GOOD NEIGHBOR ENVIRONMENTAL BOARD

Presidential advisory committee on environmental and infrastructure issues along the U.S. border with Mexico

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President Barack Obama
The White House
1600 Pennsylvania Avenue
Washington, D.C. 20006

Dear Mr. President:

As your federal advisory committee for environmental and infrastructure issues along the United States (U.S.) border with Mexico, the members of the Good Neighbor Environmental Board (GNEB) are concerned about adverse environmental impacts from climate change risks in the border region and have suggestions for federal government actions that will address them and improve the quality of life for the border's 15 million inhabitants.

Although climate risks have been included in previous GNEB reports, this advice letter focuses on U.S. federal government initiatives that can be launched within this 2016 fiscal year through cooperation among U.S. federal agencies; state, tribal, and local governments; civic organizations; and the government of Mexico to improve environmental conditions and enhance border community and environmental resilience to the diverse challenges posed by a changing climate. Much as the Conference on Global Leadership in the Arctic: Cooperation, Innovation, Engagement and Resilience (GLACIER)[1] highlighted the Artic as an example of global climate change risks, the climate change-related stresses and risks along the U.S.-Mexico border illustrate the diversity of the ecological, social, and economic issues that climate change poses for the entire country. What is happening along the border today may be a window to what will happen in the rest of the nation.

Below, we list actions we recommend that federal agencies can implement during this 2016 fiscal year to address those issues, and then we describe each area of

environmental concern in detail. Most of the specific suggestions described below can be moved forward by federal agencies without any new executive orders, although the availability of agency resources may present limitations. However, executive orders that require relevant federal agencies to act along the U.S.-Mexico border, as well as exchange information and collaborate with counterpart Mexican agencies, could reduce climate vulnerabilities of communities along the shared international boundary. Federal leadership will create synergies among all levels of government and other stakeholders on both sides of the border to enhance the climate change resiliency of the affected communities.

Climate Issues along the U.S.–Mexico Border

Climate vulnerability issues that impact natural and human systems and can affect the U.S.-Mexico border region include air, land and ocean temperature increases; significantly decreased precipitation and more extreme weather events; and sea-level rise and tropical storm surges.

Global annual average temperature, as measured over both land and ocean surfaces, warmed roughly 1.53°F from 1880 to 2012,[2] and the last decade was the warmest on record. U.S. average air temperature has increased by 1.3°F to 1.9°F since record keeping began in 1895, and most of this increase has occurred since about 1970. Temperatures in the United States are expected to continue to rise.[3] Continued warming of the planet is projected to occur as a result of past greenhouse gas emissions, as recent research has indicated that another 0.5°F increase is expected over the next few decades even if all greenhouse gas emissions suddenly stopped,[4] although natural variability could still play a role over this time period.[5] Recorded past and projected future temperature increases also have affected and will affect the climate of the U.S.-Mexico border region, with the greatest increases inland from the coast. The magnitude of the temperature increase is greatest during the summer, with more extreme heat days over 100°F and more high nighttime temperatures.[6]

Precipitation also is projected to decrease in the U.S.-Mexico border region, with more severe decreases on the Pacific coast and parts of the Arizona-Sonora border. The Lower Rio Grande Basin area of the border also could experience similar precipitation decreases, with a potential decline of 700,000 acre-feet of available surface water by 2060.[7,8]

Limited water resources and periodic droughts historically have been major issues in the U.S.-Mexico border region, with increasing temperatures and changes in precipitation exacerbating drought consequences.[9] Paleoclimate records for the area show that severe "mega-droughts" have lasted for 50-year periods.[10] The decade of 2001 to 2010 was the warmest in the 110-year instrumental record for the U.S. southwest, with temperatures almost 2°F higher than historic averages, fewer cold air outbreaks, and more heat waves.[11] Droughts and heat waves in the U.S.-Mexico border region are projected to become more intense and cold waves less intense, affecting

