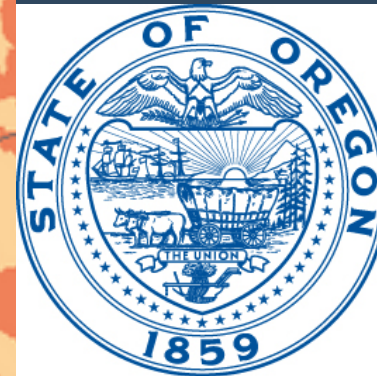



WILDFIRE & BIOENERGY FROM FORESTS



GOVERNOR'S
WILDFIRE
RESPONSE
COUNCIL

A large orange circle on the left side of the slide, partially cut off by the edge.

Topics for Discussion

1. Introduction
 - Personal
 - Oregon Governor's Wildfire Council
 2. Bioenergy & Wildfire
 - Added Dimensions from Wildfire
 3. Urgency Surrounding Wildfire
 4. Additional Public Values
 5. Additional Challenges
 6. Conclusions
- 
- A series of four yellow curved dashes in the bottom right corner, arranged in a diagonal line from bottom-left to top-right.

Professional Background

Bioenergy-to-Forests – Operations	<ul style="list-style-type: none">• Forest Capital Partners (Co-President)• Other TIMO, Industry
Bioenergy-to-Forests – Policy	<ul style="list-style-type: none">• National Alliance of Forest Owners (founding chair)• State Associations
Bioenergy-to-Forests – Innovation	<ul style="list-style-type: none">• Yale Carbon Containment Lab (Senior Advisor)• Energy Futures Initiative (Advisor)
Climate Change – Policy	<ul style="list-style-type: none">• Oregon Global Warming Commission (charter member)
Sustainability, Conservation Finance	<ul style="list-style-type: none">• Sustainable Forestry Initiative (board member)• The Nature Conservancy (collaborator, advisor)• US Forest Capital (founder)
Wildfire	<ul style="list-style-type: none">• Oregon Wildfire Council (founding chair)• Oregon Department of Forestry (advisor)

Governor's Wildfire Response Council



Oregon Governor's Wildfire Response Council

Timeline	2019-2021
Mission	Modernize Systems Amid Unfolding Crisis
Premise	<ul style="list-style-type: none">• Frontlines of Climate Change• Societal Challenge, Social Justice
Composition	Highly Diverse
Contributors	120-150
Best Available Science	<ul style="list-style-type: none">• National Cohesive Wildland Management Strategy• Comprehensive Costs of Wildfire• Quantitative Risk Assessment
Key Finding	<ul style="list-style-type: none">• Systems Built for Another Era• Comprehensive Change Needed
Deliverable	<ul style="list-style-type: none">• 37 Recommendations• Basis for First Comprehensive Wildfire Strategy



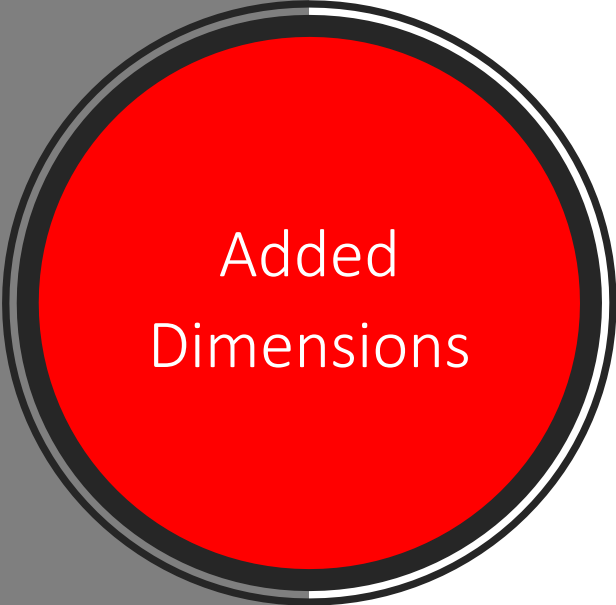
CAN BIOENERGY HELP ADDRESS THE WILDFIRE CRISIS?

