

6 February 2017

**TO: Oregon Department of Forestry  
2600 State St  
Salem, Oregon 97310**

**FROM: Ernie Niemi**

**Attn: STREAM RULES**

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Regarding the proposed rulemaking: Expanding water protection classification and protection rules to include small and medium salmon, steelhead and bull trout streams:

I respectfully request that the Oregon Board of Forestry delay decision-making on the proposed rule until it has corrected the debilitating deficiencies in its report on the rule's economic impacts. These deficiencies include ignoring the positive economic impacts of increased protection for riparian shade and exaggerating the negative impacts. The deficiencies are so extreme that the report totally fails to satisfy the Board's obligation to provide the public with a comprehensive analysis of the economic impact of the proposed rule.

The deficiencies in the Board's report also erode confidence in the process that generated the proposed rule. In the public meeting in Springfield on the proposed rule, ODF staff said that the group that developed the proposed rule considered alternatives that would provide more or less protection for riparian shade and selected among them by balancing the benefits against the costs. Moreover, I understood them to say that ODF staff provided the group with the information it used to complete this balancing of the economic benefits and costs. If this information reflected the same deficiencies present in the Board's report, then this process was biased and produced a sub-optimal proposed rule that will produce too little riparian shade. I request that the Board re-examine the process and, if it finds such bias, that it re-initiate the process in an unbiased manner.

## I. Summary

The Board must provide the public with a comprehensive analysis of the economic impacts. This requirement comes from ORS 527.714(7), which states [bold emphasis added]:

“...the board shall, prior to the close of the public comment period, prepare and make available to the public **a comprehensive analysis of the economic impact of the proposed rule.**”

On January 4, 2017, Brandon R. Kaetzel, ODF's Principal Forest Economist, submitted to the Board a report that purports to meet the requirements of ORS 527.714(7).<sup>1</sup> ODF has subsequently distributed the report to the public on behalf of the Board and described it as the

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<sup>1</sup> Kaetzel, Brandon R. 2017. *Economic Analysis to Satisfy ORS 527.714(7)*. January 4.

Board's response to the obligation of ORS 527.714(7). Mr. Kaetzel's report, however, does not provide a comprehensive analysis of the economic impact of the proposed rule. It does not even come close. Instead, it describes only the potential negative economic impacts: reduced timber production, economic contraction, lost jobs, lower incomes, and shrinkage in governmental revenue. Moreover, it exaggerates these negative impacts.

Mr. Kaetzel totally overlooked the potential positive economic impacts of the proposed improvements in streamside protections. Most important, he fails to describe impacts associated with the proposed rule's impacts on the value of:

- Water quantity.
- Water quality.
- Biodiversity and sensitive species.
- Recreation.
- Aesthetics.
- Traffic.
- Air quality.
- Carbon storage.

He also ignored the positive impacts of reduced logging on jobs, incomes and economic output.

Note that uncertainty about the rule's potential positive economic impacts is no excuse for ignoring them. Unless the Board can say conclusively that there would be zero positive impacts, then it should describe the expectation that they likely will materialize.

Mr. Kaetzel compounded these errors and bias with systemic errors and bias in the analysis he does include in the report. He does so by using an analytical framework that:

1. Overestimates the value of lost log production.
2. Overestimates the negative impacts on jobs, income, and output.

The scope of these errors is stunning. The report violates widely accepted standards of professional practice applicable to an analysis of the comprehensive economic impacts of changes in forest management. It ignores a large, well-known body of data and research regarding the positive economic impacts of reductions in logging that accompany resource-conservation efforts. Had Mr. Kaetzel conducted an analysis that applied these standards and utilized all the relevant information, he likely would have reported that the positive economic impacts of the proposed rule outweigh the negative impacts.

If the Board had used this information, it likely would have expanded the scope and intensity of restrictions on logging in streamside zones.

In sum, the Board is distributing to the public a report that totally fails to satisfy its statutory obligation to make available a comprehensive analysis of the economic impact of the proposed rule. It points down, when reality points up. To correct this deficiency, the Board should withdraw Mr. Kaetzel's report and prepare a replacement that fully satisfies the obligation. Until a satisfactory replacement report is available, the Board should suspend decision-making regarding the proposed rule change. The Board also should re-examine the process that produced the proposed rule and, if it finds that similar deficiencies biased the process, it should correct the bias and re-initiate the process.