precipitation, runoff and recharge, food and energy security, and ecosystem and species health. For example, dry conditions coupled with overgrazing can lead to erosion, the spread of invasive plants, and reduced productivity of such crops as fruit trees.[12] Drought also affects estuarine ecosystems along the U.S.-Mexico border, such as the Tijuana River Estuary in California and the Rio Grande and Lower Laguna Madre of South Texas, which depend on adequate water flow for normal habitat function and biological productivity. During extended droughts, conflict among water users could detrimentally reduce water allocated to ecosystems. Already, we are seeing competition for limited water resources as a result of the current severe drought stresses. Climate projections estimate that by 2050, 32 percent of counties in the United States could be at high or extreme risk of water shortages (compared to 10% today), with the greatest concentration of extreme conditions occurring all along the U.S.-Mexico border.[13] Reduced stream flows and snowpack will affect tourism and recreation in the Southwest's rivers and lakes. A recent detailed study of the Colorado Basin, which supplies critical amounts of water to the border regions of California, Arizona, Baja California and parts of Sonora, concludes that by 2060, there will be an annual shortfall between water production and water demand of 3.2 million acre-feet, leading to the curtailment of water deliveries to all users of the river's waters.[14]

These average temperature changes may understate the likely consequences of climate vulnerability along the U.S.-Mexico border, such as public health impacts due to a projected increase in the number of extreme heat days and high nighttime temperatures, greater frequency and intensity of wildfires, and reduced agricultural productivity. In the summer of 2011, for example, large areas of the inland U.S.-Mexico border region set records for the highest number of days with temperatures exceeding 100°F in recorded history. In some areas, there were more than 100 days when temperatures exceeded 100°F. [15] During the 2011 heat event, rates of water loss due in part to evaporation were double the long-term average, and depleted water resources contributed to more than $10 billion in direct losses to agriculture alone.[16] Another example of the consequences of the drought is that in January 2012, customers of 1,010 Texas water systems were asked to restrict water use, while mandatory water limits were in place in 647 water systems.[17] Similarly, in April 2015, California's governor ordered mandatory water use reductions of 25 percent annually by the state's 400 local water supply agencies.[18]

Possible consequences of drought and increased warming include greater vulnerability to wildfires, including those that burn across the international boundary. Increased warming, drought, insect infestations, the accumulation of woody fuels, and the spread of non-native grasses have contributed to making the region more vulnerable to intense wildfires.[19] Fire models project more wildfires and increased risks to communities across extensive border areas.[20] Drought also changes vegetation, changes grazing, and cropping productivity, compromises water quality and availability, and increases the amount of power required for water pumping and purification.[21] Higher temperatures also increase crop water requirements and air conditioning electrical demands for industry, business, and residential needs.

Projected warming may reduce chilling periods and induce changes in the seasonal timing of crop development.

Rising sea levels along both the Gulf of Mexico and Pacific coasts will result in flooding and declining water quality and ecosystem health. Based on tide gauge data, the past 100-year trend for sea level rise is 0.68 feet near San Diego, California, and 1.24 feet near Port Isabel, Texas.[22] Intermediate-low projections of the increase in local relative sea level from 2015 to 2050 for these two locations (taking into account only ocean thermal expansion but not ice melt) suggest an additional 0.49 feet and 0.70 feet, respectively.[23,24]

With elevated sea levels, the potential for coastal flooding—as well as erosion of bluffs, beaches, and barrier islands—increases. The risk of damage from higher daily tides, as well as storm surge waves from tropical storm events, also will increase. Texas' Gulf Coast averages approximately three tropical storms or hurricanes every 4 years,[25] generating coastal storm surge and sometimes bringing heavy rainfall and damaging winds hundreds of miles inland. Any sea level rise creates the potential for greater damage from storm surge along the Gulf Coast of Texas.[26,27] Coastal estuaries and marsh complexes will be inundated as sea levels rise. Saltwater intrusion into coastal aquifers can damage potable water sources. Coastal flooding could put at risk critical coastal infrastructure in San Diego and the Texas Gulf Coast, including ports, roads, bridges, and energy production and sewage treatment facilities, as well as urban beachfront development. Shorter term climate fluctuations, such as those caused by El Niño, can further stress the productivity, integrity, and rebound capacity of economic, social, and environmental systems.

