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# Climate Costs for Taxpayers: A Primer



Murphy Complex Fires, Idaho. Source: BLM via Flickr

The consequences of climate change, from floods to fires, often make the headlines but the cost for taxpayers are often overlooked. **Taxpayers have already paid hundreds of billions—perhaps more than a trillion dollars—in climate related costs, but specific numbers are often disputed.** The primary arguments most cited to challenge quantifications of taxpayer costs are flip sides of the same coin: that there is no direct correlation between climate change

and any one storm or incident and therefore costs cannot be quantified; or, that it is impossible to precisely quantify the delta between the increase in climate-related costs and costs that would otherwise occur.

**This document is intended to be an introduction to the scale and types of costs federal taxpayers have borne and will continue to bear in the absence of contributions from other responsible parties.**

These challenges do not obviate the need to identify and examine the costs to the federal taxpayer created by climate change. Rather, all estimates and examinations should identify uncertainties: factoring in those uncertainties leads to conservative costs estimates. Congress and the executive branch must take steps to more accurately document these costs as climate change continues to create enormous future liabilities for taxpayers.

## Disaster Assistance

As extreme weather events have become more frequent and intense due to climate change, demand for federal disaster spending has increased dramatically in recent years.

- There have been **69 separate billion-dollar weather and climate disasters since 2015**, with 14 in 2019 alone.<sup>1</sup>
- The **average number of major and catastrophic disaster declarations has more than doubled** from 22.2 annually between 1953 and 1989 to 51.7 per year since 1990.<sup>2,3</sup>

As a result, federal disaster relief funding has skyrocketed, exceeding \$450 billion since 2005.<sup>4</sup> Not all of the growth in disaster funding is attributable to climate change, but **more than 85 percent of these declarations occurred in the wake of climate-related occurrences**—severe storms, hurricanes, floods, droughts, and other weather disturbances.<sup>5</sup>

## Federal Insurance Programs

The **National Flood Insurance Program (NFIP)** allows property owners, renters and businesses to purchase federally backed flood insurance. Like federal disaster relief spending, federal spending on insurance claims from severe storms, floods, coastal erosion, and sea level rise have increased sharply. Consequently, the NFIP is now more \$21 billion in debt to the Treasury with more debt on the horizon.



Impact of Hurricane Harvey. Beaumont, TX.  
Source: U.S. Customs and Border Patrol via Flickr

The NFIP paid out **\$2.6 billion** for losses during the 1980s, **\$6.6 billion** for losses during the 1990s, **\$28.3 billion** during the 2000s, and **\$28.4 billion** from 2010 through 2018.<sup>6</sup>

**The U.S. Global Change Research Program (USGCPR) reports it is likely that between \$66 billion and \$106 billion worth of real estate will be below sea level by 2050, and \$238 billion to \$507 billion will be by 2100.**<sup>7</sup>

The federal **Crop Insurance Program** allows producers to purchase insurance against losses in yield or revenues for their crops. Federal spending on crop insurance has also increased in recent decades as a result of climate related droughts, floods, and extreme heat.

- From FY2000-FY2007, taxpayers spent between \$2.1 billion and \$3.9 billion on federal crop insurance.<sup>8</sup>
- Costs spiked in 2011 and 2012 to \$11.3 billion and \$14.1 billion, respectively, when more than two-thirds of counties nationwide were declared as disaster areas due to severe and extensive drought.<sup>9</sup>
- **Drought again caused \$5 billion in damages across the Southwest and Northwest in 2015, and \$2.5 billion in agricultural damages across the Northern Great Plains in 2017.**<sup>10</sup>

The Congressional Budget Office estimates that crop insurance payments will run between \$7.1 billion and \$9.6 billion annually between 2020 and 2030.<sup>11</sup>

## Public Infrastructure

The government has not released a full estimate of climate-related costs for the operations and management of federal facilities, but the scope of federal property holdings means these costs are among the most significant. **The Department of Defense alone maintains more than \$1 trillion in real property assets, which creates huge liabilities for damages from storms.**<sup>12</sup>

