Testimony of
Karen B. DeSalvo, MD, MPH, MSc

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Good morning Chairman Rouda, Ranking Member Comer and distinguished members of the Subcommittee. I am Dr. Karen DeSalvo, a primary care physician and former Health Commissioner for the City of New Orleans.

Thank you for the opportunity to participate in this panel on the important topic of protecting the public's health. Across the 30 years in which I practiced medicine and was in public service, I have had the opportunity to shape disaster preparedness and response efforts in the face of extreme weather events. Amongst the many lessons I have learned, is that while supporting people and communities in times of disaster is critical, it is not enough – we must work to build resilience, particularly for the most high risk.

With the near-constant threat of the extreme weather events coupled with daily challenges faced by vulnerable populations like seniors, my message to the committee today is that:

- We should shift our focus from responding to crisis to building more resiliency in people and invest in the public health infrastructure that support them.
- We must also provide set higher expectations for the health care system as a partner to public health in building resilience and responding to emergencies.
- And finally, public health and health care systems should leverage 21st century tools including data and technology to more effectively and efficiently build resilient communities.

I am here today to share a story of my experiences from New Orleans, including my time as Health Commissioner there, and show how focusing in these three main areas where you can make a difference in helping the nation make progress to build stronger systems, people and communities to support adaptation and resiliency in the face of any challenges that come our way.

Climate Change Challenges to the Public's Health

The [yearly average](#) for U.S. extreme weather events costing over $1 billion has shot up from a historic 5.5 events in 2012 to 10.5 events in 2016. In 2017, a record-tying 16 events cost an estimated $313 billion. The most damaging, well publicized and expensive are often storms and floods, but all regions are subject to deaths, injury and health impacts, whether through extreme heat, wildfire, decreased air quality or diseases transmitted by insects, food and water.

The contributors to these startling statistics are broad: Severe storms create flash floods and contaminate drinking water. Chronic coastal flooding regularly threatens over [300,000 coastal homes](#) in the U.S. Warming climates are changing the distribution of vectors like mosquitoes, increasing the risk of diseases like West Nile or Zika. Extreme heat not only leads to heat exhaustion and stroke, but also air pollutants, exacerbating chronic respiratory conditions like asthma, especially in kids. Drought conditions prompt wildfire injuries like burns and smoke inhalation alongside disruptions in food production and water shortages.

Experiences from the front lines

Hurricane Katrina

Climate change may cause an increase in the amount and severity of extreme weather events like hurricanes. It is my experience with Hurricane Katrina fourteen years ago that began my professional journey engaged in medical and public health actions to protect the public's health during extreme weather events. Though New Orleans escaped the direct impact of the hurricane, our catastrophe was failed flood walls, leading to inundation of our city with water for weeks and devastation of our entire health care and

public health infrastructure. From 911 to major hospitals, access and capacity were submerged, along with Charity Hospital, the primary provider for the poor and uninsured in New Orleans.

According to the Louisiana Department of Health and Hospitals, 986 Louisiana residents died as a result of Hurricane Katrina. I was actively practicing medicine during this time. It was a terrible feeling to know that my patients were disconnected from me, from their therapeutic regimens and care. At the time, like most of the country we were a paper-based health care system and those medical records turned to useless bricks. As people quickly evacuated or later landed in shelters or on rescue boats, they most often did not have their medicines or even a good list of them. This meant that essential information to guide clinicians trying to help displaced patients was not available. And those of us still in New Orleans did not have the capability to find our patients easily or to mine data to identify vulnerable patients in need of additional help.

There were exceptions; Ochsner Health System and the Veterans Affairs health system were digitized and, as a result, able to provide more seamless care such as refilling medications for chronic disease or preventing gaps in cancer care. The contrast was stark and a great motivator to us in the health care system to make a transformational change that would link everyone to a medical home. By digitizing the health care records, we could have a health system more resilient for disaster and for every day.

New Orleans, like the rest of the nation, has transformed and now has a digital health care infrastructure that is increasingly connected. It also includes patient portals so that people can view their records to find up-to-date medication lists and medical histories. This infrastructure was used during Hurricane Harvey in Houston shelters to access health information in a way we only dreamed about 14 years ago during Katrina. Because of my experience as a doctor and public health professional in having access to data about those most in need in my community, I am a supporter of the need to leverage data and technology to support people in disaster and in their every day lives, particularly those who are vulnerable.

Hurricane Isaac

Six years after Hurricane Katrina, I had begun my service as Health Commissioner for the City of New Orleans. It was during my tenure, in August of 2012, that [Hurricane Isaac](#) roared ashore in Louisiana some seven years to the day that Hurricane Katrina had landed.   Fortunately, New Orleans, like much of the country had heeded the lessons learned in the health care and public health system. We were better prepared. My efforts as a physician, advocate and now public official focused on building a more connected system to support those in need in the wake of disaster.

