

Comments for the Northwest Forest Plan Amendment Scoping process

**Issue:** Community and Economic Considerations

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### Scoping Statement:

***Community and Economic Considerations: Aligning timber and non-timber product supply strategies with community needs, environmental justice principles, and Tribal collaboration, reflecting the socio-economic dynamics influenced by forest management.***

Thank you for the opportunity to comment.

It will be hard to discuss or evaluate DEIS Alternatives of socioeconomic effects if modelling is only built around the effects of timber production. Land is a productive asset. How Forest Service land is used often precludes other uses. An economic impacts analysis must discuss economic tradeoffs as they ripple through an economy or foreclose on alternative economic activity. A dollar spent on Forest Service logs may very well be a dollar not spent on logs from private landowners. A landscape dedicated to timber production is arguably a landscape highly foreclosed to alternative economic uses such as camping, hiking and non-timber forest products. Businesses associated with non-timber land use may lose income and jobs or may never exist. Amenities associated with non-timber land use have positive economic effects in nearby communities which, in the case of the Northwest Forest Plan, are arguably significant.

### Avoid Bulk

We urge the Forest Service to not make the mistake of presenting substance through sheer bulk of analysis. The Code of Federal Regulation Title 40, Chapter V, Sub Chapter, Part 1502 at 1502.15 states *“Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose*

descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.”

## IMPLAN

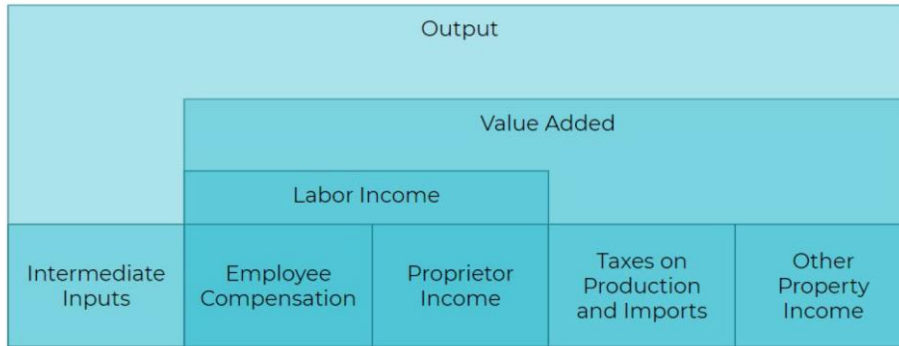
If the Forest Service uses an IMPLAN analysis do not make the same mistakes the National Marine Fisheries Service did in their DEIS for an Oregon State Forest HCP. We would be happy to provide the Forest Service comments by IMPLAN experts that identified shortcomings in the referenced DEIS.

If IMPLAN is used to model counterfactual DEIS alternatives, then direct, indirect and induced jobs and income need to be compared to the total relevant economy.

Please do not use an IMPLAN analysis report “output” values. The category termed **Output** is an artifact of the IMPLAN software analysis and IMPLAN experts **strongly advise against using the Output metric in public representations**. Such advice is similar to a caution stated in a paper published in the *Journal of Forestry* discussing use and misuse of IMPLAN in forest industry modelling. See Henderson, et al. Standard Procedures and Methods for Economic Impact and Contribution Analysis in the Forest Products Sector. *Journal of Forestry*. March, 2017.

The Henderson et al paper states “*Total output, as calculated by IMPLAN, is not the same thing as GDP. GDP only considers the final cost of goods and services (the total of four value-added components: employee compensation, proprietor income, indirect business taxes, and other property type income) and excludes the value of intermediate goods to avoid double counting. IMPLAN’s measure of total value added, not total output, is the most comparable measure of GDP or GSP.....*” And “*Analysts should be aware of this very important difference, and when both output and value-added are reported, each should be clearly distinguished. However, output is a simpler concept than value added, and because it reports much larger values, it is often requested by forest industry advocates for use in lobbying legislatures.*”

Figure 1. Components of Output, Value Added, and Labor Income



Source: IMPLAN Group 2019b

Avoid the use of IMPLAN's off-the-shelf sawmill metrics where national milling coefficients are used. Because Oregon is the nation's leading producer of lumber, we hardly believe Oregon sawmills match national metrics. Log utilization and recovery metrics by sawmills in Oregon are known. The fact is that the vast majority of Oregon's log production is processed in efficient, low cost and automated sawmills. We recommend the Forest Service document Oregon and national sawmill metrics and justify this aspect of the IMPLAN analysis.

