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Climate Change

An Unfunded Mandate

By Fran Sussman, Cathleen Kelly, and Kate Gordon

October 2013

Center for American Progress



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Contents

- 1 Introduction and summary**
- 4 What's past is prologue**
- 8 How much will responding to climate change cost the United States?**
- 17 Reducing the long-term cost of climate change**
- 25 Conclusion**
- 26 About the authors & Acknowledgements**
- 27 Endnotes**

Introduction and summary

There are many reasons why we should do something about climate change. One of them is that we cannot afford not to.

Roughly one year ago, Superstorm Sandy swept along the eastern seaboard from Florida to Maine, eventually reaching as far west as Ohio and Michigan.¹ The hurricane caused more than 150 deaths, damaged 659,000 homes, and disrupted millions of lives as transit systems, cellular phone networks, and other critical services failed or closed.² The region suffered \$65 billion in damages and economic losses, including power outages that temporarily closed 200,000 small businesses and led to 2 million lost workdays.³ Almost a year later, in September, a catastrophic Colorado storm dumped a year's worth of rain in about 24 hours, washing away roads in Boulder and nearby towns and causing thousands of people to flee.⁴ The storm caused eight deaths and an estimated \$2 billion in property losses.⁵

Unfortunately, Superstorm Sandy and the Colorado floods are not isolated events. In fact, a Center for American Progress analysis from this past February compiled data from the National Oceanic and Atmospheric Administration, or NOAA, and found that there were 25 extreme weather events in 2011 and 2012 alone that caused a total of \$188 billion in economic losses.⁶ Over the past three decades, the frequency of these billion-dollar events has increased dramatically—from an annual average of fewer than two such events per year in the 1980s to an annual average of more than nine events from 2010 to 2012.⁷ Scientists are increasingly finding evidence directly linking extreme weather events—such as the flooding caused by Sandy, as well as the United States' high temperatures in 2012—to human-caused climate change, suggesting that observed trends are likely to continue.⁸

In June, President Barack Obama introduced his Climate Action Plan. The plan includes a suite of executive actions to curb U.S. emissions of heat-trapping gases that contribute to climate change, referred to as greenhouse gases—or carbon pollution—when they are emitted by burning fossil fuels. The plan also includes actions that help prepare the nation for the consequences of a warmer world.⁹

While these executive actions are necessary steps for the United States to help rein in climate change and take a global leadership role, the president cannot solve the climate crisis alone. Congress must also act but sadly remains paralyzed. The longer we wait to take meaningful and concrete steps to significantly reduce emissions of heat-trapping pollution, the more we are going to experience—and have to pay—the steep costs of climate change.

Responding to climate change as it occurs, rebuilding and repairing damages, and preparing for future extreme weather will be expensive. Even if the United States takes massive steps to tackle climate change today, the high levels of greenhouse gas pollution already in the atmosphere ensure that the risks and consequences of a warmer world will continue to grow in the years to come. Even with immediate action to curb climate change risks, this will be expensive. Without action, however, the total U.S. bill—for responding, rebuilding, and preparing for the future—could reach hundreds of billions of dollars annually. These costs will have to be paid by already overburdened federal, state, local, and tribal governments and—directly and indirectly—by the American people.

In fact, the costs of these actions may well represent the largest unfunded mandate Congress has ever imposed on the American people.

The Unfunded Mandates Reform Act of 1995, or UMRA, requires that Congress consider the cost burden that may be imposed on state, local, and tribal governments and the private sector prior to proposing new legislation. During the floor debate on the legislation that became UMRA, sponsors of the measure “emphasized its role in bringing our system back into balance, by serving as a check against the easy imposition of unfunded mandates.”¹⁰ State and local advocates view unfunded mandates—which are enforceable duties imposed by the federal government on state and local governments—as inconsistent with a traditional view of American federalism, which is based on cooperation, not compulsion.¹¹ While Congress’s failure to take action on climate change may not fall strictly within the letter of UMRA, it is certainly within its spirit. State, local, and tribal governments will be forced to bear the burden and expense of needed actions to react to and reduce climate change risks to public health, safety, and their local economies.

In this report, we assess the magnitude of the costs of preparing for more extreme weather and other climate change impacts that Congress is imposing on state, local, and tribal governments by failing to enact policies to curb U.S. emissions of heat-trapping pollution. To stop imposing a costly unfunded mandate on the American people, we recommend that Congress and the president take immediate action in the following three areas.

The total U.S. climate change bill—for responding, rebuilding, and preparing for the future—could reach hundreds of billions of dollars annually.

Recognize and reverse the unfunded mandate

- Congress must assess the unfunded mandate that it is imposing on state, local, and tribal governments by failing to enact ambitious climate change policies.
- Congress must require that all proposed energy legislation undergo a carbon audit to reveal its effect on carbon pollution. Bills that do not meet a minimum threshold for performance should be subject to review and revision.

Adequately fund community resilience efforts

- Congress must create a dedicated fund to support community resilience efforts, which reduce the costs of disaster response dramatically. As much as \$4 in response costs are saved by each dollar invested in resilience efforts.
- The president and federal agencies must make resilience a core aspect of federal disaster and infrastructure assistance.
- Congress must adequately fund federal programs that provide state and local governments with the climate change risk information and planning tools they need to make smart resilience investments. It must also require more analysis of the cost of climate inaction in the National Climate Assessment.

Lower future climate change risks and disaster-response and rebuilding costs

- The president must continue to support and enforce the Environmental Protection Agency's, or EPA's, carbon-pollution standards for new and existing power plants.
- Congress must enact legislation and the president must use existing EPA authority to reduce climate-changing super pollutants.
- The president and Congress must act across the board to eliminate unnecessary and outdated fossil fuel subsidies and to support emerging low- and no-carbon energy-technology solutions.
- Congress must ultimately enact legislation to put a price on carbon.

