

## California's Forest Crisis and Opportunity

*Submitted November 2018*

California has about 33 million acres of fire prone forestlands. Last year over one million acres burned in over 6,000 discrete fires ranging from one to 200,000 acres. This year's fire season is clearly on pace to be worse. That we face a growing crisis is now impossible to ignore — as of August 2018, six of the 20 most expensive fires in California history have happened in the last nine months and the 2018 fire season is just underway. In July, the first month of the state fiscal year, the State has already spent one quarter of their emergency firefighting budget for the entire year.<sup>1</sup>

This crisis is the result of over 100 years of fire suppression, the adoption of dense, commercial plantation forestry, combined with the increasingly obvious impacts of climate change. Today there are three to four times as many trees per acre in a typical California forest than there were in 1910, and they are smaller. Restoring ecological health to overstressed woodlands will require removing a significant portion of the smaller diameter trees on these lands. Opening up the forest cover will reduce the threat of out of control wildfire and allow for the re-introduction of natural low intensity fire back into the system.

***What Needs to be Done.*** The tools and the science of forest management needed to restore California forests already exist and represent understood practices that both forest managers and most environmentalists agree on. Improved Forest Management, mainly in the form of thinning forests of ladder fuel and small diameter biomass that low intensity fire would have removed in the past, provides a myriad of benefits beyond reducing catastrophic fire risk, including:

- Making forests more resilient to disease and other impacts of climate change, including improving overall carbon retention
- Improving watershed hydrology, downstream water quality/quantity
- Improving wildlife habitat
- Helping rural communities by generating economic activity.

Until now, only small demonstration forest restoration projects have been undertaken, ranging from under a hundred to several thousand acres of forest treatment. At that rate, much or all of the State's High Hazard Zone (HHZ) areas will burn cataclysmically before any significant restoration can be achieved. To have a real impact, we must move towards 500,000 of state-

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<sup>1</sup> <https://www.cnbc.com/2018/07/30/california-spends-one-fourth-of-annual-emergency-fire-budget-in-july.html>

managed and private lands and nearly 1,000,000 acres if we include federal lands being properly thinned annually — and this level must be sustained for decades. Present public spending on forest management/fire reduction, even with the recent increases, is insufficient and that spending is structured such that long-term, market-driven solutions are not viable.

Given the immense volume of small diameter wood that needs to be removed from California's forests (material that today is burned in piles in the forest or chipped and used at biomass energy plants) and the rate at which this needs to happen, **developing self-sustaining markets for products produced from this material is critical to solving California's forest crisis.** This requires the creation of a wood products market of sufficient size to drive landscape scale forest restoration.

### **Catalyzing Demand for High Hazard Forest Zone Material - Policy Recommendations**

**Promote Utilization** - Kickstarting market transformations requires fully committed lead customers or policy changes that assure initial market uptake. California has repeatedly used this strategy to jumpstart transformations like solar panels, electric cars and LEDs. An immediate promising technology with potential to scale dramatically is engineered wood products such as Cross Laminated Timber (CLT) for the construction market. Were the State to set a goal that some percentage of future construction of buildings must utilize CLT, a broader market for such material could quickly emerge. State agencies, or the UC/CSU systems, could lead this effort. Other initiatives that promote these markets should include broad public information campaigns like Flex Your Power or financial awards for the first tall buildings using CLT or other high profile recognition of such early adoptions of engineered wood technologies.

**Expand Regulatory Scope to Allow for New Opportunities** - The inverse corollary to promoting utilization are situations where current regulations and policy actively lock in incumbency and/or block new alternatives. Again, consider the example of cross-laminated timber (CLT). Despite the material often having equal or better performance characteristics than construction steel and a far more benign environmental footprint, CLT is currently blocked from a substantial part of the construction market due to building codes (Title 24) and related fire codes that force CLT projects through additional and time consuming testing and permitting. Overall, a regulatory approach should be adopted that promotes results-oriented outcomes rather than mandating specific solutions.