Extreme heat events and the resulting water quantity and quality impacts can affect regional plant and animal species, promote human health risks, and affect the transmission of insect and rodent infestations and microbial diseases. Higher temperatures amplify the urban heat island effect, requiring greater cooling and increasing electricity usage.[28]

The challenges of responding to the consequences of regional climate change are exacerbated by the socio-economic conditions of communities along the U.S. border with Mexico. With the exception of the City of San Diego, U.S. residents along the border have fewer financial resources than residents of other U.S. regions; 3 of the poorest 10 counties in the United States can be found within 100 miles of the Mexico border,[29] and in 2013, nearly 30 percent of the U.S. population residing in 23 counties along the border was below the poverty level.[30] The cultures and languages are more diverse along the U.S.-Mexico border than many areas elsewhere in the nation, as approximately half of all people residing in U.S. counties along the border speak Spanish as a first language.[31,32]

Federally recognized tribes and tribal communities along the U.S.-Mexico border are affected by elevated temperature and water supply vulnerability and face the loss of traditional foods and medicines, culturally important animal species, and plant

resources.[33] Historic land settlement patterns and high rates of poverty—more than double that of the general U.S. population[34]—complicate tribes' and other disadvantaged populations' abilities to respond to these challenges.

Despite the high levels of poverty along the U.S.-Mexico border, the region is critical for the prosperity of the U.S. economy. Mexico is the second largest trading partner of the United States. By 2014, U.S.-Mexico trade was nearly $500 billion, and most of that trade moved through the land ports of entry along the southern border in truck and rail containers.[35,36] Some border regions are areas of significant economic activity, such as the biotechnology cluster in San Diego; aerospace in Arizona; petroleum and natural gas in Texas; and intensive irrigated agriculture—especially fresh fruits and vegetables—in Imperial County, California, adjacent areas in Arizona, and the lower Rio Grande Valley.

Although the benefits of U.S.-Mexico trade are spread widely throughout the United States, many of the costs associated with the flow of goods are borne by border communities in the form of a saturated transportation infrastructure, heavy truck traffic through communities, and air pollution caused by traffic and exacerbated by excessive waiting times for northbound crossings at the border.[37] Although transnational trade creates jobs in both the U.S. and Mexico border regions in transportation and warehousing, these tend to pay low wages without benefits and so fail to address the borderwide issue of low per capita income.[38]

Low-income rural and urban residents of border communities are more vulnerable to climate risks. Poorer residents of U.S. border communities most often live in substandard housing that is more vulnerable to the effects of climate extremes. Vulnerable residents may not be able to afford air conditioning, and their homes may be located in areas more prone to flooding or adjacent to major transportation routes and ports of entry that have poor air quality.[39] For example, studies have shown that within El Paso, Texas, children in economically distressed families faced disproportionate exposure to peak ozone events.[40]

Almost all border climate and environmental issues are binational, as most of the U.S. border population lives in sister cities separated from adjacent Mexican urban areas only by the international boundary, forming more than a dozen transboundary metropolitan regions. These range in size from the greater San Diego-Tijuana area, with 5 million people, to the area of Naco, Arizona-Naco, Sonora, with just over 6,000 people.[41] Each sister-city pair shares an ecosystem with shared environmental issues, such as air and water pollution. All of these communities, even wealthier San Diego, are characterized by large numbers of poor residents who are vulnerable to climate effects.

Existing Federal Programs and Resources

The U.S. federal government has invested significant financial and human resources to address water, energy, air quality, and health issues, as well as the movement of goods and people, in the border region. These initiatives include federal actions; cooperative

programs with international organizations, bilateral organizations, U.S. states, local governments, tribal communities, civic organizations, and the private sector; and transboundary cooperation with Mexico.