One of these actions by the New Orleans Health Department was the creation of a medical special needs registry to maintain a list of those most in need of assistance for evacuation during preparations or in response operations. We had been working aggressively to shift from paper to an electronic, searchable version. By 2012, we had improved our registry of high-risk individuals with special medical needs and had tripled the number of residents enrolled.

In advance of Hurricane Isaac's landfall, we reached out to these high-risk individuals directly and through social and traditional media to offer opportunities for evacuation, providing transportation for those who wanted to leave. We worked with the dialysis network to ensure that people accessed dialysis early and we coordinated with newly developed medical homes to see that people received supports, including adequate supplies of medications to carry them through potential disruptions of pharmacies.

In the end, Hurricane Isaac did not flood New Orleans proper. Rather, the challenge New Orleans faced was prolonged power outage. It was a particularly problematic storm for power outage because it had a large wind field, which remained strong for days. This prevented repair crews from assessing outages and restoring power. More than 900,000 customers in Louisiana lost power representing half of the population. 400,000 were still without power September 1st, four days after landfall.

Overall, the New Orleans area health care system fared well because of improvements in emergency preparedness and in attention to building more climate resilient infrastructure following Katrina. Though some hospitals lost power early in the storm, their redundant systems installed for climate adaptation such as back-up generators functioned as expected and maintained operations at facilities with very few exceptions. Their progress mirrors the kind of improvement in emergency preparedness the nation has experienced in the few years.

As the days dragged on, I found myself standing in the Emergency Operations Center being asked by our power company to give them guidance on the prioritizing power restoration. Hospitals were already on the priority power restoration list and returned to normal function for their inpatient and outpatient services. The question at hand was how to prioritize the remainder of our facilities and neighborhoods.

The situation was further complicated by reports that we were hearing reports that seniors were struggling with the summer heat. Many high-risk individuals, like seniors, had elected to stay in place and not evacuate, despite our efforts to encourage them to leave the city in advance of the storm. Though we had some of these vulnerable individuals identified on our Medical Special Needs Registry, we suspected that not everyone with need was registered. We also were not able to map out where those with the most risk were living, and so we were compelled to go door to door for 3 days to try to assess need and help prioritize power service restoration.

What I saw in those door to door visits of low incomes seniors is burned in my soul. Senior after senior who clearly was food insecure, isolated, unable to navigate stairs, or even sometimes their own apartments. Their situation was not the result of Hurricane Isaac, but rather a chronic, daily challenge. It was clear that they would need more than our help during disaster but every day. They needed support to build their own resiliency which is the capacity to predict, prepare for, and adjust to changing conditions, and to withstand, respond to, and recover from these disruptions.

This experience following Hurricane Isaac, motivated me to find a better way to identify the highest risk individuals in my community using a 21st century approach grounded in data. We worked with the HHS Assistant Secretary for Preparedness and Response (ASPR) to create more efficient and effective methods of identifying the most vulnerable in our community, such as those who are electricity dependent because they are on oxygen. Such an approach would be useful not only to target power restoration, but also to support them in extreme weather events that may bring flood, wind, fire or power outage.

And so, in June 2013, ASPR and the City of New Orleans piloted a first-in-the-nation emergency preparedness drill to test using Center for Medicare and Medicaid Services (CMS) Medicare claims data to identify electricity-dependent durable medical equipment. We visited the homes of people identified on the list from CMS as being electricity dependent. We wanted to know if Medicare claims data was accurate in identifying individuals using a home oxygen concentrator or ventilator. It was 93% accurate. In addition, of the 611 people that the claims data had identified in the New

Orleans community, only 15 were on our medical special needs registry. The drill findings reinforced our hope that medical claims data could be useful in improving preparedness and response for high-risk populations.

This effort, now called emPOWER, has been scaled by ASPR and is available to help public health and first responders in planning, response and resiliency work for extreme weather events and other emergencies.