**Enable Product Differentiation through Certification** - Consumer and corporate choice has been shown to be a powerful force for change across a variety of markets. Developing a verifiable certification standard allowing consumers to pro-actively choose products that are

sourced from California HHZ lands as part of a verifiable process that truly enables forest restoration would be an enabling policy. Virtually all of the conventional products currently generated from small diameter wood - such as vineyard posts, firewood, landscaping materials and the like - all face competition from other markets. A labeling/certification system, one that could among other things allow for incorporation of such material into the LEED credit system, would enable Californians to support a key California environmental issue through their purchasing, creating ongoing demand for the small diameter biomass that is central to enhanced forest management.

An effective certification program should be established by a neutral third party that could mediate amongst all interested parties and help define a standard that is effective and accelerates the utilization of small diameter material while also assuring that the material is the result of forest management practices that truly restore the forest ecosystem as desired. The state, and a new governor, can and should encourage the development of such a standard and participate in the process of establishing it.

**Enact Pro-Active Taxation and Financial Support Policies** - Finally, there are a number of ways that fiscal support and tax policy could be used to make wood-based products more cost-competitive. In particular, this could involve incorporating “carbon accounting” into building materials which would benefit locally produced wood over imported building materials. Given the carbon intensity of steel and concrete in particular, this could result in significant cost benefits for certified local material. In addition there are many existing State programs supporting renewable energy and energy efficiency that could quite easily be adapted in order to promote engineered wood and other programs to support utilization.

Longer term, the development of agnostic subsidy programs that are triggered when the wood is removed from the forest, rather than at the point of combustion or some other specific use, are particularly important as they would equally benefit any potential higher value uses of the certified material. This “level playing field” would spur market development generally, be it for engineered wood in the construction sector, advanced biofuels or other potential innovations that are yet to be imagined.

## **Immediate Administration Actions**

The next governor can take a number of immediate actions that could spur forward the creation of markets for small diameter wood, not waiting for the much longer legislative process.

### **Promote Utilization:**

1. *Declare California a “Wood First” State, directing all state agencies to look to wood and wood utilization products wherever possible.*
2. *Declare that high profile state-driven construction projects should leverage innovative wood products, for example:*
  - a. *The UC and CSU System should construct student housing with mass timber whenever feasible.*
  - b. *The City of Los Angeles should commit to use the 2028 Summer Olympics to showcase Olympic Village buildings and housing constructed from mass timber and other innovative wood products and commits the state to providing financial and other incentives.*
  - c. *Affordable housing projects throughout the state should utilize mass timber and other innovative wood projects*

*A certification standard, discussed above, would enable such programs.*

3. *Direct State agencies to begin a social media campaign (or publicity campaign) to promote holistic use of CA Forests and highlight the critical role headwater forests management plays in supporting water quality and quantity to the State’s more populated urban areas. This could include:*
  - *Supporting or encouraging Art and Architecture competitions for schools at both the University and High School levels*
  - *Funding competitions highlighting architectural or wood product solutions (along the lines of the LAGI competition for renewable energy).*
  - *Encouraging Middle and High Schools to build or expand their climate curriculum to include a focus on holistic forest management and natural fire*
  - *Encourage CA Park system to expand its interpretive programs on bringing fire back into the system and the value of holistic forest management*

4. *Direct the Secretary for the California Natural Resources to consult with representatives from other agencies, other interested stakeholders, and members of the public, and publish a study within twelve months that identifies methodologies and criteria to incentivize the demand for innovative forest products and mass timber production, milling and manufacturing in California.*

*Rationale: California transformed the solar energy industry when the legislature enacted the California Solar Initiative which successfully attracted private capital investment and significantly drove down the cost of PV panels. There are many parallels to the where the renewable energy industry was 20 years ago and where the innovative forest products industry is today. Incentives (tax credits, rebates, education programs, training, etc.) on the use of innovative wood products could be used effectively to increase demand and attract private sector investment.*

