

# EFACTS WASHINGTON

A M E R I C A N S E C U R I T Y P R O J E C T

## Pay Now, Pay Later: Washington

Climate change will cost Washington's economy at least \$3.8 billion per year by 2020, \$6.5 billion a year by 2040, and \$12.9 billion annually by 2080.<sup>1</sup>

Annual costs from increasingly frequent fires are projected to reach \$102 million by 2020 and \$208 million by 2040.<sup>2</sup>

The state's smart-energy sector is expected to receive \$3 billion in Pacific Northwest investments and \$50 billion in worldwide investments by 2020.<sup>3</sup>

According to a new study, a failure to mitigate the effects of climate change could begin to cause serious gross domestic product and job losses as early as 2010 through 2050. Washington is expected to make small gains as an adequate water supply attracts migrants from other states, translating to an increase in economic activity. Ultimately, Washington could gain \$26.6 billion in GDP and nearly 191,000 jobs.\*

*\*Possibly eclipsing the positive projections, the study's calculations do not include snowfall and icepack melt, which Washington depends on for much of the water supply. GDP numbers are based on a 0% discount rate. Job losses are measured in labor years, or entire years of fulltime employment. Backus, George et al., "Assessing the Near-Term Risk of Climate Uncertainty: Interdependencies among the U.S. States," Sandia Report (Sandia National Laboratories, May 2010), 21, 137, 141. [https://cfwebprod.sandia.gov/cfdocs/CCIM/docs/Climate\\_Risk\\_Assessment.pdf](https://cfwebprod.sandia.gov/cfdocs/CCIM/docs/Climate_Risk_Assessment.pdf) (accessed March 23, 2011).*

Admittedly, the effects of climate change, a complex and intricate phenomenon, are difficult to predict with precision. Informed scientific and economic projections, as we have used in our research, however, allow us to see that Washington faces significant losses in industries crucial to its economy if no action is taken.

Moreover, data shows Washington is poised to benefit from the research, development, and distribution of renewable energy technologies. The state has acres upon acres of windy land, yet it is highly dependent on hydropower, natural gas, and coal.<sup>4</sup> Washington is poised to wean itself off such sources without depressing its economy. Should we fail to take action against climate change, Washington has much to lose.

## Pay Later: The Cost of Inaction

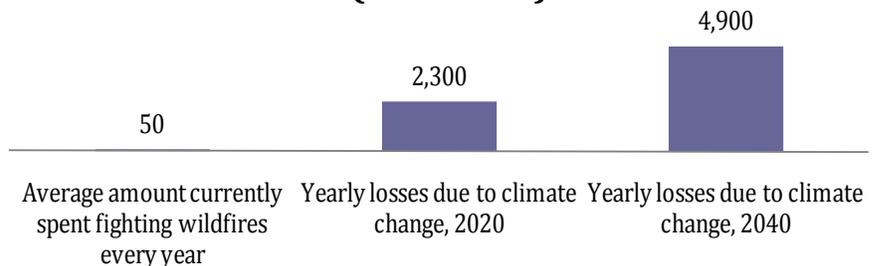
Temperatures in the Pacific Northwest are projected to increase half a degree Fahrenheit every decade if the causes

of climate change are not addressed.<sup>5</sup> Conservative estimates predict that temperature increases will cost Washington approximately \$3.8 billion every year by 2020—approximately \$1,250 per Washington household annually.<sup>6</sup> This figure, however, does not include several unquantifiable (and potentially more expensive) costs such as lost investment in Washington's robust business sector and damage to coastline property.

### Costs to the State's Energy Sectors

Washington obtains much of its electricity from hydropower; in 2001, this amounted to about 60% of consumption.<sup>7</sup> Much of the energy harnessed by the currents of the Columbia, Snake, and Spokane rivers comes from Washington's glaciers—which are

### Cost of Wildfires Today Compared to Cost of Climate Change in 10 and 30 Years (Millions \$)



Sources: Washington State Department of Ecology; Program on Climate Change, University of Oregon

threatened by climate change. Glacier melt will increase runoff during the winter, when energy demand is lower, and decrease it during the summer, when demand is at its highest. Hydro-power production during the summer is slated to drop 9-11% by 2020 and 13-16% by 2040.<sup>8</sup>

Washingtonians will thus be forced to lean on more expensive sources of energy, at an estimated cost of \$150 million every year by 2020 and \$473 million per year by 2040. Furthermore, the warmer temperatures will drive up residential cooling costs by \$28 million a year by 2020 and \$65 million a year by 2040.<sup>9</sup>

### Costs Associated with Severe Weather

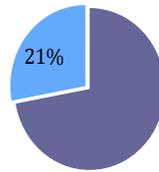
Severe weather will damage property along the state's coast as well as the interior. **Property and crop damage due to severe weather conditions will cost \$51 million annually by 2020—and \$106 million a year by 2040, and \$255 million per year by 2080.**<sup>10</sup> Climate change will intensify the impact of severe weather such as flooding and high winds.