Key Takeaways: Wildfire & Bioenergy

New Dimensions	<ul style="list-style-type: none">• Core Biofuels Issues Still Apply to Wildfire• Added Dimensions as Well
Additional Public Values	<i>Probably</i> very significant
Additional Challenges	<i>Definitely</i> very significant
Solutions Needed	Crisis Unfolding

Core Issues
Still Apply

		Bioenergy General	Bioenergy & Wildfire Mitigation
Policy Thesis	Clean Energy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Land Use Economics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Job Creation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Policy Concerns	Sustainability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Social Justice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



		Bioenergy General	Bioenergy & Wildfire Mitigation
Policy Thesis	Avoided Emissions (smoke, decay)		<input checked="" type="checkbox"/>
	Broader Values Environment		<input checked="" type="checkbox"/>
	Broader Values Social		<input checked="" type="checkbox"/>
	Broader Values Economic		<input checked="" type="checkbox"/>
Policy Concerns	Public-private-partnership		<input checked="" type="checkbox"/>
Context	Urgency Wood Waste Funding		<input checked="" type="checkbox"/>

Added Dimensions

1. Urgency surrounding wildfire, landscape treatments, wood waste
2. Thesis: expanded public values
3. Challenges

Added Dimensions

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An Unfolding Crisis

- Wildfire is the Front Line of Climate Change
 - Drought, Heat, Forest Mortality
 - Extended Fire Seasons
 - Social Justice
- Record Fire Seasons
- Catastrophic Damage to Communities, Environment
- Contributing Factors Worsening



Oregon Wildfire Council



Critical Backlog	5.6 million acres
Cost Estimate	\$4 billion
Increase Required	2-3x (20-year completion) 4-6x (10-year completion)

National Perspective



Critical Backlog	50 million <i>additional</i> acres over baseline
Cost Estimate	\$50 billion <i>additional</i>
Time Horizon	10 years

Confronting the Wildfire Crisis, USDA January 2022



Fate of Wood Waste?

- **Stack & Burn**
 - Fire risk
 - Emissions from smoke, decomposition
 - Opportunity cost: job creation
- **Burial, Storage**
 - Temporary
 - Permanent
- **Innovative Wood Products**
 - Building Materials
 - Mass Timber
 - Electricity
 - Transportation Fuels



Sustainable Funding Model?

- **Public**
 - Federal, State, Other
- **Private**
 - Innovative Wood Products
 - Property Owners, Insurance
- **“Conservation Finance” & Other Mitigation Buyers**
 - Carbon
 - Water
 - Health

Added Dimensions

1. Urgency surrounding wildfire, landscape treatments, wood waste
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Comprehensive Costs of Wildfire

Short-Term Expenses

The diagram consists of three horizontal bars, each with a colored rounded rectangle on the left and a corresponding colored outline on the right. The top bar is orange, the middle bar is gray, and the bottom bar is yellow. Each bar is connected to a vertical line on the left, which then branches into a horizontal line that forms the top and bottom of the right-hand outline.

Long-Term Damage

Other Human Loss

Short-Term Expenses

Firefighting

Home & Property

Aid & Evacuation Relief

Road & Landscape Recovery

Long-Term Damage

Climate

- Carbon emissions
- Forest fertility, carbon sequestration potential

Environment

- Unnatural Fire Impacts to Ecosystems, Habitat
- Water

Economy

- Local Business Disruption
- Natural Resources
- Property Values
- Tourism & Recreation
- Insurance

Social

- Tribal Resources
- Power Outages
- Public Finances
- Infrastructure
- Social Justice

Other Human Loss

Loss of Life

Health

- Respiratory
- Mental

Community Vitality

- Access to Outdoors

Disruption

- Community Rebuilding
- Family Dislocation
- Job Loss

Comprehensive Costs of Wildfire

Long-term Damage far Outweighs
Short-Term Expenses

- Studies Suggest 2-50x, Average 11x
- Excludes “Other Human Loss”

California Single Fire Season \$100+
billion

Forecasted Damage?

Mitigation Potential?

- Landscape Treatments
- Bioenergy

Added Dimensions

1. Urgency surrounding wildfire, landscape treatments, wood waste
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3. Challenges

Challenges

Wood Waste Costs

- Production, Freight

Competing Markets for Wood Waste

Wood Waste Revenues

- Monetizing Avoided Costs of Wildfire (“Carbon-Plus”)

Public-Private Partnership

Monetizing Avoided Costs of Wildfire

Forecasting Costs

Establishing Additionality from Landscape
Treatments

- Wildfire Response from Treatments

Cultivating Buyers

- Carbon
- Water, Energy, Other Infrastructure
- Health

Targeted v General Public Funding?

Public- Private- Partnership

Dominance of Public Ownership in Western US

Federal Forests & Renewable Energy Standards

Public Funding

Organizational Systems

Shared Governance

- Consensus on Outcomes
- Legal Authorities

Leadership Role of Large Landowners in Cultivating Wood Markets

- Including Public Agencies

CONCLUSIONS



A Crisis Demanding Action

- Unfolding Wildfire Policies will Generate Significant Wood Waste
 - Needs: Disposal, Funding
- Wildfire & Climate Policies Must be Integrated (e.g., CA “Getting to Neutral”)
 - Biofuels Should Be Prioritized as Potential Wood Waste Markets
- Potential Benefits and Challenges Create Significant Body of Work
 - Science, Economics, Policy, Investment, Public Awareness
- Urgency Demands Multi-Sector Leadership