## II. The Board’s Report Fails to Describe the Positive Economic Impacts of the Proposed Rule Change

ORS 527.714(7) identifies four potential economic impacts that the Board’s “comprehensive analysis” must address:

- (a) An estimate of the potential change in timber harvest as a result of the rule;
- (b) An estimate of the overall statewide economic impact, including a change in output, employment and income;
- (c) An estimate of the total economic impact on the forest products industry and common school and county forest trust land revenues, both regionally and statewide; and
- (d) Information derived from consultation with potentially affected landowners and timber owners and an assessment of the economic impact of the proposed rule under a wide variety of circumstances, including varying ownership sizes and the geographic location and terrain of a diverse subset of potentially affected forestland parcels.”

The statute makes clear, though, that the “comprehensive analysis...is not limited” to these four impacts. Mr. Kaetzel’s report, however, is limited. It focuses on only these four impacts. Indeed, it focuses solely on timber-related impacts. Thus, its description of item (b) limits its description of “the overall statewide economic impact” to just the change in output, employment, and income associated with anticipated declines in log production from riparian zones.

The report makes no attempt to describe other, non-timber impacts. In doing so, it ignores a large body of data and research that documents the potential positive economic impacts of conservation-based actions that reduce logging. The following paragraphs briefly describe some of these positive impacts, with the expectation that this information can help the Board understand what must be included in a replacement report if it is to fully satisfy the statutory requirement to provide the public with a comprehensive analysis of the economic impact of the proposed rule.

### A. Water quantity

If they remain unlogged, riparian zones likely would increase flows in the region’s rivers and streams and affect the timing of runoff, especially in summer months.<sup>2</sup> The increase would occur as trees filter moisture from fog. Large trees are especially productive because they have greater area on which fog can condense.<sup>3</sup> Studies have found that, within the Bull Run watershed that supplies drinking water for much of the Portland metropolitan area, fog filtering contributed 30 percent of the total precipitation that reached the earth under old-growth trees, and the total precipitation was 25–29 percent higher on lands with old-growth forests than on adjacent lands with young trees in an area that had been logged eleven years earlier.<sup>4</sup> The

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<sup>2</sup> Perry, Timothy D., and Julia A. Jones. 2016. “Summer Streamflow Deficits from Regenerating Douglas-fir Forest in the Pacific Northwest, USA.” <http://onlinelibrary.wiley.com/doi/10.1002/eco.1790/ful>

<sup>3</sup> Franklin, J.F. and T.A. Spies. 1991. “Composition, Function, and Structure of Old-Growth Forests.” In *Wildlife and Vegetation of Unmanaged Douglas-Fir Forests*. Edited by L.F. Ruggiero, K.B. Aubry, A.B. Carey, and M.H. Huff. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

<sup>4</sup> Harr, R.D. 1982. “Fog Drip in the Bull Run Municipal Watershed, Oregon.” *Water Resources Bulletin*. 18(5):785:789.

additional streamflow produced by unlogged forests has economic value: at least \$30 per acre-foot.<sup>5</sup>

## **B. Water quality**

If they remain unlogged, riparian zones would produce not just more water but also water of higher quality than they would if logged. The improvement in water quality would occur as unlogged forests reduce stream sediment, increase the incidence of large woody material in streams, and via other mechanisms.<sup>6</sup> The higher quality water would generate economic benefits for individuals, families, businesses, and communities downstream. One, partial estimate of avoided sediment-related costs, for example, exceeds \$11 per ton.<sup>7</sup>

## **C. Biodiversity and sensitive species**

In the early 1990s, while controversy was at its highest over proposals to restrict logging on federal forests to protect the northern spotted owl, economists carefully surveyed U.S. households to ascertain their willingness to pay for the protection of the owls and the old-growth forests that provide them habitat.<sup>8</sup> Respondents' expressions of their willingness to pay for this protection reasonably represent the benefits they would receive from continued existence of old-growth forests and owls. The researchers multiplied the average benefits times the total number of households, nationwide, to estimate the overall benefits of protecting old-growth forests and owls. This and similar studies suggest the value of bird species on BLM-managed lands in western Oregon is approximately \$63 million (2012 dollars).<sup>9</sup> Comparable values have been estimated for other species. These values likely apply to habitat and species on forestlands throughout western Oregon.