Estimates predict that temperature increases will cost Washington approximately \$3.8 billion every year by 2020—approximately \$1,250 per Washington household annually.

Wildfires are especially dangerous in Washington: the average number of large wildfires (defined as over 500 acres) has increased from an average of six per year in the 1970s to 21 per year this decade. Annual federal and state

costs of combating wildfires could surpass \$75 million by 2020.<sup>11</sup>

### Washingtonian Labor Force Projected to be Directly Affected



Source: Bureau of Labor Statistics<sup>12</sup>

### Costs to the Coast

**If Washington does not undertake adjustment procedures to protect its coast from the rising sea—and the global sea level is rising faster than previously expected<sup>13</sup>—it will lose \$21 million worth of coastal property a year by 2020 and \$44 million per year by 2040.**<sup>14</sup> These estimates, however, do not take into account lost investments. Companies like Microsoft, Boeing, Starbucks, and Nordstrom are all headquartered around Puget Sound, and rising sea levels may make the area less attractive as a business center.

### Costs to the Food Industry and Tourism Sectors

Agriculture is a \$5.3 billion industry in Washington.<sup>15</sup> While climate change will extend the growing season, it will also contribute to the rise of pests and diseases, reduce the availability of water, and raise temperatures to unhealthy levels. **For example, water shortages during the spring and summer are, by 2060, expected to cost \$66 million per year in crop losses in the Yakima Valley,<sup>16</sup> and the state's beef industry will lose an estimated \$11.6 million per year by**

**2020 and \$18.3 million per year by 2040.**<sup>17</sup> In addition, dairy cows will produce one less pound of milk every day for every degree higher than 68°F, depressing profits by \$6 million each year by 2040.<sup>18</sup>

Washington's changing environment will also affect its tourism sector. Hunting, fishing, and wildlife viewing attract roughly 3 million people and \$2.3 billion per year, creating over 42,000 jobs in the state.<sup>19</sup> Rising temperatures, however, may disrupt ecosystems, potentially costing Washington millions of dollars in lost revenue.

### Direct Costs to Washingtonians

Higher temperatures will accelerate the production of low-altitude ozone in urban areas, which is detrimental to health and is expected to cost \$1.2 billion a year by 2020 and \$1.9 billion each year by 2040 in lost productivity. Washingtonians will also pay \$130 million a year by 2020 in health-related and other costs as a result of the effects of heat waves—the natural disaster associated with the most deaths in the United States—and this figure will increase to nearly \$300 million by 2040.<sup>20</sup>

As Washington obtains the majority of its electric energy from hydropower, during the summer months decreased supply and increased demand could necessitate the use of other energy sources<sup>21</sup>—and shortfalls in water available for personal consumption.

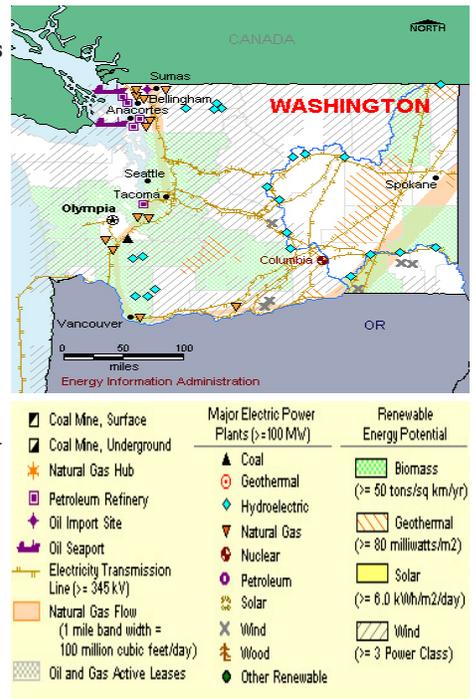
## Pay Now: The Benefits of Taking Action

Washington has already leveraged its business-friendly climate to attract a green-energy industry. **Over 240**

organizations have created nearly 8,400 jobs, each of which earn an average of \$60,000 annually, and brought in over \$2.1 billion in revenue. This makes Washington's green industry larger than its coffee and logging industries.<sup>22</sup>

While rainy Seattle might not seem like the ideal place to develop a solar energy industry, Washington would benefit greatly from the implementation of a national energy plan. Committing to a 30% growth in solar power in the United States would provide Washington with 660 new jobs and over \$531 million in investments.<sup>23</sup> Furthermore, with over a million acres of windy land, Washington can exploit wind energy to help power its future. Wind energy investments are expected to create over 9,000 jobs in construction and operations in the state by 2020 and contribute over \$336 million to the local economy.<sup>24</sup>

Washington's high-tech sector also makes it an excellent location to develop smart-energy technology. **The Pacific Northwest is poised to receive over \$3 billion in investments by 2020.**<sup>25</sup>



## Conclusion

Washington must consider action on climate change not just in terms of cost, but also in terms of opportunities. If we give Washington's population, businesses, and investors clear and consistent signals by properly offering initiatives and cultivating demand, investment and innovation in renewable technologies will follow.