We recommend the Forest Service review two journal articles, the aforementioned Henderson et al paper and a 2007 paper by Watson et al on best practices of IMPLAN analysis. Henderson, et al. **Standard Procedures and Methods for Economic Impact and Contribution Analysis in the Forest Products Sector**. Journal of Forestry. March, 2017 and WATSON, P., J. WILSON, D. THILMANY, AND S. WINTER. 2007. **Determining economic contributions and impacts: What is the difference and why do we care**. *Journal of Regional Analysis and Policy* 37(2): 140–146.

## Forest timber production simulations

### The **Objective Function**

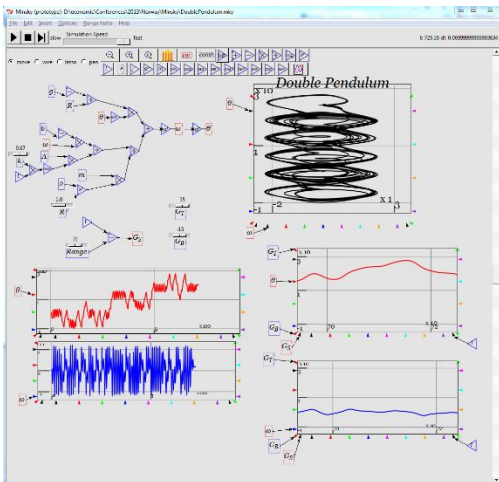
We ask the Forest Service to discuss any forest management model's Objective Function of net present value (NPV). Why is a specific interest rate is chosen and not another rate or zero percent? On a deeper level, economic optimization is almost always based on exchange value of transactions in markets. We find such a singular approach to value and meaning contrary to multiple cultures present in Oregon. **The DEIS must discuss how economic optimization denies all other cultural perspectives outside of market exchange transactions.**

## Analysis Using Linear Programming

We ask the Forest Service to discuss the limitations of linear programming related to future forest conditions and socioeconomic effects. Arguably an uncertain future due to stressed planetary ecological limits, the certainty of climate impacts and lessons learned from the recent 2008 financial collapse, **all suggest that linear projections fail to capture a dynamic future**. As a general rule, most human and natural systems are nonlinear (i.e. the [Lotka–Volterra equations](#) in biology). It is important to distinguish between reasonable estimates of future conditions and fantastical speculation draped in technical analyses.

## Dynamic Economic Modelling

It would be good if the Forest Service used dynamic systems modeling for DEIS economic analysis. We recommend Minsky dynamic modelling software for economic analysis. In Minsky, models are defined using flowcharts on a drawing canvas similar to Matlab's Simulink, Vensim, Stella, etc. Minsky's unique feature is the "Godley Table", which uses double entry bookkeeping to generate stock-flow consistent models of financial flows.



See <https://sourceforge.net/projects/minsky/> for more information.

## Impacts of climate warming

Available literature based on Forest Service Climate-FVS modelling suggests substantial changes in coastal Oregon growing conditions. We cite the paper **Projected future suitable habitat and productivity of Douglas-fir in western North America** authored by [Aaron R. Weiskittel](#); [Nicholas L. Crookston](#); [Gerald E. Rehfeldt](#) in *Schweizerische Zeitschrift für Forstwesen* (2012) 163 (3): 70–78. Available at: <https://doi.org/10.3188/szf.2012.0070>

The authors state: “*Douglas-fir (Pseudotsuga menziesii [Mirb.] Franco) is one of the most common and commercially important species in western North America. The species can occupy a range of habitats, is long-lived (up to 500 years), and highly productive. However, the future of Douglas-fir in western North America is highly uncertain due to the expected changes in climate conditions. This analysis presents a summary of work that utilizes an extensive network of inventory plots to project potential future changes in Douglas-fir habitat and productivity. By 2090, the amount of potential Douglas-fir habitat is projected to change little in terms of area (-4%). However, the habitat is expected to shift from coastal areas of North America to the interior. Corresponding changes in productivity are also projected as coastal areas experience reductions, while interior areas experience modest increases in productivity. Overall, the analysis indicates a sensitivity of Douglas-fir to climate and suggests that significant changes in North America are to be expected under climate change.*”