## **D. Recreation**

The BLM has conducted the most recent assessment of the relationship between forest management and recreation in western Oregon.<sup>10</sup> It found that unlogged areas generally have greater recreational value than logged areas. It also produced data showing that, on average, a curtailment of logging that reduces timber value (stumpage) by \$1 million is associated with an increase of \$470,000 in the value of the recreational services derived from the forest. A different, but similar, result would obtain from implementation of the proposed rule, even though it applies to private lands.

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<sup>5</sup> Brown, T.C. 2004. *The Marginal Economic Value of Streamflow from National Forests*. Discussion Paper DP-04-01, RMRS-4851. Rocky Mountain Research Station, US Forest Service. 28 December. An acre-foot of water equals the amount of water that covers one acres of area one-foot deep.

<sup>6</sup> Seeds, J. 2010. *Turbidity Analysis for Oregon Public Water Systems Water Quality in Coast Range Drinking Water Source Areas*. Oregon Department of Environmental Quality. DEQ 09-WQ-024.

<sup>7</sup> Hansen, L., and M. Ribaudo. 2008. *Economic Measures of Soil Conservation Benefits: Regional Values for Policy Assessment*. Technical Bulletin 1922. USDA, Economic Research Service.

<sup>8</sup> Hagen, D.A., J.W. Vincent, and P.G. Welle. 1992. "Benefits of Preserving Old-Growth Forests and the Spotted Owl." *Contemporary Policy Issues* X (April): 13-26.

<sup>9</sup> US Department of Interior, Bureau of Land Management. 2016. *Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon*.

<sup>10</sup> US Department of Interior, Bureau of Land Management. 2016. *Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon*.

## E. Aesthetics

The BLM also recently described research showing that scenic views and cultural and spiritual values associated with unlogged public forests in western Oregon currently provide economic value, as indicated by related increases in the value of nearby properties.<sup>11</sup> Additional research, from researchers at Oregon State University and, hence, readily available to Mr. Kaetzel, quantified the “positive amenity impacts on the growth in median income, population and property values for small communities close to NWFP [Northwest Forest Plan] land protected from logging, as compared to communities far from the NWFP.”<sup>12</sup> The research finds that, for communities of 100–2,500 residents, the amenities from protected, unlogged lands within five miles increased:

- Median income by \$1,133–\$2,964, or 3–8%.
- Mean value of property within the community by \$18–\$63 million, or 29-100%.

## F. Traffic

Insofar as the proposed rule would reduce the amount of timber logged, as estimated by Mr. Kaetzel, it also would reduce the number of log trucks and related vehicles on local and state roads. The reduced traffic would reduce road damage and maintenance costs.

## G. Air quality

Insofar as the proposed rule would reduce the amount of timber logged, as estimated by Mr. Kaetzel, it also would reduce particulate emissions from vehicular traffic and slash burning. The improvements in air quality would have positive impacts on visibility and the health of humans, livestock, and wildlife.

## H. Carbon storage

The BLM recently assessed the value of carbon stored in trees on the lands it manages in western Oregon.<sup>13</sup> Logging reduces the amount of stored forest carbon and increases the amount of carbon dioxide in the atmosphere. The assessment indicates that, for every \$1 million in timber value (stumpage) generated by logging, the value the harm resulting from the increased atmospheric carbon dioxide would equal \$3.87. Research not included in the BLM’s assessment indicates that the carbon-related costs would be much greater.<sup>14</sup> Incorporating this research into the BLM’s calculations would raises the ratio of the carbon-related benefits of not logging to the timber-related costs to 60-to-1. On-going research suggests the ratio probably is even higher.

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<sup>11</sup> US Department of Interior, Bureau of Land Management. 2016. *Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon*.