**The repair and reconstruction of Tyndall Airforce Base in 2018 as a result of Hurricane Michael is estimated to cost \$3 billion.<sup>13</sup> Hurricane Florence similarly caused \$3.6 billion in damage to Camp Lejeune in North Carolina the same year.<sup>14</sup>**

Of the property held by all agencies, the Office of Management and Budget (OMB) identified \$83 billion in federal assets located in the 100-year floodplain with heightened flood risks and \$62 billion in other federal coastal assets threatened by 6-foot sea level rise.<sup>15</sup>

Federal spending on other public infrastructure, such as commercial ports needing a retrofit to accommodate sea level rise or publicly owned wastewater facilities adapting to increased storm water, will cost hundreds of billions of dollars in the coming decades. **Between 2,500 to 4,600 bridges across the United States will be vulnerable to increased inland flooding by 2050, resulting in average costs of between \$1.2 to \$1.4 billion each year.**<sup>16</sup> Other essential public infrastructure, such as electricity systems, have sustained massive damage from intensifying storms and hurricanes. Hurricanes Irma and Maria destroyed Puerto Rico’s power grid, which may cost as much as \$17 billion to rebuild.<sup>17</sup>

**Wildfire Suppression**

The U.S. Department of Agriculture and the Department of the Interior share responsibility for fire management and suppression on federal lands. Costs associated with combatting wildfires have jumped in recent years.

- From 1985 to 1997, federal wildfire suppression costs totaled \$5.5 billion;
- From 1998 through 2018, suppression costs totaled \$31.5 billion, a 480 percent increase.<sup>18</sup>
- Extreme drought in 2017 fueled extensive wildfires leading to \$2.9 billion in suppression costs that year.
- A single fire in October 2018, **the Tubbs Fire, was the most destructive in California’s history, causing an estimated \$1.2 billion in damages.**<sup>19</sup>



Impact of Getty Wildfire. Sepulveda Pass, CA. Source: Los Angeles Fire Department via Flickr

A 2016 study by OMB estimated that fire suppression costs are likely to increase by nearly \$400-900 million by mid-century.<sup>20</sup>

**Increased Federal Health Costs**

**Total climate-related health costs**, like operations and maintenance costs of federal facilities, have not been documented by the federal government. But like federal facility management, these costs **are likely to be among the most substantial**. The effects of climate change may increase:

- heat-related death and illness,
- exposure to air pollutants—fine particulate matter and ozone—due to wildfires, and
- exposure of food and water sources to certain pathogens and toxins.

The OMB expects increased incidence of asthma-related emergency room visits, heat-related cardiovascular events, and morbidity and mortality as a result of disasters. One recent

study of 10 climate-related events in 2012 found that associated health costs totaled \$10 billion.<sup>21</sup> Another study estimated that the health costs associated with six climate change-related events in the U.S. between 2000 and 2009 exceeded \$14 billion.<sup>22</sup>



Impact of Hurricane Harvey, TX. Source: U.S. Customs and Border Patrol via Flickr

## Endnotes

<sup>1</sup> National Oceanic and Atmospheric Administration, “Billion-Dollar Weather and Climate Disasters: Overview,” <https://www.ncdc.noaa.gov/billions/>. Accessed February 18, 2020.

<sup>2</sup> <https://www.fema.gov/disasters/year>

<sup>3</sup> Congressional Research Service, “The Disaster Relief Fund: Overview and Issues.” Report R45484, updated November 22, 2019. <https://crsreports.congress.gov/product/pdf/R/R45484>.

<sup>4</sup> U.S. Government Accountability Office, “DISASTER RECOVERY: Recent Disasters Highlight Progress and Challenges,” Testimony of Chris Currie, Director Homeland Security and Justice, before the House Committee on Transportation and Infrastructure, October 22, 2019. Report GAO-20-183T, <https://www.gao.gov/products/gao-20-183t>.

<sup>5</sup> Congressional Research Service: Stafford Act Declarations 1953-2014: Trends, Analyses, and Implications for Congress. July 14, 2015 R42702

<sup>6</sup> Federal Emergency Management Agency, “Loss Dollars Paid by Calendar Year,” <https://www.fema.gov/loss-dollars-paid-calendar-year>. Accessed February 18, 2020.