What's past is prologue

The U.N. Intergovernmental Panel on Climate Change, or IPCC, stated unequivocally in its September 2013 report that the climate system is warming and that many of the observed changes—including warming of the atmosphere and ocean, diminishing sea ice, and rising sea level—are occurring at rates unprecedented over previous decades or even millennia. The IPCC report further states that, “It is *extremely likely* that human influence has been the dominant cause of the observed warming since the mid-20th century”—a viewpoint with which 97 percent of the world’s climate scientists concur.¹²

Scientists predict a litany of climatic changes, many of which are already uncomfortably familiar to us. Climate change has been clearly linked to global projections of increased intensity and/or frequency of extreme events—such as heavy precipitation, warm spells and heat waves, and drought in some regions—over the coming century.¹³ Scientists also predict that the trends in tropical cyclone activity in the North Atlantic are likely to continue, meaning that future storms, such as typhoons and hurricanes, will become more intense, with larger peak wind speeds and more heavy precipitation.¹⁴ Thomas Stocker, co-chair of the working group that produced the IPCC report, further warns that, although there will be exceptions, “As the Earth warms, we expect to see currently wet regions receiving more rainfall, and dry regions receiving less.”¹⁵

Climate change is already altering what we in the United States think of as “normal,” as we cope not only with extreme weather events but also with higher average temperatures—sometimes coupled with higher humidity—as well as changes in the timing and amount of rain and snowfall, the length of seasons, and other aspects of weather that affect daily life.¹⁶ Climate will become more variable and more difficult to predict and plan for—not only over the course of a season but from one year to the next.¹⁷

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Superstorm Sandy was the second-most expensive hurricane in U.S. history—second only to Hurricane Katrina. Sandy was also only 1 of 11 U.S. weather and climate disaster events in 2012 that caused losses exceeding \$1 billion, according to NOAA's National Climatic Data Center.¹⁸ Since 1980, there have been 144 such events, with a total cost exceeding \$1 trillion in 2013 dollars.¹⁹

These estimates take into account a wide range of insured and uninsured losses from extreme weather events, as well as relief costs borne by federal, state, and local governments. But they also miss some critical impacts, such as the loss of life; the health care costs associated with injuries and illness; the value of damaged and lost dunes, wetlands, and other ecosystems; and a whole range of quality-of-life impacts that go well beyond what estimates of disaster costs typically capture. Most cost estimates also do not take into account how disaster losses and damages affect the broader economy, jobs, and income or how such costs may persist over time.²⁰

While much of the media attention highlights the damages associated with extreme storms, the losses associated with other climate events, such as droughts and wildfires, are also disturbingly large.

Drought takes its toll on farmers over time, particularly in regions, such as the U.S. Southwest, that are already dry and expected to become even drier in the future.²¹ Last year's drought, which afflicted more than half of the United States for much of 2012, cost an estimated \$30 billion in lost harvests.²² In Texas, the 2011 drought was the costliest in the state's recorded history, causing \$5.2 billion in crop and livestock losses, according to Extension Service economists.²³ A loss of this magnitude is equivalent to one-quarter of the value of agricultural production in a typical Texas year, and its effects on agricultural output may well go beyond the drought year.²⁴

In 2012 alone, wildfires destroyed more than 9.3 million acres across the United States, with an estimated aggregate cost of \$1 billion.²⁵ These damages were equaled, or in some cases surpassed, by the wildfires that occurred in 2011, 2009, and 2008.²⁶ The economic damage caused by the recent Yosemite Rim fires in California, which as of early October had scorched more than 250,000 acres of national forestland and parkland, have yet to be totaled.²⁷ Nonetheless, given the magnitude of the damage, it is likely that economic and other losses tied to timber, tourism, ecosystems, and wildlife will be significant.

Monetary measures, however, do not capture all the potential damages from wildfires. According to research published in the *Proceedings of the National Academy of Sciences*, “Continued warming could completely transform” fire activity in the greater Yellowstone ecosystem by the middle of this century, “with profound consequences for many species and for ecosystem services including aesthetics, hydrology, and carbon storage.”²⁸ Yellowstone and Yosemite are not alone in being highly vulnerable to wildfire; the National Park Service is working to develop fire-management strategies to reduce the danger at other national parks, such as Glacier National Park in Montana’s Northern Rockies and Saguaro National Park in Southern Arizona.²⁹

But changes in average climate conditions—what we might call everyday climate—also take a bite out of our wallets and the economy. Warmer average temperatures will affect society in many ways, including by producing heat stress and illness, particularly for the elderly and poor; shortening working hours for outdoor workers; and creating travel delays for business travelers and people commuting to work and school, as rail tracks and tarmacs buckle in the extreme heat. Increased precipitation will also come with costs from flooding and property damage, construction delays, and transportation accidents. Similarly, hotter and drier weather and earlier snowmelt will result in Western wildfires starting earlier in the year, lasting later into the fall, and damaging more homes and forests. The effects will be as numerous and varied as the ways in which climate influences livelihoods and daily life.³⁰

Yet not every weather event—whether disastrous or merely unpleasant and potentially costly over time—can be laid at the doorstep of climate change. Although scientists have long stressed a relationship between climate change and the occurrence of some extreme events generally,³¹ until recently, they have been less willing to extend that tie to individual events such as Hurricane Sandy.