<sup>12</sup> Chen, Yong, David J. Lewis, and Bruce Weber. 2015. “Conservation land amenities and regional economies: A post-matching difference-in-differences analysis of the Northwest Forest Plan.” *Journal of Regional Science*. [http://www.science.oregonstate.edu/~lewisda/JRS\\_Chen\\_EtAl\\_2015\\_OA.pdf](http://www.science.oregonstate.edu/~lewisda/JRS_Chen_EtAl_2015_OA.pdf).

<sup>13</sup> US Department of Interior, Bureau of Land management. 2016. *Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon*.

<sup>14</sup> Moore, Frances, C., and Delavane B. Diaz. 2015. “Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy.” *Nature Climate Change*; Hope, Chris, and Kevin Schaefer. 2015. “Economic Impacts of Carbon Dioxide and Methane Released from Thawing Permafrost.” *Nature Climate Change*; and Cai, Yongyang, Timothy M. Lenton, and Thomas S. Lontzek. 2016. “Risk of multiple interacting tipping points should encourage rapid CO<sub>2</sub> emission reduction.” *Nature Climate Change*.

Private forestlands in western Oregon also store large amounts of carbon, which is released when these lands are logged.<sup>15</sup> The proposed rule would reduce the emissions of carbon dioxide and generate economic benefits insofar as it would reduce the amount of logging in riparian zones.

## I. Jobs, income, and economic output

Mr. Kaetzel’s report says that the proposed rule would eliminate jobs, reduce income, and shrink the state’s economy. It reaches this conclusion because it focuses solely on the potential negative impacts of the proposed rule. Had it looked at the potential positive impacts on these variables, it probably would have reached the opposite conclusion.

The BLM reviewed the relevant literature and found that non-timber resources contribute to economic well-being in nearby communities by retaining residents, and by attracting new residents, including retirees and entrepreneurs, who bring human and financial capital.<sup>16</sup> Moreover, it found that there is an empirical foundation for this belief, observing that, “These beliefs have been supported by research showing how scenic amenities, open space, healthy watersheds, public lands and protected areas, and other non-market resources contribute to local economic development.”

Indeed, a Google search of “economic impact of scenic amenities,” found more than 400,000 results. Near the top is a link to a bibliography that describes 30 peer-reviewed studies of this issue (Figure 1).

**Figure 1. 30 Peer-Reviewed Studies that Document the Importance of Natural Resource Amenities to Local Economies.**

1.	Beyers, W. B. and D.P Lindahl. 1996. “Lone Eagles and High Fliers in Rural Producer Services.” <i>Rural Development Perspectives</i> . 11(3): 2-10
2.	Booth, D.E. 1999. “Spatial Patterns in the Economic Development of the Mountain West.” <i>Growth and Change</i> . 30(3): 384-405
3.	Charnley, S., R. J. McLain, and E. M. Donoghue. 2008. “Forest Management Policy, Amenity Migration, and Community Well-Being in the American West: Reflections from the Northwest Forest Plan.” <i>Human Ecology</i> . 36: 743-761
4.	Cromartie, J.B. and J.M. Wardwell. 1999. “Migrants Settling Far and Wide in the Rural West.” <i>Rural Development Perspectives</i> . 14(2): 2-8
5.	Deller, S. C., T.-H. Tsai, et al. 2001. The Role of Amenities and Quality of Life in Rural Economic Growth. <i>American Journal of Agricultural Economics</i> . 83(2): 352-365
6.	Duffy-Deno, K. 1998. The Effect of Federal Wilderness on County Growth in the Intermountain Western United States. <i>Journal of Regional Science</i> . 38(1): 109-136

<sup>15</sup> Talberth, John, Dominick DellaSala, and Erik Fernandez. 2015. *Clearcutting Our Carbon Accounts: How State and Private Forest Practices Are Subverting Oregon’s Climate Agenda*. <http://sustainable-economy.org/wp-content/uploads/2015/11/Clearcutting-our-Carbon-Accounts-Final-11-16.pdf>.

<sup>16</sup> US Department of Interior, Bureau of Land Management. 2016. *Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon*.

