilities for post-dried wood
  - National Institute of Food and Agriculture (NIFA) Renewable Resources Extension Act (RREA) grant to look at solar during kiln for wood
    - Will offer a workshop for building the kiln and drying wood.
- Potential for biochar manufacturers to deal with bamboo and brush from the forest.
  - Need increased education to earn trust that would lead to adoption.
  - Biochar could be a solution for flooding issues on agricultural lands.
- PR wood could be brought to market with a 'story' - emphasizing the defects and cracks as character that connects people to local products.
  - There are local 'pioneers' for telling the story of enhancing local wood value.
  - Research Question: What is the willingness to pay for value-added wood products?
  - Educational component: importance of trees for climate change
- Incorporate into urban wood network through NGOs and arborists.
- Coffee farmers are critical forest stewardship partners.
  - Added value to products.
  - Marketing and Tourism expertise
  - Climate-smart grant in this area
- Forestry knowledge and experience needs to be shared with farmers - often landowners have a mix of forests and farm.

    - Potential for agroforestry focus and agro-ecotourism
    - Connect wood-working workshops with eco-tourism ventures.
- PR residents do not view forests as a source of products.
    - No forestry sector.
    - No college of forestry.
    - No Extension.
    - Some expertise in wood engineering but need more local and technical experts or partnerships with other land grants to increase institutional capacity.
- Artisanal and Industry don't always fit together, but there could be a local community market and an industrial market for PR wood products.
    - Mahogany export market needs a consistent supply and stability.
- When biomass is removed from forest, those which are small diameter material could be sent to local farmers that might be willing to receive it for their operations if it is shredded, thus can be composted at farms.
    - Compost is hard to find, and transportation is expensive.
- Lack of associations for small producers (e.g., farmers and sawyers)
    - Landowners need to be organized and represented.
- Current laws prohibit cutting and it is difficult for landowners.
    - Agency support needed to administer industry (at first)
        - Create a resolution for the senate or house - gather a small group to create a document to present.
    - 80% of forested land is private.
    - Sawmills can't get access to plantations.
        - Road accessibility issues
    - Need to better value standing trees - the estimate for standing volume on private lands is severely lacking.
        - Need small-scale inventory data to inform small landowner management plans.
- Lack of financial support from banks
- Can FEMA support salvage activities?
- Partner with land trusts
- Need more training and capacity-building for younger generation.
- There is a general 'taboo' on wood buildings because of hurricane perceptions.
    - No FHA loan in PR to buy/make a house out of wood.
    - Research Question: Engineered mass timber products that are appropriate for hurricane-susceptible environments.