Climate scientists draw an analogy between the effects of climate change on extreme weather and baseball players who start taking steroids and begin hitting 20 percent more homeruns than before. While we cannot say whether any individual homerun is the result of steroids, we can say that steroid use has increased the probability of a homerun by 20 percent. Where climate change is concerned, scientists can calculate the changed odds that an individual extreme weather or climate event can be attributed to climate change.³²

A special September 2013 issue of the *Bulletin of the American Meteorological Society* presents 18 analyses of 12 different extreme weather events that occurred around the world in 2012. The findings support the conclusion that human-induced climate change played a key role in about half of the events assessed, with the remainder influenced primarily by natural weather fluctuations. Findings about prolonged periods of high temperatures are particularly striking: More than one-third of the heat waves experienced in the eastern United States between March and May 2012 can be attributed to human-induced climate change. Put another way, we should expect high temperatures such as those in 2012 to occur four times as often as they did in the past.³³ The findings also suggest that the climate change-related increases in sea level that have already occurred have nearly doubled the probability of Sandy-level inundation relative to 60 years ago. The implication is that Sandy-level flooding will occur more frequently in the future, even for less-intense storms.³⁴

Both of these trends—rising degrees of heat and storm damages—are tied directly to climate change. The recent past is, indeed, prologue to what the United States should expect in the future.

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How much will responding to climate change cost the United States?

The past decade offers a preview of the type of climate change impacts that the United States is likely to experience going forward. As extreme weather events become more frequent and more severe, governments at every level will need to respond by providing more emergency relief and recovery aid. We will also need to react routinely to the new realities of climate—by repairing bridges and roadways and dredging ports more often, treating increased incidence of climate-related disease, purchasing more air conditioners, changing which crops we grow where, and a host of other small and large changes.

We can reduce these costs by building climate resilience into our infrastructure and institutions so that we are less vulnerable to future weather events. Actions that can scale back the long-term costs and impacts of climate change include:

- Improving building codes and strengthening transportation infrastructure
- Training doctors and expanding health care facilities
- Developing more drought-resistant crops
- Protecting wetlands and other natural systems that reduce storm surges in coastal areas and reduce flood risks along rivers
- Modifying land use and development patterns to minimize flood damages

Unfortunately, there is no comprehensive national study of climate-resilience costs. But the available evidence paints a picture suggesting that, in aggregate, the combined costs of responding to climate change risks, rebuilding in the wake of more extreme storms, and making communities more resilient to future weather-related disasters are likely to be in the tens to hundreds of billions of dollars annually.

State and local governments are beginning to recognize the risks that climate change poses to their communities, and they are taking steps to protect against future changes. In Grand Rapids, Michigan, for example, Mayor George K. Heartwell is taking action to protect his city from extreme weather and other climate change risks. He notes:

*The City of Grand Rapids is addressing various climate-related threats such as extreme heat and more intense precipitation events. We see these climate strategies as an extension of responsible governance and an imperative investment in the future prosperity of our city. As an inland watershed city, we have focused on restoring and maintaining a high quality of water in the Grand River with over \$240 million in combined sewer separation investment. This prepares us for ever-increasing precipitation levels now and into the future.*³⁵

With a population of 189,000 people in 2012 and a city budget of \$308 million, these costs—paid by the city through a mix of bonds, loans, federal assistance, and capital-projects financing—are significant, even when spread out over a number of years.³⁶ Not all cities will face the same types of issues as Grand Rapids, but if these costs are representative of the magnitude of per-capita costs we expect to see nationally, then addressing climate threats could run up a total bill of more than \$400 billion over the next 20 years.³⁷

A number of other counties and cities have taken initial steps to protect their communities from climate change. In Washington state, for example, the King County Flood Control District has spent an average of \$100,000 per home to assist property owners with home elevation.³⁸ Seattle's Public Utilities Department has implemented several pilot projects to improve the ability of urban areas to act as natural drainage systems and absorb runoff during heavy rainfall and flooding events, at an average cost of \$280,000 per block.³⁹

Many other cities and states are considering actions, with total costs ranging from a few million dollars to almost \$1 billion. The City of Punta Gorda, Florida, for example, is spending \$13.8 million on replacing sea walls that protect the downtown area from sea-level rise and storm surges.⁴⁰ By contrast, the Massachusetts Water Resources Authority is spending more than \$850 million on combined sewer-overflow projects to protect beaches, shellfish beds, and other sensitive waters.⁴¹ As Washington, D.C., Mayor Vincent Gray stated:

*We cannot avoid or ignore the evidence of the increased risk a changing climate poses to the safety of our residents or the health of our economy. We are committed—across government and the private sector—to act so that we can ensure that our city is prepared for these coming challenges.*⁴²

Despite the real need on the part of governments and the private sector to understand the costs of managing current and future climate risks, little work has been done to estimate these costs nationally. A March *Climate Policy* article surveyed existing estimates of the cost of adapting to projected climate change in the United States—both routine actions and those that promote resilience in the future.⁴³ Table 1 extracts the cost estimates from the most recent and comprehensive studies in each sector that are reported in the article and converts them into annual costs. For most sectors studied, annual costs could range from several billion dollars to tens of billions of dollars.

TABLE 1
Recent estimates of annual costs of adapting to climate change in the United States, in 2010 dollars

Sector	Actions considered in study	Rough annual costs, in 2010 dollars
Coastal protection	Shoreline armoring and grade elevation	\$2 billion to \$3 billion per year through 2100
Infrastructure—paved and unpaved roads	Maintenance and design changes	Around \$2 billion in 2050
Infrastructure—bridges	Strengthening vulnerable bridges	Around \$2 billion per year through 2090
Wastewater treatment facilities	Maintenance, replacement, and improvement of wastewater infrastructure	Around \$5 billion to \$10 billion per year through 2050
Drinking-water utilities	Conservation, flood protection, and changing water-management practices	Around \$14 billion to \$26 billion per year through 2050
Energy demand	Increased residential and commercial expenditures on energy for air conditioning and heating	\$40 billion to \$87 billion in 2100
Health—asthma	Medical treatment costs for increased asthma cases	\$5 billion in 2025
Air quality	Incremental pollution-control costs to meet air-quality standards	\$12 billion in 2050

Source: Fran Sussman, “What Will it Cost the United States to Adapt to Climate Change?”, *Climate Dollars & Sense*, October 21, 2013, available at <http://climatedollarsandsense.wordpress.com/%20short-papers/>.