**Figure 1. 30 Peer-reviewed studies that document the importance of amenities to local economies, cont.**

7.	Migration, and Public Land Policy: Evidence from the Northwest Forest Plan." <i>Journal of Agricultural and Resource Economics</i> . 35(2): 316-333
8.	Fuguitt, G.V. and C.L. Beale. 1996. "Recent Trends in Nonmetropolitan Migration: toward a New Turnaround?" <i>Growth and Change</i> . 27: 156-174
9.	Gude, P.H., Hansen, A.J., Rasker, R., Maxwell, B. 2006. "Rates and Drivers of Rural Residential Development in the Greater Yellowstone." <i>Landscape and Urban Planning</i> . 77: 131-151
10.	Hansen, A.J, R. Rasker, B., Maxwell, J.L. Rotella, J.D. Johnson, A. Wright Parmenter, U. Langer, W. B. Cohen, R. L. Lawrence, and M. P.V. Kraska. 2002. "Ecological Causes and Consequences of Demographic Change in the New West." <i>Bioscience</i> . 52(2): 151-162
11.	Holmes, P. and W. Hecox. 2002. "Does Wilderness Impoverish Rural Areas?" <i>International Journal of Wilderness</i> . 10(3): 34-39
12.	Johnson, J.D. and R. Rasker. 1995. "The Role of Economic and Quality of Life Values in Rural Business Location." <i>Journal of Rural Studies</i> . 11(4): 405-416
13.	Knapp, T. A. and P. E. Graves. 1989. "On the Role of Amenities in Models of Migration and Regional Development." <i>Journal of Regional Science</i> . 29(1): 71-87
14.	Lewis, D. J., G. L. Hunt and A. J. Plantinga. 2002. "Public Land Conservation and Employment Growth in the Northern Forest Region." <i>Land Economics</i> . 78(2): 245-259
15.	Lorah, P. and R. Southwick. 2003. "Environmental Protection, Population Change, and Economic Development in the Rural Western United States." <i>Population and the Environment</i> . 24 (3): 255-272
16.	Lewis, D.J., G.L. Hunt and A. J. Plantinga. 2003. "Does Public Lands Policy Affect Local Wage Growth?" <i>Growth and Change</i> . 34(1): 64-8
17.	McGranahan, D.A. 1999. "Natural Amenities Drive Population Change." Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Report 781, 1- 24
18.	Nelson, P.B. 1999. "Quality of Life, Nontraditional Income, and Economic Growth: New Development Opportunities for the Rural West." <i>Rural Development Perspectives</i> . 14(2): 32-3
19.	Power, T. M. 1991. "Ecosystem Preservation and the Economy of the Greater Yellowstone Area." <i>Conservation Biology</i> . 5(3): 395-404
20.	Rasker, R. and D. Glick. 1994. "Footloose Entrepreneurs: Pioneers of the New West?" <i>Illahee</i> . 10(1): 34-43
21.	Rasker, R. 1993. "Rural Development, Conservation, and Public Policy in the Greater Yellowstone Ecosystem." <i>Society and Natural Resources</i> . 6:109-126
22.	Rasker, R. 1994. "A New Look at Old Vistas: the Economic Role of Environmental Quality in Western Public Lands." <i>University of Colorado Law Review</i> . 65(2): 369-399
23.	Rasker, R. and A. Hackman. 1996. "Economic Development and the Conservation of Large Carnivores." <i>Conservation Biology</i> . 10(4): 991-1002
24.	Rasker R. and A. Hansen. 2000. "Natural Amenities and Population Growth in the Greater Yellowstone Region." <i>Human Ecology Review</i> . 7(2): 30-40
25.	Rasker, R. 2005. "Wilderness for Its Own Sake or as Economic Asset?" <i>Journal of Land, Resources, and Environmental Law</i> . 25(1): 15-2
26.	Rasker, R., P.H. Gude, J.A. Gude, J. van den Noort. 2009. "The Economic Importance of Air Travel in High-Amenity Rural Areas." <i>Journal of Rural Studies</i> . 25: 343-353