HHS continues to deploy emPOWER to support communities in disaster including in the recent hurricanes Harvey and Irma, as well as for other emergencies ranging from boil water advisories to tornadoes. Public health authorities across all fifty states, all territories, and MMAs have deployed emPOWER Program tools to strengthen emergency preparedness, response, recovery, and mitigation activities across a range of that include, but are not limited to, wild fires, hurricanes, severe flooding, power outages, and winter storms.
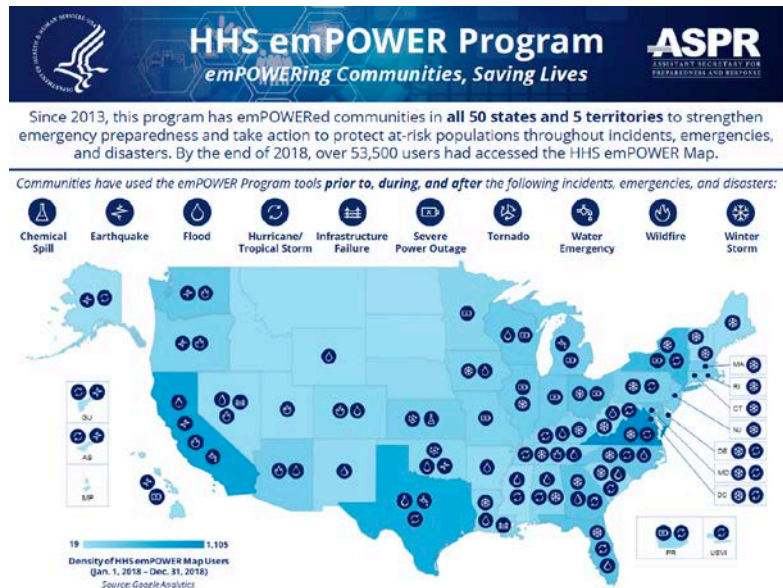
emPOWER is also useful as a tool to build community resiliency and support climate and extreme weather adaption. For example, local communities across the US can use the map to identify high risk neighborhoods where concentrations of Medicare beneficiaries who are electricity-dependent equipment and target those communities for enrollment in Medical Special Needs Registries and focus outreach and education to these focused communities to more effectively reach high risk, vulnerable individuals. The emPOWER tools also include "real-time" natural hazard and NOAA severe weather tracking services to help guide local communities in high risk weather and other disaster events to which they are prone. The tool can also support and inform climate adaptive planning.

Opportunities to Adapt for Climate Change and Build Resilient Communities

Since Hurricane Katrina, the public health and health care sectors have made strides more effective and coordinated response actions following extreme weather events. However, responding to crisis is an inefficient approach, often leading to higher costs and risk of unnecessary suffering and lives lost. Over the past decade, public health and medicine have become increasingly proactive about preventing negative impacts from extreme weather and other disasters. This more proactive approach is more than planning for emergency response but rather is about building more resilient communities.

Essential to this work is the need to strengthen our nation's public health infrastructure, enable the health care system to be a better partner and leverage data and technology in this work. A best practice model of this kind of partnership is [AIR Louisville](), a public-private collaboration in Louisville, Kentucky that offered asthma inhalers to participants and tracked their usage, both by frequency and location. Using the data they collected, AIR Louisville was able to create a map of asthma risk throughout the city, allowing the local government to increase tree coverage in high risk asthma areas, identify alternative truck routes reducing emissions in those areas, and ultimately improve health outcomes for their citizens. The effort resulted in improved health outcomes, reduced health care costs, and improvements in air quality and is the kind of model collaborative approach that can improve public health protection across the nation.

1. **Invest to Provide Public Health Protection for Everyone**

    Public health agencies are the "first responders" when it comes to protecting the health of our residents – whether we are responding to chronic conditions or emergencies. This includes leading our communities to be more resilient with regard to the effects of climate change and extreme weather events. I have experienced firsthand the difference it makes to have a strong local public health infrastructure to

support communities based on my experience from Hurricane Katrina in 2005 to Hurricane Isaac in 2012.

Today more than half of local health department directors acknowledge the health impacts of climate change, but less than 20% have the resources and expertise needed to assess the potential impacts, create effective plans, and protect their community from these health impacts. We must also provide the public health workforce with adequate resources to identify risks and develop and implement climate adaptation action plans to protect communities across the country that are already experiencing health harms due to climate change.

As called for in Public Health 3.0, the public health infrastructure needs flexible, sustainable, and enhanced funding—not only to address crises, but to ensure strong foundational capabilities to protect the public every day. Because daily public health demands and emergent challenges like epidemics and natural disasters do not recognize state or city boundaries, health protection should not depend on local decisions or stop abruptly at political borders. Instead, it should be more reliable, like the interstate highways. Foundational public health capabilities should be part of our nation's infrastructure.

Current best research indicates that an annual outlay of $32 per person is required to put in place the foundational public health capabilities needed to promote health across the nation. Yet national investment in public health capabilities is currently about $19 per person, leaving a $13 per person gap in annual spending. To close this gap, The Public Health Leadership Forum proposed creating a Public Health Infrastructure Fund, a mandatory funding stream, awarded to state and local health departments to fully support core public health foundational capabilities so urgently needed. A sustainable, dedicated revenue stream from this body would fulfill a key governmental responsibility to protect the health of the public. Congressional investment in a Public Health Infrastructure Fund is a critical step to assuring all people in America have the public health protection they should expect and deserve.