Yearly expenses to respond to climate change and build climate resilience, however, could be much larger than those estimated by these studies. For one thing, these national studies cover a very limited portion of climate impacts and types of actions that will be needed to adapt to climate change (see the box below), suggesting that annual costs could be considerably higher than indicated. For another, costs will also depend on just how severe climate change is and how hard we work to restore lost services and infrastructure. A study that looked specifically at the cost of water conservation and developing alternative water supplies found that annual costs could rise to more than \$300 billion in 2030 if climate change exacerbates drought conditions and water supplies are managed to maintain streamflows.⁴⁴

Lastly, and perhaps most importantly, almost none of the existing national studies look at the costs of climate variability or extreme weather events; instead, they focus on what it will cost to deal with changes in average climate conditions. The costs of rebuilding after Superstorm Sandy suggest that if the current trend toward high-damage extreme weather events continues into the future, the costs of rebuilding after such events will be massive.⁴⁵ Gov. Andrew Cuomo's (D-NY) office estimated that following Superstorm Sandy, recovery and prevention costs in New York state alone will reach \$42 billion—almost \$33 billion in repairs and restoration costs, including \$15 billion for New York City alone and more than \$9 billion in protective measures to stave off damage from future storms, including steps to protect the state's power grid and cell phone network.⁴⁶

In aggregate, the cost of adapting to climate change will conservatively be in the many tens of billions of dollars annually, based on published studies. Taking into account the types of costs that are omitted and the evidence from the actions that states and localities are already planning, as well as the potential costs of rebuilding after extreme events such as Superstorm Sandy, the actual cost could easily rise into the hundreds of billions of dollars.

What's missing from the national studies of adaptation cost in the United States?

According to a recent survey of existing estimates for adapting to climate change in the United States, only a dozen or so relatively recent national-level studies exist. Generally, there are only one or two studies, at most, per sector. The survey suggests that these existing estimates are woefully incomplete in their ability to portray the true costs of adapting to climate change. Limitations noted in the survey include:

- Only a few sectors, including several infrastructure types—protection of coastal property from sea-level rise, wastewater treatment, water quality and quantity, and roads and bridges—have been studied in any detail.
- The costs of adapting have not been estimated at all for many critical impact categories, including but not limited to the effects of cli-

mate change on illness due to waterborne and foodborne disease; ecosystems and parks; transit, rail, air, and water transportation; agricultural production; and power generation and transmission.

- Even in areas that have been relatively well studied, existing assessments do not look comprehensively at impact categories. Studies of coastal protection, for example, typically focus on private property rather than public infrastructure and therefore do not capture the costs of measures taken to protect or harden public buildings such as schools and hospitals.

Importantly, these studies focus almost exclusively on changes in average climate and do not take into account the cost of adapting to extreme weather events or climate variability.

Source: Fran Sussman and others, "Climate change adaptation cost in the US: what do we know?" (Washington: Climate Policy, 2013), available at <http://www.tandfonline.com/doi/full/10.1080/14693062.2013.777604#preview>;

A burden on public-sector budgets and taxpayers

Most of the cost of responding, repairing and rebuilding, and planning for a more resilient future will be borne by the public sector—and, by extension, taxpayers. The Natural Resources Defense Council, or NRDC, for example, estimates that the federal government supports the lion's share of cleanup after a disaster. In 2012, private insurers covered less than 25 percent of the damages, while the federal government spent almost three times as much.⁴⁷

Storms, such as Superstorm Sandy and the blizzard Nemo that hit New England in February, demand immediate action and a rapid allocation of resources to recovery. But expenses related to cleanup, repair, and rebuilding after a disaster represent only part of the true cost of climate change. The cost of proactively making investments and taking other actions to reduce our vulnerability to future change—for example, designing bridges to better withstand storm impacts and helping relocate families and businesses away from dangerously high-risk flood zones—continue long after a storm strikes. So do routine activities, such as repairing transportation systems to keep them running smoothly in the face of extreme weather and other climate changes.

Together, these costs could be significant when compared with public-sector expenditures, as reported by the Congressional Budget Office, or CBO.⁴⁸ Annual costs for adapting wastewater treatment systems to climate change—around \$5 billion to \$10 billion per year through 2050, as reported in Table 1—could alone be as much as 10 percent of the total public spending on water supply and treatment combined, as indicated in Table 2.

TABLE 2
Public spending on transportation and water infrastructure in 2007,
in billions of 2009 dollars

	Highways	Aviation, mass transit, and rail	Water supply and wastewater treatment	Water transportation and water resources	Total public spending
Capital	87.5	26.6	38.9	7.8	160.8
Operation and maintenance	67	57	62.4	9.1	195.5
Total	154.5	83.6	101.3	16.9	356.4

Source: Congressional Budget Office, "Public Spending on Transportation and Water Infrastructure" (2010).

State and local governments are already taking the lead on responding and building resilience to climate change. While the federal government is helping shoulder some of this cost, much of it falls directly on state and local budgets. According to Mayor Brian A. Roth of Plymouth, North Carolina:

In many smaller coastal towns that are going to be affected, the concern is not about expanding the current water and sewer infrastructure systems in a smart way. Rather, it is about moving infrastructure that has been in the ground for decades. Some of my pipes are over 100 years old. Smaller, low-wealth communities cannot possibly undertake the financial burden of system relocations without grants from the Federal government.⁴⁹

If the aggregate cost to state and local governments rises into the billions of dollars, it would become a significant component of their budgets, many of which are already stretched to the breaking point. In 2011, total state expenditures ranged from \$4 billion in South Dakota to more than \$200 billion in California, averaging about \$33 billion across all states.⁵⁰ An increase of even a few percentage points in costs—relative to current expenditures—could increase the pressure on cash-strapped state budgets and further strain funding for schools, hospitals, roads, and other services that communities and businesses rely on daily.