As indicated by Weiskittel, et al, **suitable habitat for Douglas fir and the tree’s productivity will likely decline in Oregon’s coastal region.** The climate impacts to Western Hemlock are even more dramatic. The Moscow, Idaho based Forestry Sciences Laboratory of the USDA Forest Service, Rocky Mountain Research Station has modeled changes in site viability for numerous tree species under expected climate change. **One mapped example, based on one of three climate models, demonstrates the potential dramatic shift in geographic suitability for Western hemlock.**

We urge the Forest Service to assess and incorporate the extensive data and literature on climate impacts to forests available at <https://charcoal2.cnre.vt.edu/climate/> : **Research on Forest Climate Change: Predicted Effects of Global Warming on Forests and Plant Climate Relationships in Western North America and Mexico.**

A brief review of the mapped climate impacts to PNW commercial tree species and an extensive literature is available at <https://charcoal2.cnre.vt.edu//climate/publications.php>

## The social value of an additional metric ton of CO2 sequestration

The Interagency Working Group (IWG) on Social Cost of Greenhouse Gases, United States government February 2021 provides the following:

**Table ES-1: Social Cost of CO<sub>2</sub>, 2020 – 2050 (in 2020 dollars per metric ton of CO<sub>2</sub>)<sup>3</sup>**

Emissions Year	Discount Rate and Statistic			
	5% Average	3% Average	2.5% Average	3% 95 <sup>th</sup> Percentile
2020	14	51	76	152
2025	17	56	83	169
2030	19	62	89	187
2035	22	67	96	206
2040	25	73	103	225
2045	28	79	110	242
2050	32	85	116	260

The IWG has this to say regarding Table ES-1 “Consistent with the guidance in E.O. 13990 for the IWG to ensure that the SC-GHG reflect the interests of future generations, the latest scientific and economic understanding of discount rates discussed in this TSD, and the recommendation from OMB’s Circular A-4 to include sensitivity analysis with lower discount rates when a rule has important intergenerational benefits or costs, agencies may consider conducting additional sensitivity analysis using discount rates below 2.5 percent. Furthermore, the IAMs used to produce these interim estimates do not include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature. For these same impacts, the science underlying their “damage functions” – i.e., the core parts of the IAMs that map global mean temperature changes and other physical impacts of climate change into economic (both market and nonmarket) damages – lags behind the most recent research. Likewise, the assumptions regarding equilibrium climate sensitivity and socioeconomic and emissions scenarios used as inputs to the model runs in this TSD will need to be updated. It is the IWG’s judgment that, taken together, these limitations suggest that the range of four interim SC-GHG estimates presented in this TSD likely underestimate societal damages from GHG emissions.”

When modelling climate related issues, the above passage suggests the Forest Service should use a much lower discount rate than 3% (“when a rule has important intergenerational benefits or costs, agencies may consider conducting additional sensitivity analysis using discount rates below 2.5 percent.”)

A current carbon market value estimate out of the University of Chicago suggests an immediate revision of the social cost of carbon to \$125. We quote: “This paper outlines a

*two-step process to return the United States government's Social Cost of Carbon (SCC) to the frontier of economics and climate science. The first step is to implement the original 2009-2010 Interagency Working Group (IWG) framework using a discount rate of 2%. This can be done immediately and will result in an SCC for 2020 of \$125. The second step is to reconvene a new IWG tasked with comprehensively updating the SCC over the course of several months that would involve the integration of multiple recent advances in economics and science. We detail these advances here and provide recommendations on their integration into a new SCC estimation framework."*

See: <https://ssrn.com/abstract=3764255>

And: <https://impactlab.org/research/updating-the-united-states-governments-social-cost-of-carbon/>

The DEIS must determine future values based on a discount rate significantly below 2.5% and state a substantially higher social value of carbon using a schedule of values over the course of an assumed planning period.