As early as 1983, the La Paz Agreement between the United States and Mexico sought to protect and improve the environment of the border region in both countries. In 1993, the North American Free Trade Agreement created two binational institutions, jointly funded and focused on environmental infrastructure along the border: the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB). These institutions certify and finance environmental infrastructure projects in the border region, including water and wastewater treatment, pollution control, and energy efficiency. Since 1995, 215 such projects have been certified and funded, with 131 completed as of 2014. Some $2.49 billion has been dispersed for these projects as loans and grants by the NADB.[42] The U.S. Environmental Protection Agency's (EPA) Border Environmental Infrastructure Fund (now down to $10 million per year from $100 million in 1997) also contributes to environmental projects under a cooperative agreement with the NADB and BECC.

The EPA-led binational Border 2020 program builds upon the success of the earlier Border 2012 program by establishing five environmental health goals coupled with specific objectives and strategic approaches for accomplishing each goal. The U.S. and Mexico Sections of the International Boundary and Water Commission (IBWC) manage treaty-based water sharing arrangements and sanitation responsibilities between the United States and Mexico. The IBWC also maintains two water storage dams on the Rio Grande, and the U.S. Section of the IBWC (USIBWC) operates two border wastewater treatment plants in San Ysidro, California, and Nogales, Arizona, while the Mexican Section of the IBWC operates the Nuevo Laredo wastewater treatment plant. The U.S. Department of the Interior (DOI), the National Oceanic and Atmospheric Administration, the U.S. Geological Survey (USGS), and other federal agencies also have strong programs in the border region and many collaborative efforts with their Mexican counterparts. These agencies need to be engaged to implement efforts in the current fiscal year to help meet the climate vulnerability challenges that may affect the binational border region.

Collectively, these federal and binational agencies have many years of experience in working across the international boundary and convening local and state actors to participate in transborder activities. In addition, the Border Liaison Mechanism enables local U.S. and Mexican consuls to convene U.S. and Mexican government agencies and other stakeholders to interface directly on transborder issues. Regular transborder consultation could empower cooperative local responses, thereby enhancing local border resiliency.

Under federal leadership, many ongoing programs can be focused to address binational challenges and climate change vulnerabilities in the U.S.-Mexico border region. The members of the GNEB recommend that federal agencies implement a number of actions during the 2016 fiscal year to address climate change risks, as discussed below by environmental media or topic.

Recommended Federal Agency Actions

Water

The combination of increased temperatures, reduced precipitation, and ongoing drought associated with climate risks threaten surface and subsurface water supplies for residential, commercial, agricultural, and ecosystem maintenance purposes. Many of the resultant risks are transborder in nature and can be most effectively addressed through bilateral cooperation in the border region. The most obvious challenges are effective management of the binational Rio Grande and Colorado River systems and support of state aquifer management programs.

Watershed Management

Federal or binational agencies with responsibility for addressing water problems and needs along the border (including EPA, the USIBWC, the USGS, the BECC, and the NADB) should build upon existing programs, such as EPA's Border 2020 program and the IBWC's Minutes 319 and 320, to engage with Mexico and its agencies to address climate change related to shared water problems. More specifically, federal water agencies should work to prevent adverse impacts of more intense storm events and increased sedimentation on public health, urban infrastructure, and storm water systems. They should cooperate on watershed management to address water quality impacts resulting from land cover change, increases in impervious surfaces, and ecosystem deterioration. They should work together with local agencies to prevent disposal of trash to surface waters, remove existing trash in storm water channels, and implement existing regulations to control floods and protect watersheds in the border region. The federal agencies should adopt and propagate water harvesting and green infrastructure practices to conserve water and decrease energy demands associated with delivering and treating water from nonlocal sources. These practices relieve stress on reservoirs and aquifers affected by drought and restore ecosystems through adoption of native landscapes that can survive on harvested rainwater. Federal agencies also should provide improved, regionally tailored information to water managers on early warning of drought conditions through the National Integrated Drought Information System and related seasonal to inter-annual climate forecasts.