Declining revenues and federal funding

States are beginning to recognize both the potential burden of climate change on already-stressed state budgets and the likelihood that less federal funding will be available to make up for any shortfalls. In the wake of Superstorm Sandy, Gov. Cuomo cautioned investors that climate change posed a long-term risk to the state's finances.⁵¹ Since the beginning of 2013, climate change has been included as a top fiscal risk to the state's bond offerings.⁵²

Even at the federal level—where the Federal Emergency Management Agency, or FEMA, has a history of picking up the check for the immediate cleanup and rebuilding of public infrastructure after big natural disaster events⁵³—regulators are starting to balk at the long-term risks and costs posed by climate change. A recent report from the Government Accountability Office, or GAO, found that the impacts of climate change present a significant financial risk to the federal government.⁵⁴ And at a press conference last year, Rep. Darrell Issa (R-CA), the Republican chairman of the U.S. House Oversight and Government Reform Committee, observed that as the frequency of extreme weather events increases, the states and cities they affect may no longer be able to depend on the federal government for extra help.⁵⁵ The growing cost to the federal budget comes at the same time that Congress has cracked down on federal expenditures, imposing \$1 trillion in often arbitrary budget cuts across all federal agencies as part of the plan known as the sequester.

As the federal government pulls back, states will have to step up to address climate change. But they may have to do so using tax bases that are shrinking due to climate change impacts, such as job and business losses, declining housing values, reduced sales from forest and farmland, and reduced labor productivity. Significant production losses may be felt in a number of states, as the following examples—which are by no means comprehensive—illustrate:

- In the Northeast, annual revenues in the maple syrup industry are expected to decline by as much as \$12 million annually—40 percent.⁵⁶ The region should also expect a 20 percent decline in skiing days, a revenue loss of roughly \$500 million per year.
- For the agriculturally productive Central Valley in California alone, the estimated economy-wide loss during the driest years is predicted to be around \$6 billion per year.⁵⁷

- New York’s agricultural yield may drop by as much as 40 percent annually, causing \$1.2 billion in annual losses.⁵⁸
- The Great Plains and Midwest will suffer, particularly from increased frequency and severity of flooding and drought events, causing billions of dollars in damages to crops and property.⁵⁹
- In the South and Southwest, declining precipitation levels will strain water resources for agriculture, industry, and households, as occurred during severe droughts over the past few years.⁶⁰

An unfunded mandate on state, local, and tribal governments

In 1995, Congress passed UMRA to focus attention on the costs of mandates that the federal government imposed on other levels of government and the private sector.⁶¹ According to an article published in the *National Tax Journal*, the legislation’s supporters “wanted to ensure that Congress had information about the costs of mandates before it decided to impose them” and to encourage “the federal government to provide funding to cover the costs of intergovernmental mandates.”⁶²

Some viewed the issue even more strongly. William V. Roth Jr. (R-DE), the former chairman of the Senate Governmental Affairs Committee, said that voters wanted an end to “the steady stream of dictates from Washington on how to spend locally raised tax dollars.”⁶³ This issue has remained salient with politicians. When former Speaker of the House Newt Gingrich (R-GA) was asked more than a decade after UMRA took effect whether he would support a constitutional amendment banning unfunded congressional mandates on states, he replied that he “would be willing to consider it.” He added, “I think if every governor and every state legislature would create a national federal cost analysis, that would be an enormously helpful way of highlighting it.”⁶⁴

UMRA requires that the CBO—the nonpartisan agency charged with conducting independent analyses of budgetary and economic issues to support the congressional budget process—assess each piece of

legislation that is reported out of committee for whether it contains a federal mandate.⁶⁵ Such mandates might take the form of enforceable duties imposed by the legislation or reduced federal funding for existing mandates. Where a mandate exists and the direct costs are likely to be above a legislatively set threshold, the CBO must also provide an estimate of the cost.⁶⁶

If the CBO report indicates that the legislation contains intergovernmental mandates with costs exceeding the threshold and does not include authorization for appropriations sufficient to cover the costs, UMRA’s rules prohibit further consideration of the legislation.⁶⁷ According to the CBO, “Although it has rarely used UMRA’s explicit enforcement mechanism when considering bills, in some cases the Congress had changed legislation before enactment either to eliminate a mandate or reduce its costs.”⁶⁸

The intergovernmental cost threshold that triggers a CBO analysis—and possible action by Congress—is currently \$75 million annually for the first five years after the law takes effect.⁶⁹ As described earlier in this report, the costs of needed action by state, local, and tribal governments over the next few years and decades to reduce the risks of climate change to public health, safety, and local economies will far surpass—likely by an order of magnitude or more—the annual threshold set by Congress for an unfunded mandate.

But UMRA is not restricted just to intergovernmental mandates. It also contains provisions for dealing with private-sector unfunded mandates, which include enforceable duties imposed by legislation on households, businesses, educational institutions, and other private-sector entities. In other words, UMRA protects just about everyone from unfunded mandates. To the extent that FEMA and other federal agencies finance some of the costs of disaster recovery and increasing resilience, inaction from Congress not only forces an unfunded mandate on states but also pushes costs onto federal taxpayers. The costs of actions that all levels of government will take—and pass on to taxpayers—as well as the costs of actions that fall directly on the private sector, add to the burden and the unfunded mandate.

In fact, Congress's failure to take action to reduce greenhouse gas pollution in the United States may well be the largest unfunded mandate ever imposed on all levels of government—federal, as well as state, local, and tribal—not to mention the American people.

But let's back up for a moment. In point of fact, UMRA is concerned with the actions that proposed legislation requires nonfederal government entities and the private sector to take. It is not, in the letter of the law, concerned with the costs imposed by actions resulting from legislation that Congress does not pass. By failing to take action, however, Congress is ensuring that state, local, and tribal governments will not have a choice; these governments will have to take action if they want their communities to be safe, healthy, and thriving, and they will have to bear the costs. The unfunded mandate is very real.