**Washington will have to pay for the effects of climate change.** The only remaining question is whether they will pay now, or pay later and run the risk of paying significantly more.

### (Endnotes)

- 1 Program on Climate Change, University of Oregon, *An Overview of Potential Economic Costs to Washington of a Business-As-Usual Approach to Climate Change*, February 17, 2009, v. [http://www.ecy.wa.gov/climatechange/docs/021609\\_ClimateEconomicsImpactsReport.pdf](http://www.ecy.wa.gov/climatechange/docs/021609_ClimateEconomicsImpactsReport.pdf) (accessed July 6, 2010).
- 2 Ibid.
- 3 Washington State Department of Ecology, *Impacts of Climate Change on Washington's Economy*, November 2006, 81. <http://www.ecy.wa.gov/pubs/0701010.pdf> (accessed September 7, 2010).
- 4 U.S. Energy Information Administration, *State Energy Profiles: Washington*, August 26, 2010. [http://tonto.eia.doe.gov/state/state\\_energy\\_profiles.cfm?sid=WA](http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=WA) (accessed August 30, 2010)
- 5 Washington State Department of Ecology, 7.
- 6 Program on Climate Change, University of Oregon, iv.
- 7 Washington State Department of Commerce, *Washington Energy-Use Energy Consumption by Sector*. [http://www.commerce.wa.gov/\\_CTED/documents/ID\\_1714\\_Publications.pdf](http://www.commerce.wa.gov/_CTED/documents/ID_1714_Publications.pdf) (accessed July 2, 2010)
- 8 Climate Impacts Group, *Evaluating Washington's Future in a Changing Climate*, June 2009, 10. <http://cses.washington.edu/db/pdf/wacciaexecsummary638.pdf> (accessed July 6, 2010).
- 9 Program on Climate Change, University of Oregon, 16-17.
- 10 Ibid., 25.

- 11 Washington State Department of Ecology, 8.
- 12 Includes agricultural workers and those employed in the hospitality and leisure, professional, and business services sectors. Bureau of Labor Statistics, *Economy at a Glance: Washington*, September 29, 2010. <http://www.bls.gov/eag/eag.wa.htm> (accessed September 29, 2010).
- 13 Program on Climate Change, University of Oregon, 4.
- 14 Program on Climate Change, University of Oregon, 23.
- 15 Washington State Department of Ecology, 48.
- 16 The Program on Climate Change, University of Oregon, 29.
- 17 Ibid., 27.
- 18 Washington State Department of Ecology, 51-52.
- 19 National Wildlife Federation, *Global Warming and Washington*, January 9, 2009. <http://www.nwf.org/Global-Warming/-/media/PDFs/Global%20Warming/Global%20Warming%20State%20Fact%20Sheets/Washington.ashx> (accessed September 4, 2010).
- 20 Program on Climate Change, University of Oregon, 35-37.
- 21 Climate Impacts Group.
- 22 Washington State Department of Community, Trade and Economic Development, *Renewable Energy, Energy Efficiency, and Smart Energy Industries*, 2005, i. [http://www.commerce.wa.gov/\\_CTED/documents/ID\\_3543\\_Publications.pdf](http://www.commerce.wa.gov/_CTED/documents/ID_3543_Publications.pdf) (accessed July 3, 2010).
- 23 National Wildlife Federation, *Charting a New Path for Washington's Electricity Generation and Use*, 2. [http://www.nwf.org/Global-Warming/-/media/PDFs/Global%20Warming/Clean%20Energy%20State%20Fact%20Sheets/WASHINGTON\\_10-22-7.ashx](http://www.nwf.org/Global-Warming/-/media/PDFs/Global%20Warming/Clean%20Energy%20State%20Fact%20Sheets/WASHINGTON_10-22-7.ashx) (accessed July 5, 2010).
- 24 U.S. Department of Energy, *Energy for Washington's Economy: Economic Development from Energy Efficiency and Wind Power in Washington*, September 9, 2008. [http://www.windpoweringamerica.gov/econ\\_project\\_detail.asp?id=11](http://www.windpoweringamerica.gov/econ_project_detail.asp?id=11) (accessed July 6, 2010).
- 25 Washington State Department of Community, Trade and Economic Development, 25.