5. *Direct the Resources Agency in coordination with the Port of Oakland to Study Opportunities for Enhancing Wood Pellet Feasibility as recommended in the [California Assessment of Wood Business Innovation Opportunities and Markets \(CAWBIOM\) Phase 2 report](#)*

*There are no pulp mills operating in California to purchase the chips, and there is only one particleboard plant operating in the state to purchase sawdust and shavings. Thus, the clean fiber (non-bark) portion of mill by-product production would appear to represent a stable, relatively low cost fiber resource that could be utilized for manufacturing wood pellets.*

*It is estimated that nearly 70 percent of the total cost of the delivered pellet can be attributed to the cost of fiber and transportation and logistics. As described previously, if forest management processes accelerate, California will have a long-term supply of low cost fiber. However, California does not currently have port infrastructure to efficiently and cost effectively handle bulk pellet exports. This fact precluded pellets from being considered for detailed financial analysis.*

*There are only two ports along the entire North American West Coast with infrastructure specifically designed for efficient and cost effect pellet handling; both are in British Columbia and both ship pellets primarily to Europe through the Panama Canal with much smaller amounts being shipped to Asia. These ports have the following features that are required for pellet handling: rail/truck access, covered receiving area, automated discharge from trucks/rail, receiving systems designed to limit breakage and dust, fire protection, covered/enclosed storage, storage areas with dust control, aeration*

*systems, fire detection and fire control, special loading and unloading equipment designed to minimize breakage, and specially designed loaders to minimize ship repositioning. The State of California should investigate use of public funds to bring a port in the state up to such standards.*

- 6. Develop policy incentives to catalyze the growth of the biochar industry, specifically encouraging the use of small diameter trees, dead trees, and other hazardous biomass from the forest. Biochar could become an effective use of forest biomass given its ability to accelerate the restoration of soil, one of the most effective carbon sinks on earth when in its original, living state. Biochar also increases the water storage capabilities of soil, increases crop yields, reduces/eliminates the need for fertilizer inputs, and reduces emissions of nitrous oxide, a potent greenhouse gas, among other benefits. A growing biochar would essentially store carbon taken from CA forests in the ground for thousands of years and restore CA's largest carbon sequestration machine: our working lands.*
- 7. Incorporate HHZ-sourced (or certified once certification is established) wood materials into the State's Buy Clean Program.*
- 8. Direct the Governor's Office of Business Development (GoBiz) to Conduct Comprehensive Demand-Side Research.*
- 9. Direct the Contracts & Procurement Department to Conduct a CLT Opportunities Analysis*
- 10. Offer a \$1m One-Time Cash Prize for the First City/County to Permit a Tall CLT Building*

### **Expand Regulatory Scope to Allow for New Opportunities**

- 1. Encourage the Office of the State Fire Marshal, the Department of Housing and Community Development, the Division of State Architect, the California Building Standards Commission, and the Office of Statewide Health Planning and Development to review the approved Tall Wood Building Proposal of the International Code Council's Ad Hoc Committee on Tall Wood Buildings and consider proposing its adoption into the California Building Standards Code in the subsequent intervening code cycle.*

2. Direct GSA to update its [2016 Guiding Principles Checklist for New Construction and Major Modernization Projects](#) to reflect the benefit of building with materials that have lower carbon content and lower embodied energy.

### **Establish Certification**

1. Direct CARB to Expand Forest and Biomass Protocols for Forest Restoration. The Governor can also direct CARB to expand forest and biomass carbon market protocols to incorporate Forest Restoration and recognize the carbon retention value of such practices.