Congress has had many opportunities to tackle climate change, from putting a price on carbon, to supporting low-carbon technology development and deployment while scaling back subsidies for fossil fuels, to adequately funding federal, state, and local governments to build resilience to climate change impacts. Sadly, it has seized none of these.

While the House of Representatives did pass a bill by Reps. Henry Waxman (D-CA) and Ed Markey (D-MA) in 2009 aimed at curbing heat-trapping emissions,⁷⁰ the Senate failed to pass a companion bill, and the effort died in 2010. The single-largest energy bill recently passed in the United States was the American Recovery and Reinvestment Act of 2009, which President Obama championed and which included \$90 billion in clean energy investments and tax incentives. But that was just a two-year bill, and its programs have mostly ended. Aside from various renewable energy tax credits passed at the end of 2012, this Congress has made almost no progress toward seriously addressing the root causes of climate change or its immediate impacts.

Even worse, 161 members of Congress continue to deny that climate change is real, despite the overwhelming scientific and meteorological evidence to the contrary.⁷¹ Ironically, according to a recent CAP analysis, 47 climate change deniers in Congress represent the 10 states that received the most federal disaster aid to help farmers, businesses, and communities rebuild and get back on their feet after devastating droughts, wildfires, and storm damage in 2011 and 2012.⁷²

Reducing the long-term cost of climate change

States, cities, and tribal communities have had no choice but to step into the void left by Congress. As communities across the country experience the firsthand effects of more extreme heat, floods, storms, and other climate change impacts, more and more state and local decision makers realize the need to strengthen aging infrastructure and take other steps to build climate resilience through adaptation planning,⁷³ long-range development plans that take climate into account, and, in some cases, even a radical rethinking of state budget accounting to internalize sustainability metrics.⁷⁴ A 2011 survey found that 58 percent of U.S. city managers are taking action to build resilience to future extreme weather events.⁷⁵

States and localities do not have all the resources needed to react to climate change—much less to proactively take steps to prepare for it on their own. The only way to truly lessen the burden of paying for climate change impacts is to tackle the problem now—by rapidly reducing emissions of heat-trapping gases and increasing resilience so we can lessen the long-term risks and costs of a changing climate. That is a challenge we must not face alone as individuals or localities but, rather, as a nation.

To stop imposing this costly unfunded mandate on the American people, Congress and the president must take immediate action in the following three areas.

Recognize and reverse the unfunded mandate

Congress must assess the unfunded mandate that it is imposing on state, local, and tribal governments by failing to enact ambitious climate change policies

In the interest of transparency and full disclosure, Congress should ask CBO to assess the expected cost to state, local, and tribal governments if the current national policies on climate change continue as they are. As in UMRA, CBO

should be asked to assess, at a minimum, the direct costs of actions that these governmental entities will have to take to respond to climate change and ensure that necessary services—such as health care, provision of safety, transportation and transit, electricity, drinking water, and communications—continue to be provided to communities. CBO should also be asked to assess the costs of the full range of actions that state, local, and tribal government entities will likely need to take and that will not be covered by federal appropriations and funds, including:

- **Costs of responding to extreme events, such as Superstorm Sandy and the recent Colorado floods, and subsequent rebuilding.** Since these costs will not be fully covered by federal aid—given current federal funding for emergency response and related activities—they represent an unfunded mandate.
- **Costs of maintaining infrastructure and public service levels, given changes in average and seasonal weather and in the variability of temperature, precipitation, and humidity.** States—often in partnership with the federal government—play a critical role in maintaining transportation systems and public health systems, protecting coastlines, and a host of other activities that will become more expensive as warming continues.
- **Costs of building resilience into infrastructure and institutions.** As states take the lead on making changes to proactively protect and make their populations more secure against future climate change, these costs—many of which will come from declining budgets—are an unfunded mandate.

Congress must require that all proposed energy legislation undergo a carbon audit to reveal its effect on carbon pollution

All proposed legislation should be subject to an audit—using a widely accepted method—to determine the legislation’s effect on emissions of greenhouse gas pollutants during the 10-year period after the law would take effect. Effects on emissions could be calculated using established techniques for measuring, aggregating, and projecting emissions. At a minimum, any proposed energy legislation should be required to reduce net greenhouse gas emissions in line with the president’s goal to reduce U.S. emissions by 83 percent below 2005 levels by 2050.⁷⁶ The audit’s purpose would be to prevent Congress from imposing an additional unfunded mandate by enacting laws that escalate emissions of greenhouse gases and future climate change risks and costs.

In addition to conducting an audit, Congress should incorporate the principles of carbon reduction into its legislative proposals. The CBO regularly produces reports for the House and Senate budget committees. One of these is a compendium called “Reducing the Deficit: Spending and Revenue Options,” which describes more than 100 legislative options that Congress could adopt and estimates the effects each option would have on the budget. For the most part, the options would, if adopted, reduce the federal budget deficit. The options cover an array of policy areas, from energy to the tax code to defense programs.⁷⁷ A similar report on climate change—one that lists a range of large and small options that lawmakers could adopt to reduce heat-trapping emissions—would enable Congress to incorporate emissions-reducing measures into proposed legislation.

Adequately fund community resilience efforts

Congress must create a dedicated fund to assist community resilience efforts and save billions of dollars in disaster response

New sources of federal financing are needed to adequately build community resilience.⁷⁸ Every \$1 that FEMA invests in resilience and in actions to reduce disaster losses saves the nation \$4 in disaster-recovery costs.⁷⁹ By underinvesting in resilience today, we risk facing even higher disaster-relief and recovery costs in the future.

