

>>Krystal: Hello. My name is Krystal Laymon, policy advisor at the US Department of Energy's Office of Energy and Energy Efficiency. I'll be presenting with Virginia Castro at the US Department of Energy and we'll be presenting on planning for an energy resilient future, energy project models and lessons learned. During this presentation we will be showcasing various examples of energy efficiency and renewable energy projects that have been funded by the federal emergency management agency, the US Department of Housing and Urban Development and the US Department of Energy to mitigate against natural disasters. We will be highlighting the value of energy efficiency and renewable energy and show examples of how stakeholders have been using federal funding to build more resilient communities. Finally, we will touch upon how different federal agencies are coordinating to encourage mitigation strategies and provide examples of how energy efficiency and renewable energy can be incorporated.

First, I would like to provide a little bit of background on the US Department of Energy and why it is important to include energy efficiency and renewable energy in disaster mitigation strategies. This is a high-level overview of US Department of Energy and where the Office of Energy Efficiency and Renewable Energy sits. There are many different offices within Department of Energy and information I'll be presenting on comes from Department of Energy's Office of Energy Efficiency and Renewable Energy which is highlighted on this slide.

Between 2010 and 2019 there has been a rise in devastating natural disasters totaling \$802 billion in damages. As seen in this graphic the total cost of disasters exceeds \$460 billion over the last three years averaging \$153 billion per year. Due to the rising cost of recovery for federal state, local and tribal personnel it is important than ever to invest in mitigation strategies to decrease the impact of these disasters. We define mitigation as risk reduction to reduce the risk to life, property which includes existing structures and future construction in the pre and post disaster environments where there's growing opportunity to incorporate energy efficiency and renewable energy technologies into mitigation efforts and to build more resilient communities.

This table showcases that mitigation saves. FEMA funded the study by the National Institute of Building Scientists published in 2017 that determines for every \$1.00 spent on hazard mitigation the nation can save \$6.00 in future disaster costs. Mitigation measures are a benefit to communities and now will explore how energy efficiency and renewable energy can be used as part of these mitigation methods.

The energy sector is cross cutting in that not only is needed to power our homes but can help power critical facilities such as hospitals, police, fire stations or shelters. More energy efficiency buildings demand less power from the grid and need less backup generation during an outage which allows for energy resources to be utilized elsewhere. Energy efficiency enhances resiliency to outages because buildings need less power to run during an outage. This strategy is quite simple. When a critical building is in need, it needs less backup generation on site to operate if the grid is down.

Energy efficiency improvements save money by lowering energy bills, improve air quality, decrease energy burden and help buildings stay warmer in the winter and cooler in the summer. These characteristics can allow individuals to shelter in place during an adverse event and potentially reduce morbidity and mortality. Energy efficiency saves money on public facilities during normal operations by lowering energy bills year-round. They're a strong component to on site renewable energy generation such as solar plus storage.

Renewable energy technologies can mitigate against natural disasters and contribute to resiliency. Solar technology paired with storage provides back up power and can support critical services during grid outages. These critical services can range from energy, water, food, telecoms, transportation and health services. Solar plus storage also allows for micro grid islanding that enabled independent grid operations to provide power and reduce stress across the energy system using solar power to charge on site energy storage offers facilities and homes the ability to continue to have power if the electricity grid goes down. Integrating renewable energy technologies into buildings and community centers can serve as a matter to mitigate against power outages while also serving as an emergency in times of disaster. Now I will show how stakeholders have the opportunity to invest in energy efficiency and renewable energy technologies by leveraging federal programs.

>>Virginia: Thank you Krystal for that background. Again my name is Virginia Castro. I'm with the state energy program. Now that we have a background on the important role that energy efficiency and renewable energy can play in the mitigation space, we'll be covered three federal agencies that provide funding opportunities for states and local governments. The first – next slide please. Thank you. The first agency is the Federal Energy – sorry, Federal Emergency Management Agency. The Disaster Recovery Reform Act of 2018 authorized FEMA to develop a new pre-disaster mitigation program called building resilient infrastructure in communities also known as BRIC. This program which is scheduled to launch later in the fall of 2020 will replace the existing pre-disaster mitigation program. It is estimated about \$300 to \$500 million per year will be available for FEMA to support states and communities in undertaking innovative, large infrastructure projects that reduce risks from natural disasters.