Best Practices and Information Sharing

Federal water agencies and the binational BECC/NADB should compile and share information on local and state water conservation programs on both sides of the border. They should convene a bilateral conference to learn what U.S.-Mexico border communities are doing to conserve water, share successful practices, and engage the private sector in the discussion and implementation of best practices. The agencies ought to use existing program funds to encourage state and local government agency staff, staff from environmental utilities, appropriate private sector stakeholders, and Mexican counterparts to meet and discuss practical ways to prevent water pollution of transboundary surface water and ground water resources and watershed management

approaches to enhance border water quality. In shared water bodies where such discussion has been occurring (e.g., through the Transboundary Aquifer Assessment Program), implementation of solutions to identified problems should commence.

In another example, the U.S. Department of Energy (DOE) is funding refinement of U.S. state-level Sankey diagrams, illustrating the water used by the energy sector and the energy used by the water sector. This will include energy and water flows in thermoelectric power plant cooling; biomass production; hydraulic fracturing; and water treatment, pumping, and transmission. With technical assistance and funding, a similar project might be possible in border-region Mexican states.

Rainwater Harvesting, Ground Water Recharge and Ecological Flows

Federal agencies (including EPA, the IBWC, the USGS, the U.S. Bureau of Reclamation, the U.S. Department of Agriculture [USDA], and the U.S. Army Corps of Engineers) should implement or support ground water recharge for vulnerable and/or disadvantaged communities through existing water programs. Ground water recharge efforts provide a mechanism to create stable ground water storage areas, which in turn allow surface water to flow to storage areas with reduced losses. Federal agencies should implement and/or support storm water runoff programs to utilize recycled water for surface water-dependent municipalities and facilitate funding through existing programs to establish and/or enlarge surface water storage impoundments and/or reservoirs, where appropriate and cost effective. Federal agencies should engage with local officials and planners to develop or support community design solutions that prevent water contamination, such as infrastructure for wastewater capture and treatment.[43] To protect tribal resources and meet the federal government's trust responsibilities to tribes, the DOI and its Bureau of Indian Affairs should operate U.S. government programs to protect treaty and other tribal rights as the climate changes.

To adapt to climate vulnerability, all federal water agencies should operate existing programs using integrated water resources management principles, such as coordinating land and water resources management, recognizing water quantity and quality linkages, promoting conjunctive use of surface water and ground water, protecting and restoring natural systems, and inviting public advice in consideration of how to respond to climate risks. Federal agencies should cooperate to ensure adequate ecological flows to support the unique biodiversity of the region and support important binational efforts to provide water to preserve and restore valuable ecosystems.[44] The experimental releases of water and associated research conducted on the Lower Colorado River under IBWC Minute 319 in cooperation with Mexico is recognized, and it is recommended that monitoring continue and that plans for additional releases of water be developed and implemented.

Flood Mitigation, Flood Prevention, and Watershed Management

The USDA's Natural Resources Conservation Service could allocate funds under PL-566, the Small Watershed Program, to rehabilitate aging storm water infrastructure and complete watershed plans in the U.S.-Mexico border region to prevent and mitigate flooding. The U.S. government could provide financial assistance for water conservation projects that target shared resources (e.g., the Colorado River and ground water) in such areas as California-Baja California, where people and ecosystems are already experiencing negative climate-related impacts.[45] Agencies should consider how future—or modifications to existing—infrastructure investments in floodplains will be informed by the new Federal Flood Risk Management Standard. The new flood standard describes various approaches for determining the higher vertical flood elevation and corresponding horizontal floodplain for federally funded projects and establishes the level to which a structure or facility must be resilient. This may include using structural or nonstructural methods to reduce or prevent damage; elevating a structure; or, where appropriate, designing it to adapt to, withstand, and rapidly recover from a flood event. In addition, agencies should consider the use of natural systems, ecosystem processes, and nature-based approaches in the development of alternatives for actions.