Congress and the president should identify a sustainable revenue stream to support state and local government efforts to increase community resilience before a disaster strikes and while rebuilding in the aftermath of a storm. To this end, a previous CAP analysis recommends:

... the creation of a dedicated fund for community resilience with annual revenue equal to one-third of the total federal disaster relief and recovery spending from the previous three years. For fiscal year 2013, we estimate that the amount earmarked for such a resilience fund would have been approximately \$7 billion using this formula.

The money dedicated for resilience could come from a small levy on some or all of the fossil fuels that emit the carbon pollution responsible for climate change, which scientists predict will exacerbate extreme weather.

In addition, we need an annual and complete accounting of federal funds spent on every disaster-recovery program in the previous fiscal year. Such an accounting would enable public officials and everyday citizens to better understand the true cost to taxpayers of unchecked extreme weather. An accounting of federal investments in resilience programs would highlight the gap between resilience needs and available resources.⁸⁰

Congress and the president must make resilience a core aspect of all federal infrastructure and disaster-recovery funding

As described in another recent CAP analysis, the federal government can also use existing federal funds to improve community resilience simply by strengthening existing grant programs.⁸¹ In his Climate Action Plan, President Obama directs federal agencies to “encourage and support smarter, more resilient investments, including through agency grants, technical assistance, and other programs, in sectors from transportation and water management to conservation and disaster relief.”⁸²

To deliver on this commitment, the Department of Transportation, or DOT; the Department of Housing and Urban Development, or HUD; the Army Corps of Engineers; and the EPA should only fund infrastructure-project designs that can withstand more extreme heat, floods, and storms. HUD, for example, should ensure that the roughly \$3 billion available annually for Community Development Block Grants, or CDBGs, support climate-resilient housing and other projects.⁸³ Similarly, DOT should ensure that the \$500 million available yearly for Transportation Investment Generating Economic Recovery, or TIGER, Discretionary Grants—which help improve our nation’s infrastructure—support storm-ready roads, rails, transit systems, and ports.⁸⁴

In addition, HUD should continue to apply and enforce its new resilience requirements for CDBG disaster-recovery assistance in areas hit hardest by Superstorm Sandy. DOT, the Army Corps of Engineers, and other agencies should also require that their disaster-recovery programs invest in resilient rebuilding projects that can withstand future extreme weather. Building on important Sandy Relief Act reforms to federal disaster assistance, Congress must further amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to require that all FEMA-funded rebuilding projects are climate resilient. As it stands, FEMA and other federal agencies rely primarily on the political will and initiative of federal disaster-aid recipients to rebuild resilient communities and infrastructure.⁸⁵

Congress must adequately fund federal programs that provide state and local governments with the climate change-risk information and planning tools necessary to make smart resilience investments

State and local decision makers need more accurate and up-to-date flood maps to allow families, businesses, local policymakers, and planners to make smart decisions to keep people and property out of harm's way.⁸⁶ Congress gave FEMA the authority to update its floodplain maps to account for sea-level rise as part of the 2012 National Flood Insurance Program reforms.⁸⁷ FEMA also released a study by independent contractor AECOM revealing that rising seas and more extreme weather are expected to expand the areas of the country vulnerable to flooding by up to 45 percent by 2100. These changes could double the number of flood-prone properties nationwide that are covered by the National Flood Insurance Program and drive up flood losses by 90 percent.⁸⁸

Despite this new pressure to update floodplain maps, FEMA's budget for its Flood Hazard Mapping and Risk Analysis program dropped from \$181.6 million in 2011 to \$97.7 million in both 2012 and 2013.⁸⁹ Similarly, spending cuts enacted by Congress as part of the sequester are undermining efforts by NOAA, the Department of the Interior, and the Department of Agriculture to deliver climate science and planning tools to help state and local officials, coastal managers, farmers, and other decision makers understand and build resilience to drought, flooding, severe storms, and other climate change risks.⁹⁰ Instead of cutting these critical programs, Congress and the president must ensure that these agencies have adequate resources to provide climate change-risk information and other resiliency services to communities across the country.

Include more economic data in the National Climate Assessment

The National Climate Assessment, or NCA, is a comprehensive report on climate change in the United States that is required by Congress as part of the Global Change Research Act of 1990. The current draft will be the third assessment report produced and is due to be completed by the U.S. Global Change Research Program, or USGCRP, in 2014. The report provides information about observed changes, the current status of the climate, and anticipated trends for the future.⁹¹

Thus far, the national assessments have not systematically included information on economic impacts or other costs associated with projected climate change. The USGCRP's strategic plan, however, recognizes the importance of integrating socioeconomic and scientific methods and data and has formed a Social Sciences Task Force with the goal to "better integrate a broad range of knowledge and expertise from across the breadth of the social sciences."⁹² It will be a large undertaking, however, to assess the socioeconomic knowledge base with anything approaching the level of detail in the science analyses in the current NCA. Congress should appropriate funding for the USGCRP to assess the existing economic literature, develop socioeconomic scenarios and projections to assist researchers, and develop and encourage the use of good practice guidelines for assessment.

Lower future climate change risks and disaster-response and rebuilding costs

The president must continue to support and enforce the EPA's carbon-pollution standards for new and existing power plants

President Obama's Climate Action Plan directs the EPA to complete carbon-pollution standards for both new and existing power plants. The EPA unveiled its proposed carbon standards for future power plants in September and is expected to propose existing plant standards in June 2014.⁹³ Many Republicans in the House and Senate, as well as a number of coal-state Democrats, want to block these standards from moving forward.⁹⁴ The administration should continue to move expeditiously to complete the carbon-pollution standards for existing plants by 2015 so that Americans can reap the public health benefits.⁹⁵

Congress must enact legislation and the president must use existing EPA authorities to reduce super pollutants that contribute to climate change