This program encourages and enables innovation in promoting partnerships and it is here that states have the opportunity to develop innovative energy projects as mitigation solutions to directly support FEMA's community lifelines. These BRIC _____ have the potential to reshape disaster mitigate solutions with integrating energy efficiency and renewable energy technologies. And this can be accomplished through enhanced collaboration between hazard mitigation offices, state energy offices as well as other stakeholders to leverage expertise and catalyze innovation within the communities that they serve.

Next slide please. The next program is the Department of Housing and Urban Development's Community Development Block Grant Program also known as CDBG. This program provides federal grants to communities that enable resources to address a

wide range of community needs. It's under the Stafford Act that congress may appropriate CDBG funding for disaster systems on a need basis. This grant includes disaster recovery grants and the recently launched CDBG mitigation grants which can both be used as an opportunity to invest in energy mitigation projects.

While the CDBG program has a long history, it's important to note that the CDBG Mit program was launched just last year and is the first mitigation only focused program and underscores the federal focus on making impactful mitigation investments. As Krystal had mentioned earlier there's a focus on developing strategic and innovative mitigation projects and this is where integrating energy efficiency and renewable energy can be an integral part of this solution set. It's through these programs that grantees can adopt higher energy efficiency standards, deploy renewable energy and also adopt energy storage technology to enhance reliability. Next slide please.

Within EERE's weatherization intergovernmental programs office the state energy program provides funding and technical assistance to 56 states, territories and the District of Columbia to enhance energy security, advance state led initiatives and maximize the benefits of increasing energy efficiency. The goal of this program is to develop and protect the nation's energy infrastructure by providing funding directly to state energy offices to form grants. In order to receive funding, state energy offices are required to have an emergency plan for supply disruptions. SEP operates in a congressionally approved annual budget of roughly \$50 million a year and since 2015 has invested in over \$30 million in formula funding into energy emergency resilience and energy security activities. And next we'll transition to stakeholder's trends. Krystal?

>>Krystal: Thank you. Our first stakeholder example is New York University's Langone Medical Center. Due to severe flooding, heavy rains and high winds caused by Hurricane Sandy the medical center lost power and its backup generators failed. Nearly 300 patients including critical care patients and babies were evacuated to nearby hospitals. After the event the medical center used funding from FEMA's public assistance program to implement a campus wide mitigation strategy that included a flood barrier to shield campus buildings and a cogeneration energy infrastructure to protect the center's power supply. FEMA's public assistance mitigation measures is an example of the type of potential activities FEMA's new mitigation program BRIC could implement.

Our next stakeholder example is California's HUD MDBC mitigation action plan. As previously mentioned, grantees must develop and submit an action plan in order to receive CDBG mitigation funds. California used its draft to incorporate energy efficiency and renewable energy technologies. The action plan states that it intends to promote high quality durable and energy efficient construction in areas impacted by 2017 wildfires. In addition to this California's mandated building energy efficiency standards require that all new constructed homes must include solar systems effected January 1, 2020. Many other state examples are in process of drafting their action plans and are subject to adjustment even after submission to HUD.

>>Virginia: These next few projects are going to be examples of how SEP funding was used to create more resilient committees and engage with local governments. In 2010 the Department of Agriculture and Consumer Service's Office of Energy developed the Sun Smart Schools and Emergency Shelters Program. This program installed more than a megawatt of solar power across 118 schools designated as emergency shelters throughout the state. The systems have been activated during four hurricane events between 2010 and 2017. There is an annual savings of approximately \$133,000.00 for the entire project, about \$1,250.00 per school and over 154 of the teachers and 50,000 students have received education in the science and use of renewable energy technologies. These systems are an example of an important measure to mitigate against power outages. Not only do the systems provide power during critical loads, for critical loads during emergencies. But they also offset day to day electricity costs.

In the aftermath of Hurricane Maria in 2018 the Department of Economic Development in _____ state energy program piloted a PV and storage residential resiliency program. Many of the residents on the island were without power for months and the objective of the program was not to only reduce energy consumption from the grid but also to establish resiliency for the families whose homes had been affected by Hurricane Maria. As a result participating homes had reported reduced energy usage of about 15, 10 to 15 kilowatts on average per home. Participants have reported feeling safer and more confident in having electricity when the power is out and also have reported having increased passive survivability for and as a result the homes have increased their passive survivability for the residents.