Health and Vector-Borne Diseases

Climate changes, such as warmer temperatures and increases in the freeze-free season, may affect human health, as warmer temperatures in the border region have been accompanied by the appearance of new vectors and new vector-borne diseases.[46,47] Other impacts on public health related to climate may include an increase in heat-related illnesses and deaths and an increase in allergy and asthma cases due to earlier and longer spring bloom for many plant species. The Centers for Disease Control and Prevention (CDC), in cooperation with state and local authorities and Mexican agencies, should use existing public health infrastructure programs to strengthen transboundary disease surveillance, educate the public regarding transboundary vector prevention and control efforts, control insect vectors and animal reservoirs of disease, and respond rapidly to border public health outbreaks.[48] The CDC could coordinate public education campaigns that emphasize protective behaviors to reduce risk to vector-borne diseases and promote access to cooling centers, particularly for the elderly, the infirm and economically disadvantaged people.

Transportation and Air

The transportation sector is the largest source of air pollution in the border region, and the movement of trade and people across the U.S.-Mexico boundary exacerbates this problem because delayed movement resulting from U.S. and Mexican security measures has the unintended consequence of increased emissions of volatile organic compounds and oxides of nitrogen, which contribute to ozone formation.

The U.S. Department of Transportation and the Customs and Border Protection program of the U.S. Department of Homeland Security should reduce greenhouse gas releases and air pollution at border crossings with Mexico by decreasing border wait times, create amenities for pedestrians waiting in line, improve border crossing traffic-flow designs, and identify innovative technologies to better predict and reduce border wait times. Some design options include creation of buffer zones between roadways and communities, re-routing trucks through commercial areas and away from residential zones, and encouraging clean diesel programs for commercial vehicles.[49] Of course, many of these solutions require coordination of all three levels of U.S. government, as well as Mexican authorities. The Mariposa port of entry in Arizona is an example of effective design and smart border management to increase energy efficiency and reduce vehicular pollution.[50] Some changes to reduce excessive border crossing delays involve infrastructure and design issues that will require years for implementation. However, there are immediate actions that the relevant federal agencies can take now to decrease border wait times. In 2014, for example, there were 11.9 million passenger vehicles with 21.1 million passengers along with 7.9 million pedestrians that crossed into San Diego at the San Ysidro port of entry.[51] During the times when most crossings took place, waits were often 1 to 2 hours for passenger vehicles and more than 1 hour in the pedestrian line, resulting in significant human health exposure to ozone, carbon monoxide, and fine particulate matter, as well as considerable distress to waiting individuals, especially in the pedestrian line.[52,53] An executive order mandating that U.S. border authorities prioritize reallocating staff to inspection booths and positions at busy crossing times could significantly reduce vehicular and pedestrian wait times, reducing ozone and air contaminant production, as well as reducing negative health effects on passengers, pedestrians, workers at the ports of entry, and residents of the surrounding communities. The economic benefits of shorter wait times for both commercial and noncommercial traffic at the ports of entry also would be significant.[54]

Energy

To meet the energy needs of the growing population in the border region and enhance climate resiliency, the border states have begun to transition to a cleaner energy economy powered by energy efficiency and renewable energy programs and policies. The federal government can continue to play a vital role through education and outreach programs, as well as providing support for the adoption of energy efficiency and renewable energy technologies.

The DOE can provide information at regional events and conferences to educate border communities on climate vulnerabilities, clean and efficient energy technologies, best practices, costs and benefits, and how to determine the potential economic and job creation impacts from implementing energy efficiency and clean energy projects, including photovoltaic (PV) solar at the rooftop, community, and utility scales. For example, energy efficiency projects create instant energy savings, create fiscal benefits, and reduce greenhouse gas emissions. PV solar projects provide significant economic benefits, can be developed and implemented in reasonably shorter timeframes

compared to wind or geothermal energy projects, and displace carbon dioxide and water used by more traditional energy sources. Both energy efficiency and PV solar projects are near-term projects that federal agencies can support to help communities achieve increased climate resiliency.