<sup>7</sup> Houser, T., S. Hsiang, R. Kopp, K. Larsen, M. Delgado, A. Jina, M. Mastrandrea, S. Mohan, R. Muir-Wood, D. J. Rasmussen, J. Rising, and Paul Wilson, “Economic Risks of Climate Change: An American Prospectus.” 2015. Columbia University Press, New York. Cited by USGCRP, “Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States,” 2018, Chapter 8. <https://nca2018.globalchange.gov>

<sup>8</sup> Congressional Research Service, “Federal Crop Insurance: Background,” Report R40532, August 13, 2015. <https://crsreports.congress.gov/product/pdf/R/R40532>

<sup>9</sup> Ibid, 17.

<sup>10</sup> USGCRP, P. 67.

<sup>11</sup> Congressional Budget Office, “Spending Projections, by Budget Account: January 2020 Baseline.” January 28, 2020. <https://www.cbo.gov/publication/56020>

<sup>12</sup> U.S. Government Accountability Office, “DEFENSE REAL PROPERTY: DOD Needs to Take Additional Actions to Improve Management of Its Inventory Data,” Report GAO-19-73, published November 13, 2018. <https://www.gao.gov/products/gao-19-73>

<sup>13</sup> Rempfer, Kyle, “Air Force to spend \$3 billion to rebuild Tyndall AFB as ‘an installation of the future’” Air Force Times. February 1, 2019. <https://www.airforcetimes.com/news/your-air-force/2019/02/01/air-force-to-spend-3-billion-to-rebuild-tyndall-afb-as-an-installation-of-the-future/>

<sup>14</sup> Snow, Shawn, “\$3.6 billion price tag to rebuild Lejeune buildings damaged by Hurricane Florence,” Marine Times. December 12, 2018. <https://www.marinecorpstimes.com/news/your-marine-corps/2018/12/12/36-billion-price-tag-to-rebuild-lejeune-buildings-damaged-by-hurricane-florence/>

<sup>15</sup> Office of Management and Budget, “Climate Change: The Fiscal Risks Facing the Federal Government,” November 2016. [https://obamawhitehouse.archives.gov/sites/default/files/omb/reports/omb\\_climate\\_change\\_fiscal\\_risk\\_report.pdf](https://obamawhitehouse.archives.gov/sites/default/files/omb/reports/omb_climate_change_fiscal_risk_report.pdf).

<sup>16</sup> Environmental Protection Agency, “Multi-model Framework for Quantitative Sectoral Impacts Analysis: A Technical Report for the Fourth National Climate Assessment.” EPA Report 430-R-17-001, published May 11, 2017; last revised November 8, 2018, [https://cfpub.epa.gov/si/si\\_public\\_record\\_Report.cfm?dirEntryId=335095](https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=335095).

<sup>17</sup> Puerto Rico Energy Resiliency Working Group, “Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico,” December 11, 2017. [https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/PRERWG\\_Report\\_PR\\_Grid\\_Resiliency\\_Report.pdf](https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/PRERWG_Report_PR_Grid_Resiliency_Report.pdf)

<sup>18</sup> National Interagency Fire Center, “Federal Firefighting Costs (Suppression Only),” [https://www.nifc.gov/fireInfo/fireInfo\\_documents/SuppCosts.pdf](https://www.nifc.gov/fireInfo/fireInfo_documents/SuppCosts.pdf). Accessed February 18, 2020.

<sup>19</sup> USGCRP, 46.

<sup>20</sup> See Note XV.

<sup>21</sup> Limaye, V. S., Max, W., Constible, J., and Knowlton, K, “Estimating the health-related costs of 10 climate-sensitive U.S. events during 2012.” GeoHealth, Volume 3, published on September 17, 2019, corrected on February 10, 2020, <https://doi.org/10.1029/2019GH000202>.

<sup>22</sup> Knowlton, Kim, Rotkin-Ellman, M., Geballe, L., Max, W., and Solomon, G.M., “Six Climate Change-Related Events In The United States Accounted For About \$14 Billion In Lost Lives And Health Costs,” Health Affairs, published November 1, 2011, <https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.2011.0229>.