*From the report:*

*Under AB 32 implementation, the California Air Resources Board is tasked with developing Protocols under which various GHG reduction efforts can be evaluated and offset credits assigned. The work of CARB in this arena should be expanded to include Protocols for forest activities and infrastructure expansions designed to address the need for large scale forest restoration in California, including the need to develop uses for small timber, dead and burned trees, and the byproducts of forest thinning.*

*The need to limit future wildfires, restore forest health and function, and prevent open burning or decay of forest by-products have quantifiable GHG reduction benefits that can be analyzed by CARB. The recovery and use of traditional non-merchantable material is very expensive, however, and so the long term sequestration of the carbon in products or the use of the material to offset fossil fuel use should be encouraged by Protocol through the granting of scientifically determined saleable offset credits. [Recently passed SB 901 appears to legislate this requirement.]*

### **Enact Pro-Active Taxation and Financial Support Policies**

1. Direct California Building Standards Commission to Design a “Wood First” Incentive for State-Permitted Buildings.
2. Eligible innovative forest products and mass timber harvesting, milling, and manufacturing operations shall receive priority in parity with the priorities set forth in Section 23689(c)(1) of the Revenue and Taxations Code for the Cal Competes tax credit established pursuant to the California Competes Tax Credit Act of 2014.

3. *Eligible innovative forest products and mass timber harvesting, milling, and manufacturing operations qualify as an eligible “project” for purposes of Section 26011.8 of the California Public Resources Code, within in the California Alternative Energy and Advanced Transportation Financing Authority Act of 1994.*
4. *Eligible mass timber products shall be included as “eligible materials” under Section 3501(c) of the Public Contract Code, within the Buy Clean California Act of 2017.*
5. *Use the (overlooked) review and amendment authority granted to the Governor before formally adopting the California Energy Commission’s Integrated Policy Report as the official State Energy Policy document to guide decisions by the CEC, CPUC and CAISO. Specifically, make clear that the Electric Program Investment Charge (EPIC) funds supporting public interest research can and should be used by the CPUC, CEC and IOUs to support research associated with precision forestry technologies and practices which ultimately benefit the electricity users by helping make the electric grid more resilient to wildfires.*  
  
*EPIC funds can and should be used for research into mass timber and innovative wood products that improve building energy performance under Title 24 and that funds can be used to study the seismic protection potential of new mass timber buildings.*

### **Other Related Actions**

1. Issue an Emergency Order that declares the ongoing wildfire crisis, exacerbated by climate change, requires rapid research at large enough scale (e.g 500k acres) to prove out the most effective restoration processes. The project would leverage existing ecologically based and scientifically proven models, executed at smaller scale (15k acres) for forest restoration developed by the Berkeley Sagehen Field Station’s Experimental Forest, The Nature Conservancy, Sierra Nevada Conservancy, and the US Forest Service, among other collaborators. In finalizing an order like this, the governor would consider which rules and regulations may require a waiver or suspension in order to proceed expeditiously for rapid learning that can be applied across the state before we lose millions more acres of forests. A potential 500k acre plot has already been determined by the coalition led by Berkeley.
2. Establish a Center of Excellence for advancing precision forestry practices and technology with support from the leaders in the high-tech industry, forestry agencies and universities.



3. Direct CARB to Quantify the Benefits of Controlled Forest Waste Burning as recommended in the [California Assessment of Wood Business Innovation Opportunities and Markets \(CAWBIOM\) Phase 2 report](#)

From the report:

California's strict air quality regulations, when aggressively applied, can greatly increase a forest products conversion facility's capital and operating cost and threaten the economic viability of small biomass power or combined heat and power facilities. However, if such facilities were to be installed, regional air quality might actually be improved as it could lead to less open burning of forest wastes and a lower chance of forest wildfires, which have staggering emission levels of pollutants. For example, controlled combustion of forest wastes in a boiler versus open burning typically results in a 95 percent or more reduction in the criteria pollutants of concern in California (PM, CO, VOC's, NO<sub>x</sub>).

The report above recommends that the California Air Resources Board (CARB) recognize the air quality benefits of forest waste combustion under controlled conditions versus open burning of the same materials. CARB should petition EPA to allow consideration of regional air quality benefits and avoided open burning cost in the permitting process for biomass power and CHP facilities. Once approved, CARB should distribute such authority to local permitting agencies in California.

The goal is protection of air quality in the vicinity of the project without overburdening the plant with Lowest Achievable Emission Rate (LAER) technology or operating protocols that would cause the project to be abandoned with the attendant loss of potential regional air quality improvements.

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