As another example of possible federal action on energy, EPA could collaborate with the BECC through the Border 2020 program and cooperate with the DOE to undertake a regional assessment of opportunities to promote energy efficiency and distributed solar energy generation for small water and wastewater utilities along the border, including those of tribal governments. The DOE, the National Science Foundation, and EPA held a joint workshop[55] in April 2015 on water resource recovery facilities (WRRFs, also known as wastewater treatment plants) to stimulate dialogue and accelerate the wide-scale advent of advanced WRRFs. Most water and wastewater facilities have large pumps, drives, motors, and other equipment operating 24 hours per day, and these facilities can be among the largest individual energy users in a community. Communities that operate water and wastewater treatment plants along the border can improve energy efficiency and cost savings through the use of variable speed pumps/aeration equipment and incorporating solar power systems. Facilities also can use other approaches to improve energy efficiency by shifting energy usage away from peak demand times to times when electricity is cheaper. Wastewater treatment facilities that incorporate anaerobic digesters can use the generated biogas end product as a source of energy to operate facility booster and process transfer pumps, blowers, and heating units. The use of more energy-efficient motors and pumps will reduce further the amount of electricity needed to operate these facilities. These actions can reduce the power generation requirements of the electric power utility, thereby reducing greenhouse gas emissions.

Since 2011, the GNEB has asked the federal government to encourage adoption of cost-effective conservation and energy efficiency technologies that benefit low-income families currently paying high prices for energy.[56] For example, EPA can encourage U.S. border states utilizing the Clean Energy Incentive Program as part of the Clean Power Plan to support renewable energy projects and energy efficiency in low-income communities. The U.S. Department of Health and Human Services can use its Low-Income Home Energy Assistance Program to target tribal and other poor communities in the border area, especially considering the increased number of extreme heat events and the growing need for air conditioning for vulnerable populations. In the border region of San Diego-Tijuana, cooperative efforts are underway between the U.S. Department of Housing and Urban Development (HUD) and Mexico's Secretaría de Desarrollo Agrario, Territorial y Urbano to mitigate and adapt to climate change through regional planning and green building. To provide more clean, reliable, resilient, and affordable power to border regions, the DOE and Mexico's Secretaría de Energía are expanding power sector cooperation to include peer dialogues for grid planning and operation to include integration of renewable energy, supporting establishment of renewable energy zones in Mexico, and launching programs to enable

business and investor partnerships to scale up investment in low-carbon power infrastructure. High-level government-to-government engagement, including through the U.S.-Mexico Clean Energy and Climate Policy Task Force, can continue to further these efforts. In coordination with the National Weather Service, the Climate Prediction Center can use existing programs to develop methods to predict more accurately the location, length, and severity of extreme heat weather events, including events with above-average nighttime heat, which are expected to have energy use impacts. Existing DOE, HUD, and EPA grant programs can be used to provide emergency shelters for extended periods of extreme temperatures in vulnerable communities and subsidize air conditioning for vulnerable populations.

Emergency Response and Community Resilience

The USDA, DOI, and HUD can use existing programs to discourage communities from building human settlements in wildfire corridors or areas subject to large-scale fires due to human, as well as natural, causes. The USDA and DOI can promote sustainable agroforestry and wildfire defensive measures such as wind breaks, shelter belts, and riparian buffers. Those agencies also should reconsider fire suppression policies to prevent excess biomass accumulation that can create dangerous conditions, and they should improve forest conservation and retention in "climate-smart" ways that advance carbon sequestration. Every federal agency with an emergency preparedness mission should use its existing programs to support vulnerable and disadvantaged communities in establishing infrastructure and building capacity for fire suppression, emergency management implementation, and hazard mitigation for natural disaster events. For example, federal agencies should facilitate wildland fire management specific to rural disadvantaged tribal and other vulnerable communities.

Federal agencies should leverage their efforts and capacities under Presidential Policy Directive-8 on National Preparedness to enhance how they work with border states and communities to increase their resilience to episodic hazard events and chronic climate vulnerabilities. For example, federal agencies should provide for support for communities to assess climate change risk and vulnerability; invest in predisaster planning for the purposes of postdisaster recovery; and develop strategies for addressing potential impacts of more intense coastal storms, sea-level rise, and flooding along the coastal regions of Texas and California.