An additional opportunity to strengthen the public health infrastructure is to continue support for the Climate and Health Program. This program currently funds 16 states, two cities, three tribes and three territories and reaches 50 percent of the U.S. population. The program has been successful in supporting local public health in its work to partner with health care, the community and other sectors to build in resiliency and climate adaptation. Examples of the critical projects supported by this program include: the development of a vulnerability mapping tool in Massachusetts; a climate change and healthy homes curriculum for community health workers in Maryland; the identification of specific communities at greatest risk due to sea level rise in North Carolina; and, educational programs for rural elders on heat stress and for day-camp counselors on tick exposures in New Hampshire. Increasing funding for this program from $10 million to $15 million would serve two critical purposes. First, it would allow CDC to fund work in additional locations. Second, it would allow CDC to evaluate the existing grantees' work to identify and be able to share best practices with communities nationwide. Given public health resource constraints, evaluating existing programs and broadly sharing lessons learned is a commonsense step that can help save lives across the nation.

2. The Health Care System as a Partner in Resiliency

Health systems have a responsibility to their patients in the face of climate-related disasters and associated emerging public health threats like heat stroke and infectious diseases and have been improving their ability to respond to and recover from disasters. The digitization of health care with electronic health records has provided a means of more readily reaching patients when they are evacuated and in need of information like medication lists. Health care systems now also have the capability of identifying their attributable population to be proactive in reaching out in advance of severe weather or other events such as wildfires.

Broader scale efforts to become more adaptive and reducing the health care sector's carbon footprint will be critical to fully supporting the populations they serve. The

private sector has and can take action on their own to be more adaptive. However, requirements from CMS could strengthen the expectation of building an adaptive and resilient health care infrastructure and go a long way in ensuring the health of patients across the country. For example, the CMS Emergency Preparedness Rule could include a requirement to consider risks related to climate change in hospitals' community all-hazard assessments. Risk projections can no longer be based on historical weather patterns. Hospitals must be using updated projections so they are able to keep their doors open during extreme weather events and fulfill their roles as anchor institutions in their communities.

In 2014, the Department of Health and Human Services published *Primary Protection: Enhancing Health Care Resilience for a Changing Climate* as part of the U.S. Climate Resilience Toolkit. The goal of the Guide and Toolkit is to assist health care providers, design professionals, policymakers, and others with roles and responsibilities in assuring the continuity of quality health and human care before, during and after extreme weather events. The guide is focused on health care facility resilience to climate change impacts and includes an assessment tool to determine facility and infrastructure vulnerabilities as well as solutions. This tool is currently included as a resource by CMS but should be integrated more specifically into the rule to better highlight its value to hospitals.

Finally, Congress and the Administration should continue to provide the flexibility needed to health plans and health care systems to support resiliency for individuals served by them. A key strategy is to address all of the drivers of health including the social determinants of health (SDOH), such as those impacting the seniors I visited after Hurricane Isaac. For example, the latitude provided by Congress in the Chronic Care Act, and furthered by CMS including in recent guidance, expands the tools that Medicare Advantage plans have to address SDOH, including those that may be a significant risk factor for poor health outcomes from climate change impacts like extreme weather. Some of these areas include addressing social isolation, transportation, home accessibility and food insecurity. Congress should encourage

the Administration to continue to provide flexibility for the health care system to address the SDOH and resiliency through Medicare, Medicaid and market place plans.

3. Drive Efficiency and Effectiveness by Leveraging Data and Technology

Previous calls to expand emPOWER have been successful. In 2018, ASPR, in partnership with CMS Medicaid Enterprise Systems (MES) Team, launched the voluntary emPOWERing State Medicaid and CHIP Data Pilot to advance states' and territories' understanding of at-risk populations in their communities, and help them to better anticipate needs and protect the health of children and adults based on their specific access and functional needs. The pilot provides guidance, tools and technical assistance to help states and territories create complementary emPOWER datasets using their state-operated Medicaid and CHIP Program data. This data can be merged with the HHS emPOWER Program Medicare data to provide a more holistic understanding of pediatric, adult and older adult access and functional needs in their communities. A number of states are currently conducting pilots on additional uses of the data. Building on this progress, CMS should require Marketplace Advantage plans and Marketplace plans to provide data to the emPOWER tool.

In addition, technology tools like emPOWER are only helpful if the local officials are aware of the resource and able to use it. ASPR has piloted an expansion of the resource to now include Medicaid data to allow for the identification of additional high risk populations and are starting to work with public health organizations and local public health officials to train public health practitioners in its use on the front lines. Congress should enhance this training opportunity through resources to support training exercises by the Public Health Service Commission Corps to test the use of emPOWER in communities across the nation in partnership with local public health for use in severe weather and other disasters and to support resiliency.

Closing

Our nation should take a more proactive approach to strengthening our public health and health care infrastructure so that everyone in the U.S. has the public health protection they should expect to protect them from a changing climate, from severe weather events and in their everyday lives. I would welcome the opportunity to work with you on any of these issues.