The next slide are examples of how SEP the state energy offices are directly engaging with local governments. For example just this year the Kentucky Office of Energy and Policy launched the Kentucky Energy Assurance Tool Kit for local governments. Out of a statewide initiative to aid local planners, energy managers and civic leads Kentucky developed a tool kit which serves as a repository for essential elements needed to develop and institutionalized energy assurance plan for local governments. It provides a structured process to build a team, develop a plan and procure the information needed to execute.

And currently in Missouri this project will be completed in 2021. The Missouri Department of Natural Resources is partnering with three small medium sized communities to develop a roadmap to resilience which provides resources, best practices and tools for how communities can strengthen community resilience and harden critical infrastructure. Part of this project aims to improve energy efficiency in buildings and homes in an effort to mitigate against natural disasters. Upon completion the roadmap and the case studies developed in this partner community will serve as resources for other communities across the nation. Thank you. I'll turn it back to Krystal.

>>Krystal: Now we'll talk about nationwide mitigation efforts that would not be feasible or successful without interagency coordination and collaboration. FEMA, HUD, Department of Energy and other organizations must work together with stakeholders to offer resources and funding for community resiliency. The mitigation framework leadership group also known as MitFLG was formed in 2013 and provides a national

coordination of federal efforts mitigation needs identified from stakeholders' input and federal priorities.

MitFLG follows the priorities of the National Mitigation Investment Strategy also known as NIMS released in 2019. From the NIMS FEMA has developed four internal working groups, Share, Measure, Integrate and Demonstrate where federal agencies and state, local, territorial and tribal governments can determine priorities, design implementation strategies for mitigation MitFLG follows FEMA's community lifeline approach including coordinating with DOE to support the energy lifeline. MitFLG is a result of coordination between 14 federal agencies and 9 state, local, tribal and territorial government also known as SLTTs. SLTTs are important members of the MitFLG as they provide insight and unique perspectives on gaps and needs.

The state of Tennessee through the Tennessee Department of Environment and Conservation is one of MitFLG's SLTT members and a contributing voice on disaster mitigation and preparedness to combat natural disasters that can affect the energy system. Tennessee practices disaster mitigation and preparedness through training exercises and ongoing development of their state energy assurance plan which helps identify state specific mitigation preparedness, response and recovery in the energy sector. They also developed an energy security checklist which provides detailed guidelines to determine short term response measures in the event of an emergency. And they have resources available to maintain energy reliability to the state.

Throughout summer 2020 HUD costed a CDBG mitigation webinar series which provides grantees information on best practices for mitigation projects. The webinars feature information on a variety of topics including best practices for energy efficiency, energy storage and renewable energy between speakers from DOE and other offices. Next Virginia will talk about conclusions.

>>Virginia: Great. So we'd like to leave you all with a couple of actual steps that will catalyze these efforts. First [Break in Audio] through the pathway of leveraging federal funding. Funding to implement and build out energy resilience and mitigation projects or challenges that many stakeholders face. Either the process is too cumbersome or simply federal resources are not easily accessible to the communities in which they are intended to serve. Leading a coordinated effort is done best with information is centralized and strong established channels for stakeholder engagement.

As Krystal had mentioned an example of this is FEMA's mitigation leadership framework group where information is disseminated across the federal families to grantees and community action partners. To this point we invite you all to include and integrate energy efficiency and renewable energy solutions as part of the disaster mitigation narrative. It is through these exchanges and platforms that there is the highest potential to fully integrate energy efficiency and renewable energy into these acts.

In the next pathway, while it's important to convene stakeholders across the federal, state and local levels, it's also really important to collaborate with local governments. The

collaboration across the state and local governments is just as important. Disasters occur at a local level. And while there is a coordination as part of an emergency response and recovery there is an opportunity space to integrate state and local partners to collaborate in the pre-disaster mitigation and planning processes. It is in this planning process where the value proposition of how to integrate energy efficiency and available energy for storage can serve and support various state agency missions to have the most impact in the communities we serve. We need to gather stakeholders across different state agencies empowering local governments to be part of this process while further supporting innovative energy projects. And finally we invite all of you to be collaborative at all levels of government. Be innovative in your disaster mitigation solutions and be a champion for the value of energy efficiency and renewable energy in the communities that you serve. Thank you.

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