Super pollutants such as methane; tropospheric ozone; hydrofluorocarbons, or HFCs; and black carbon—also known as short-lived climate pollutants, or forcers—are potent heat-trapping emissions that are harmful to the climate, human health, and agricultural productivity.⁹⁶ While reducing carbon pollution will be essential to tackle climate change over the long term, quick action to reduce super-pollutant emissions can slow down warming by as much as 0.5 degrees Celsius by 2050, while also avoiding 2.4 million premature deaths from exposure to air pollution.⁹⁷

Rep. Scott Peters (D-CA) introduced the Super Pollutant Emissions Reduction Act, or SUPER Act, in the House in May to streamline the enforcement of existing federal policies to reduce super pollutants, support similar policies at the state and local levels—such as California’s successful diesel-truck regulations and efforts to curb HFCs—and identify other best practices for reducing super pollutants.⁹⁸ Sens. Chris Murphy (D-CT), Robert Menendez (D-NJ), and Al Franken (D-MN) are also preparing a bill to tackle super pollutants.⁹⁹ Congress should take immediate steps to enact legislation to rein in emissions of super pollutants.

President Obama reached a historic agreement with Chinese President Xi Jinping and the heads of other G-20 nations in September to initiate action under the Montreal Protocol and other multilateral institutions to phase down HFCs, widely used in refrigeration and car air conditioning.¹⁰⁰ In his Climate Action Plan, the president directed the EPA to identify and approve climate-friendly alternatives to HFCs and prohibit harmful alternatives through its Significant New Alternatives Policy program.¹⁰¹ The president also directed agencies to purchase cleaner alternatives to HFCs and called for an interagency strategy to reduce methane emissions. The president should also require action to reduce methane emissions from oil and gas wells and coal mines on federal lands. In addition, the EPA should strengthen rules and programs to limit methane emissions from oil and gas operations, landfills, and coal mines and accelerate the retrofitting or replacement of existing diesel-powered trucks that emit black carbon.¹⁰²

The president and Congress must act across the board to eliminate unnecessary and outdated fossil fuel subsidies and support emerging low- and no-carbon energy-technology solutions¹⁰³

According to the International Monetary Fund, or IMF, global fossil fuel subsidies are at \$1.9 trillion, or 2.5 percent of global gross domestic product, or GDP.¹⁰⁴ The worst offender is the United States, which provides \$502 billion in fossil fuel subsidies annually, taking into account both tax breaks for fossil fuel companies and failure to place a price on carbon pollution either through a carbon tax or a cap-and-trade program.¹⁰⁵ In his Climate Action Plan and during his visit with Nordic leaders in September, President Obama reaffirmed his 2009 G-20 commitment to expand multilateral and bilateral cooperation to end unwarranted fossil fuel subsidies and tax breaks for oil companies.¹⁰⁶

Despite the president's phase-out commitment, little progress has been made to end fossil fuel subsidies in the United States.¹⁰⁷ According to investment firm DBL Investors, fossil fuels have received a whopping \$447 billion—in 2010 dollars—in cumulative historical subsidies, compared to \$6 billion in subsidies for low-carbon energy that same year.¹⁰⁸ Congress could help by reforming U.S. tax policy to eliminate expensive tax expenditures for multibillion-dollar oil companies such as BP, ExxonMobil, and Chevron, all of which would be profitable even without government subsidies.¹⁰⁹ These companies, together with Shell and Conoco, made roughly \$250 billion in profits in 2011 and 2012 combined.¹¹⁰ President Obama's 2014 budget proposes to eliminate nearly \$40 billion in unnecessary special tax breaks for oil and gas companies over the next 10 years.¹¹¹

At the same time, Congress should continue supporting the no- and low-carbon energy policies that are helping move the United States toward a more sustainable energy future. A number of tax credits for alternative energy—including the Production Tax Credit for wind power, credits for alternative fuels, and credits for energy-efficient homes and appliances—are set to expire at the end of 2013.¹¹² Without a national price on carbon, these types of incentives help put low-carbon alternatives onto an even playing field with fossil fuels.

Congress must ultimately enact legislation to put a price on carbon

In an August *New York Times* op-ed, four former Republican EPA administrators praised President Obama for directing the EPA to regulate carbon dioxide from new and existing power plants under the Clean Air Act and called for “[a] market-based approach, like a carbon tax” to further reduce greenhouse gas emissions.¹¹³ Congress should heed this call and adopt a new plan to put a price on carbon using a market-based approach such as a carbon tax. Legislation proposed by Sens. Barbara Boxer (D-CA) and Bernie Sanders (I-VT) would place a fee on carbon at \$20 per ton.¹¹⁴

Conclusion

If emissions of heat-trapping gases continue unabated at current rates and the climate responds as expected, NOAA researchers predict that by the year 2100, Washington, D.C.—a city already known for hot, humid summers—will feel more like New Orleans, which is located about 1,000 miles south of the nation’s capital. In turn, New Orleans will feel more like Bahrain—a hot, dry, and mostly desert country in the Persian Gulf almost 8,000 miles east of New Orleans—where August temperatures historically average above 100 degrees Fahrenheit.¹¹⁵

As the climate warms, we will not be able to change how hot New Orleans feels when we are outside, but we will need to deal with the health effects and other impacts that will hit children, the elderly, and low-income households the hardest.¹¹⁶ We will not be able to stop sea-level rise combined with more powerful storm surges from battering our coastlines or prevent prolonged drought from threatening water supplies, devastating crops and livestock, and raising the risk of wildfires across the West and Southwest, but we will need to deal with the aftermath.

Congress’s failure to take meaningful action on climate change represents an enormous unfunded mandate. Unless Congress works with President Obama, instead of against him, to reduce heat-trapping emissions and prepare communities for the inevitable impacts of an already-changing climate, the American people will continue to pay the cost of doing too little, too late to combat climate change.

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Acknowledgements

Thank you to Dan Weiss, Richard Caperton, Bracken Hendricks, Rebecca Lefton, David Hudson, Mark Dennin, Anne Paisley, and Chester Hawkins for their contributions to this report.

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