**Figure 1. 30 Peer-reviewed studies that document the importance of amenities to local economies, cont.**

27.	Rasker, R., P.H. Gude, M. Delorey. 2013. "The Effect of Protected Federal Lands on Economic Prosperity in the Non-Metropolitan West." <i>Journal of Regional Analysis and Policy</i>
28.	Rudzitis, G. and H.E. Johansen. 1989. "Migration into Western Wilderness Counties: Causes and Consequences." <i>Western Wildlands</i> . Spring, Pages 19-23; Rudzitis, G. and H.E. Johansen. 1991. "How Important is Wilderness? Results from a United States Survey." <i>Environmental Management</i> . Vol. 15,: 227-233and; Rudzitis, G. 1993. "Nonmetropolitan Geography: Migration, Sense of Place, and the American West." <i>Urban Geography</i> . Vol. 14(6): 574-585
29.	Shumway J.M. and S.M. Otterstrom. 2001. "Spatial Patterns of Migration and Income Change in the Mountain West: The Dominance of Service-Based, Amenity-Rich Counties." <i>Professional Geographer</i> . 53(4): 492-502
30.	Snepenger, D.J., J.D. Johnson and R. Rasker. 1995. Travel-stimulated entrepreneurial migration. <i>Journal of Travel Research</i> . 34(1): 40-44

Source: Headwaters Economics. 2013. "Annotated Bibliography: Studies on the Economic Value of Public Lands and Protected Public Lands that have Appeared in the Peer-Reviewed Academic Literature." [http://headwaterseconomics.org/wphw/wp-content/uploads/Annotated\\_Bib\\_Value\\_Public\\_Lands.pdf](http://headwaterseconomics.org/wphw/wp-content/uploads/Annotated_Bib_Value_Public_Lands.pdf).

One of these studies, Rasker et al. (2013), quantifies the positive relationship – between the protection of federal lands and waters and economic growth in nearby communities – that applies in most rural counties of the western states. The analysis looked both at the years between the early 1990s to the mid-2000s, when the national economy and amenity-related migration grew rapidly, and during the Great Recession, when both contracted. The authors considered a broad set of protected lands:

- Wilderness Areas
- National Parks and Preserves
- National Conservation Areas
- National Monuments
- National Recreation Areas
- National Wild and Scenic Rivers
- Waterfowl Production Areas
- Wildlife Management Areas
- Research Natural Areas
- Areas of Critical Environmental Concern
- National Wildlife Refuges

After controlling for other factors that influence local economies, the analysis found that, on average, counties with 10,000 additional acres of protected public land exhibited these characteristics:

1. Per capita income in 2010 was higher by \$436.
2. Per capita income growth, 1990-2010, was higher by \$237.
3. Investment income growth, 1990-2000, was higher by \$175 per county resident.  
[Investment income includes dividends, interest, and rent earned from investments.]

The proposed rule likely would have a similar effect by preventing logging in riparian zones, even though its protections would apply to private lands interspersed with federal lands.

## J. Summary

This section demonstrates that there exists a large body of data and research documenting the positive economic impacts of conservation actions similar to those incorporated into the

proposed rule. By distributing to the public a report that ignores this information, the Board is falling far short of meeting its statutory obligation to provide “a comprehensive analysis of the economic impact of the proposed rule.” The material in this section provides an introduction to the literature and data the Board should consider as it prepares a replacement report that will satisfy this obligation. Mr. Kaetzel utilized none of this information.

As it prepares the replacement report, the Board should comply with widely accepted professional standards applicable to this type of analysis (Figure 2). A recent and directly applicable description of these standards is the *Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* (PR&G).<sup>17</sup>

**Figure 2. Key Elements of the Professional Standards Applicable to the Board’s Comprehensive Analysis of Economic Impact**