EPA should continue to support the La Paz Agreement and Border 2020 initiatives to enhance emergency coordination with their federal, state, and local partners. The collaboration allows communities within the border region to benefit from improved training, state-of-the-art equipment, and enhanced emergency response capabilities. The U.S. and Mexico established a Joint Contingency Plan (JCP) in 1999 under the La Paz Agreement. The JCP supported cooperative efforts regarding preparedness, mitigation, response, and prevention of hazardous substance releases in the border area, as well as provided a foundation for the development of 15 sister-city binational

emergency response plans. The plans establish an agreement to provide mutual cooperation to effectively reduce the risk of and respond to threats to the public health, safety, and welfare of the communities through increased communication, coordination, and cooperation between the sister cities to complement existing local, state, regional, and federal response plans. For example, the binational response plans identify sensitive populations, sensitive natural resource areas, drinking water supplies, water treatment facilities, and incident response resources. Future support of these efforts will continue to ensure emergency preparedness along the border. Under Border 2020, at least eight of the sister-city joint contingency plans will be supplemented with preparedness- and prevention-related activities, such as certified training, risk analysis and/or capacity building. These efforts will support capacity building for emergency management at the local level.

In its 2008 11th report, *Natural Disasters and the Environment along the U.S.-Mexico Border*, the GNEB recommended that the United States and Mexico update the 1980 U.S.-Mexico Agreement on Cooperation during Natural Disasters to enable the immediate and targeted responses required when a natural disaster strikes and impacts the same geographical region on both sides to the shared border.[57] Federal action on this agreement should be a priority to prepare the border for climate-related and other natural disasters.

Recommendations

The U.S.-Mexico border region is projected to experience challenging economic and social impacts due to climate risks across a spectrum—from water and energy to health and transportation. This letter outlines specific recommendations for positive actions that federal government agencies should implement in this fiscal year to build climate resilience in the border region. Executive actions on the following can be implemented during the current fiscal year:

- Convene stakeholders from both sides of the border to share information on responses to threats to water supplies.
- Enhance storm water harvesting, ground water recharge, and ecological water flows to respond to both flood and drought risks.
- Facilitate flood mitigation and watershed management efforts, especially systems with crossborder causes and effects.
- Promote efforts to advance integrated wastewater resource management, innovative technologies, and green infrastructure along the border with the goal of providing clean, reliable, and affordable water, wastewater, and storm water services.
- Promote and incentivize green infrastructure and prioritize its financing for both domestic and binational projects.

- Promote the understanding of ecosystem services and co-benefits of nature-based and carbon mitigation options in water infrastructure projects (e.g., green infrastructure) and coastal adaptation measures (e.g., living shorelines).
- Coordinate efforts across and along the border to prepare for new vectors and vector-borne diseases, as well as other potential health effects related to temperature increases and other climate risks.
- Using existing executive orders, and reflecting community concerns, continue to support, plan, and design for the reduction of wait times at the border crossings from Mexico into U.S. border communities—initially though management efforts and full staffing and in the longer term through physical infrastructure improvements.
- All federal agencies should target border urban and rural communities to enhance and increase support for their energy efficiency and security in the face of growing energy demand risks.
- Federal leadership is necessary to enhance the ability of border communities to respond to emergencies such as heat waves, flooding, coastal inundation, and wildfires, especially when U.S. and Mexican border communities are affected. An important first step is to modernize and make relevant to border realities the 1980 U.S.-Mexico Agreement on Cooperation during Natural Disasters.

Mr. President, we thank you for the opportunity to provide you with our insights and recommendations on these important issues related to climate change in the border region.

Respectfully,

Paul Ganster, Ph.D.
GNEB Chair, on behalf of the Good Neighbor Environmental Board

NOTE: GNEB representatives from federal departments and agencies have recused their organizations from this advice letter.

cc: The Honorable Joe Biden
The Vice President of the United States

The Honorable Christina Goldfuss, Managing Director
White House Council on Environmental Quality

The Honorable Gina McCarthy, Administrator
U.S. Environmental Protection Agency

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