Natural Resource Economics

Dexter, Oregon USA
Phone + (541) 505-2704
www.nreconomics.com
ernie.niemi@nreconomics.com

Testimony in Support of SB 1187

TO: Oregon Senate Committee on Energy and Environment
From: Ernie Niemi, President, Natural Resource Economics **April 7, 2025**

I. Background/Credentials

- Second generation Oregonian.
- B.S. (chemistry): University of Oregon. Master of City and Regional Planning: Harvard.
- 40+ years experience as professional economist, specializing in investigating the economic importance of the natural environment and the economic impacts of climate change: ECONorthwest and Natural Resource Economics
- Economist: Forum on Oregon Climate Economics (FORUM)

II. Climate Change Currently Imposes Large Economic Costs on Oregonians

A large body of evidence shows that climate change has imposed and currently imposes substantial economic costs on Oregonians. These costs include but are not limited to:[1]

- **Economic Costs to Oregonians from Climate-Related Wildfire-Smoke Mortality.**
  - Exposure to climate-related wildfire smoke has, on average, killed 411 Oregonians per over the past decade. This number is expected to grow, up to 1,245 per year by mid-century. The economic costs associated with these deaths total:
    - Past decade: $5.4 billion/year
    - Mid-century: $13 billion/year
- **Economic Costs to Oregonians from Climate-Related Heatwave Mortality.**
  - The 2021 heatwave over the Pacific Northwest killed at least 350 Oregonians. The economic costs associated with these deaths total:
    - 2021 Heat Wave: $4.6+ billion
- **Economic Costs to Oregonians from Climate-Related Wildfires.**
  - In 2018, wildfire-related costs to Oregonians—damage to property, aid and evacuation to those at risk of harm, reduction in property value, infrastructure repair, and loss of services from degraded ecosystems—totaled $6.8 billion.
- **Economic Costs to Oregonians from Exposure to Climate-Related Wildfire Smoke.**
  - In 2023, Oregon households, on average, endured at least 14 days exposure to wildfire smoke. For the average household, the economic costs—reduced income, increased costs of living, and diminished quality of life—totaled about $6,000.
  - A "major smoke event" can reduce the value of goods and services produced in the state (Gross Domestic Product) that year by at least $1 billion. [2]

[1] Miller, K., and others. 2024. The Economic Costs of Climate Change for Oregonians: a First Look. Forum on Oregon Climate Economics.
[2] Sterns, J., and T. Beavers. 2025. Potential Economic Impacts of a major Wildfire Smoke Event in Oregon. in Fleishman, E., editor. 2025. Seventh Oregon Climate Assessment. Oregon Climate Change Research Institute, Oregon State University. pp. 121-129.

- Every day of exposure to wildfire smoke is expected to shorten a person's life expectancy by one week.[3]
- Exposure of persons aged 60 years or older to wildfire smoke is associated with an increase in the probability of subsequent dementia.[4]

- **Economic Costs to Oregon's Children.**
  - For children born now, lower incomes plus higher living costs over their lifetime could total more than $1 million.[5]
- **Economic Costs to Oregon's Workers.**
  - A worker unable to work because of climate-related heat, wildfire smoke, etc. would lose about $110-$120 per day in gross earnings, on average.[6]
  - Extreme weather and disruption of supply chains reduces workers' productivity in many sectors.[7]

III. The Economic Costs Climate Change Imposes on Oregonians Will Increase Markedly

Recent research, by climate scientists, economists, and actuaries (risk analysts), warns that the economic costs from climate change will increase markedly in the coming decades.

- **Scientists Warn:**
  - [W]e declare, with more than 11,000 scientist signatories from around the world, clearly and unequivocally that planet Earth is facing a climate emergency…. The climate crisis has arrived and is accelerating faster than most scientists expected. It is more severe than anticipated, threatening natural ecosystems and the fate of humanity. Especially worrisome are potential irreversible climate tipping points and nature's reinforcing feedbacks (atmospheric, marine, and terrestrial) that could lead to a catastrophic 'hothouse Earth,' well beyond the control of humans."[8]
- **Economists Warn:**
  - Greenhouse gases already in the atmosphere are reducing income now. The reduction will grow to 19% by 2050. This impact, if it occurred today, would reduce annual income for the average Oregonian by $12,000.[9]
- **Actuaries Warn:** (With full recognition of the scientists' warning)
  - Global temperature increase = 3°C by 2050.
  - Breakdown of critical ecosystem services and Earth systems; frequent large-scale mortality events. 50% probability climate-related deaths exceed 4 billion.
  - Lose 50% of gross domestic product (GDP) by 2070-2090.[10]

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[3] Ohio State University. 2024. As Wildfires Intensify, Prolonged Exposure to Pollution Linked to Premature Death.
[4] Elser, H., and others. 2024. Wildfire Smoke and Incident Dementia. p. E1. JAMA Neurology.
[5] ICF Incorporated, L.L.C. 2024. Cost of Climate Change to an American Born in 2024.
[6] Miller, K., and others. 2024. The Economic Costs of Climate Change for Oregonians: a First Look. Forum on Oregon Climate Economics.
[7] Benayad, A., and others. 2025. Landing the Economic Case for Climate Action with Decision Makers. Boston Consulting Group and University of Cambridge, ClimaTRACES Lab, and Cambridge Judge Business School; Lentan, T.M., and others (eds). 2023. Global Tipping Points. University of Exeter, Global Systems Institute; Mohaddes, K., and others. 2023. Climate Change and Economic Activity: Evidence from US States. Oxford Open Economics; Oxera. 2024. The Economic Cost of Extreme Weather Events. International Chamber of Commerce; Vetter, D. 2025. Climate Inaction Could Cost 1/3 of Global GDP This /Century, BCG Warns. Forbes. Website; Woolf, S., J. Morina, and E. French. 2023. The Health Care Costs of Extreme Heat. Center for American Progress; World Economic Forum and Allianz. 2025. Insuring Against Extreme Heat: Navigating Risks in a Warming World; Xie, X., and others. 2024. The Impact of Climate Change on Violent Conflict Risk: A Review of Causal Pathways. Environmental Research Communications.
[8] Ripple, W.J., and others. 2020. World Scientists' Warning of a Climate Emergency. BioScience.
[9] Miller, K., and others. 2024. The Economic Costs of Climate Change for Oregonians: a First Look. Forum on Oregon Climate Economics.
[10] Trust, S., and others. 2025. Planetary Solvency–Findings Our Balance with Nature: Global Risk Management for Human Prosperity. Institute and Faculty of Actuaries, and University of Exeter.

For More Detail on Climate-Related Costs to Oregonians:

A. Miller, K., and others. 2024. The Economic Costs of Climate Change for Oregonians: a First Look. Forum on Oregon Climate Economics

B. Climate-Economics Issue Briefs:

Economic Costs to Oregon Households from Exposure to Wildfire Smoke. January 10, 2025.

Economic Costs to Oregon Households from Climate-Related Deaths. January 13, 2025.

Economic Costs from Impacts of Climate Change on Oregon's Children. January 18, 2025

Climate Change Kills Oregonians, Jobs, and Incomes. It Is Not a Hoax. February 13, 2025.

Economic Costs from Climate Change Probably Will Get Worse. Much Worse. February 19, 2025.