Analytical Component	Requirements
<b>1. Compute the net public benefits of each alternative</b>	Describe the gross social costs and the gross social benefits that would result from implementation of the proposed rule, then subtract the latter from the former.
<b>2. Compute the net impact on jobs, income, etc.</b>	Subtract the gross negative impacts on jobs, income, etc. from the gross positive impacts.
<b>3. Promote sustainable economic development</b>	Assess the proposed rule’s impacts on the sustainability of goods and services produced by the economy, and the sustainability of jobs, income, etc.
<b>4. Consider the economic importance of ecosystem services</b>	Describe the proposed rule’s impacts on the services that ecosystems directly and indirectly provide households, businesses, and communities.
<b>5. Weigh the value of all benefits and costs, whether monetized or not</b>	The weighing process should jointly consider effects of the proposed rule that can be described in monetary units as well as those that can’t.
<b>6. Consider all mechanisms of economic development</b>	Some mechanisms stem directly from monetary expenditures affected directly by the proposed rule, others from amenities that influence household location.
<b>7. Consider cultural values</b>	Describe the extent to which the proposed rule would affect cultural values of Tribal and other stakeholders.
<b>8. Account for subsidies and externalities</b>	Account for all subsidies and externalities when describing affected goods and services.
<b>9. Describe climate-change and other risks</b>	Evaluate the proposed rule’s impacts on climate change and the impacts of climate change on the likelihood that the proposed rule will achieve its objectives.

<sup>17</sup> <https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/PandG>

### **III. The Board’s Report Improperly Describes the Negative Economic Impacts of the Proposed Rule Change**

Mr. Kaetzel’s report provides a biased, unreliable description of the proposed rule’s potential negative economic effects, overestimating the negative impacts on the value of log production and on jobs, income, and output.

#### **A. Overestimated the value of lost log production**

To estimate the value of future reductions in log production from riparian zones, Mr. Kaetzel assumed that log prices in the future will equal the average of prices in past years. He does so, even though he acknowledges that the real (i.e., inflation-adjusted) price of logs has, for more than two decades, experienced “a rather sharp decline through the present period.” If this trend continues – and Mr. Kaetzel identified no forces that will stop it from doing so – then log prices will be even lower in the future. By using the higher, average price of the past rather than the lower expected prices of the future, he overestimated the value of the lost log production.

#### **B. Overestimated the negative impacts on jobs, income, and output**

To estimate the negative impacts on jobs, etc., Mr. Kaetzel used the IMPLAN model. This model gives a snapshot of Oregon’s economy in the recent past, showing, for example, the amount of timber produced and the number of timber-related jobs, income, and output. From this information, Mr. Kaetzel calculated the number of jobs, the amount of income, and the output per thousand board feet. He then assumed that each of these ratios from the past would apply in the future to his estimates of reductions in log production from riparian zones.

This process has several problems. One is that the IMPLAN model works best when applied to larger impact regions that have more complicated trade patterns and more complex production and consumption relationships. Thus, although the model might predict that a total reduction of  $x$  mbf of timber throughout the region would lead to a loss of  $y$  jobs, the actual job loss would be determined on a logging site-by-site basis. For some logging sites, perhaps all, the proposed rule’s incremental impact might be too small to have any impact on the number of workers required to conduct the logging.

A more direct and serious problem with Mr. Kaetzel’s analysis is that it fails to account for the dynamic character of Oregon’s economy. In the IMPLAN model, when workers lose their jobs, they remain unemployed forever. This assumption is embedded in Mr. Kaetzel’s estimates of job losses, reductions in income and reductions in the economy’s output.

In the real economy, though, when workers lose their jobs, they generally find new ones. At the extreme, when Oregon’s economy is functioning at full employment – as it is today – laid-off workers likely would find replacement jobs with little or no delay, so the net impact on jobs, income, and output would be nearly zero.

By using an unrealistic model, Mr. Kaetzel produced incomplete, exaggerated estimates of the impacts on jobs, income, and output. He could have corrected the deficiencies in the estimates by translating the model’s results so they better represent reality. But he did not. Hence, his estimates of the negative impacts on jobs, income, and output do not satisfy the Board’s obligation to provide the public with a comprehensive analysis of the proposed rule’s economic impacts.

## **C. Summary**

Mr. Kaetzel does not provide a real-world description of the potential negative economic impacts of the proposed rule. Instead, he looked at the past to estimate the value of reductions in log production, even though he recognized trends that suggest future prices will be smaller. And, he described the negative impacts on jobs, income, and output using a model that, by design, can't depict the dynamic realities of Oregon's economy.