

Effective Disaster Mitigation Projects

Jennifer Carpenter: Hello, folks. This is Jennifer Carpenter. I'm the assistant director of Policy for the Disaster Recovery & Special Issues here at HQ in DC. We hope everyone and their families are staying as safe as possible during this time. We're happy to be able to meet with you virtually today. This is our first webinar in our CDBG-DR series and we'll be following it up with our first webinar in the mitigation series in the following weeks.

So really given today's contents and the topics we'll be covering, you can see that there's a lot of information that's useful for both our CDBG-DR grantees and our mitigation grantees, and you'll see that across the board in both sets of webinars. We just really want to thank you all for taking the time to learn some new stuff today and thanks to all the presenters for taking time out to present. And welcome. And I will hand it over to Brandy Bones.

Brandy Bones: Thank you, Jenn. Looking forward to this hour and a half session. As you can see from the agenda, we have a lot of great content to cover that focuses on effective mitigation projects including the role of planning. I'm going to start by providing a brief overview of mitigation and its connection to CDBG-DR and CDBG-MIT and then we're going to dive into the connection between mitigation planning and projects.

We'll follow that with a presentation on completing benefit-cost analysis, which is a feature of FEMA projects specifically for flood mitigation projects. And then the final three presentations will provide case studies and best practices learned in the mitigation space using different strategies and tactics, so you can really see how you can bring mitigation to life and some of the best practices that we've all learned.

We have a lot to cover, so as time allows, we'll also try to wrap up with some final Q&A's if, again, there's time, but please do feel free to type in your questions throughout the session and if we're not able to get to it, we will definitely keep a record of those and follow up with each of you separately after the webinar to make sure you get your answers.

So I'm going to start by introducing our amazing panel of individuals that we have presenting today. I'll start with myself. My name is Brandy Bones. I work with ICF where I work with HUD and state and local governments to design, plan and implement their disaster recovery and mitigation projects and programs including those funded with CDBG-DR and CDBG-MIT.

We also have Mary Beth Caruso who serves as a mitigation division director for Region 5 where she supports the citizens and first responders of Illinois, Indiana, Ohio, Minnesota, Michigan, and Wisconsin. The mitigation division is responsible for creating safer communities through programs that reduce the loss of lives and property such as the National Flood Insurance Program or NFIP.

Derek Fellows is also one of our presenters. He's a registered professional engineer and certified floodplain manager with over 15 years of experience in civil engineering. Derek is the FEMA Region 4 CTP program lead and he leads the technical and benefit-cost analysis reviews for Region 4, hazardous mitigation assistance grants and is a FEMA instructor for the FEMA

benefit-cost analysis tool. His prior experience includes FEMA building science branch, FEMA public assistance, 406 mitigation for disaster recovery and design and construction of commercial, and industrial site development of road and highway facilities.

Heather Lagrone joins us from Texas General Land Office, where she's a senior deputy director of the community development and revitalization office. She's had leadership roles in all of the state of Texas's community development block grant disaster recovery programs -- or CDBG-DR -- since 2005 when the state was awarded disaster funds for the impacts realized from Hurricane Rita. Her current \$13 billion portfolio of CDBG-DR funds covers recovery for Hurricane Ike, Sally and Harvey, the Texas wildfires and multiple major flooding events.

She's been involved in all aspects of the CDBG-DR programs to include creation of action plans, policy and program designs, and implementation of a wide variety of projects and programs as well as grant closeouts. The program that she's lead has replaced over 22,000 housing units, thousands of miles of roads, made tons of drainage improvements, replaced water and sewer lines and created countless jobs in the disaster impacted areas of Texas. She's a nationally recognized CR expert and a graduate of Texas A&M University and a native Texan.

We're also joined by Christine Meissner with FEMA. She's a resilience officer for FEMA and works with state and tribal and local governments on coordination and outreach initiatives to promote disaster resilience. She has a master's in sustainable development and has worked domestically and internationally with non-government organizations and local governments to implement local, environmental and community development projects.

And finally we're joined by Roosevelt Grant who also works with FEMA in the mitigation department and has over 20 years of mitigation experience in the Hazard Mitigation Grant Program or HMGP.

So as I mentioned, I'm going to provide a brief overview just to set us on the road and provide some larger context about CDBG and how it connects to mitigation. So what exactly is mitigation? As HUD defines it, is the activities that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of properties and suffering and hardship by lessening the impacts of future disasters. So CDBG-MIT, which was a one-time appropriation of \$15.9 billion to about 20 grantees is specifically for mitigation projects and that's defined very well in course of the federal register notice that HUD has published.

But we also want to focus on not just CDBG-MIT but for all of you who are on the phone, if you have MIT funding, you also have CDBG-DR and CDBG-DR can also play a very important role in mitigation. So this webinar is part of the series for CDBG-DR grantees. So we're going to talk about mitigation and provide an overview on that as well.

So what is mitigation in the context of CDBG-DR? And what if you don't have CDBG-MIT funds or even if you do but are looking for ways to strategically use your existing CDBG-DR funding to reduce future risks from multiple hazards? How can you use CDBG-DR funds for mitigation projects? CDBG-DR does allow for mitigation or resilience as part of the recovery process.

The major thing to make sure that you're doing is, that as long as you can tie the project, the activity back to recovery efforts from the qualifying disaster, rebuilding or recovering in a way that allows you to build in mitigation features is allowable. So for example, instead of repairing damaged homes back to where they were in the prior -- to the qualifying disaster, you know before it was damaged, the grantee may provide assistance to elevate or buy-out those properties thereby reducing risks for those properties when they are in the face of future disasters. However, with CDBG-DR you have to have that tie back to the recovery.

So for example, if there's a qualifying disaster and a wildfire in Sonoma County, as there was a couple years ago, it is unlikely that you could demonstrate a tie back with the drainage program to prevent flooding in a county that was not impacted by the qualifying wildfires but -- because you couldn't not clearly tie that back to the recovery from the wildfire.

There's definitely as we've listed out some of the examples of how mitigation can work in the context of CDBG-DR. Buy out programs are probably among the most common as well as elevation of structures is part of usually larger rebuilding or reconstruction efforts of homes or other building aspects. You can also adopt rehab and reconstruction standards and incorporate these to resilient materials and are served to help keep previously damaged assets online in the event of a future disaster event such as, for example, the installation of solar panels.

And finally, green infrastructure improvements is another really good example; highly effective, relatively low cost way of building back resilience in disaster impacted areas. So you can see how CDBG-DR definitely can be used very effectively in the mitigation space and you can still use it to build a comprehensive approach to reduce future hazard risks.

So here are the stated goals that HUD has for the CDBG-MIT program. So again, this is that one-time appropriation of CDBG-MIT funding that many CDBG-DR impacted areas got who have suffered disasters more recently. HUD has structured the requirements and the goals to compliment the FEMA hazard mitigation policies and processes wherever possible. There's definitely an emphasis on making data informed investments and making sure that these dollars really do prevent repetitive loss of property and protect critical infrastructure.

There's an emphasis on building capacity so that comprehensively communities and governments can begin to analyze disaster risks and update their plans across all levels of government and regionally as well. It's important in the adoption of policy, which is really where planning can come into play in community engagement and really using the funding to leverage and make sure you're doing private public partnerships and coordinating with other federal dollars, such as, for example, FEMA funding.

And then finally all CDBG-MIT program activities have certain requirements that they have to meet. They're similar to CDBG-DR but with that mitigation overlay that comes with the funding. So that really should hopefully set the stage for understanding mitigation and how we define it, how CDBG-DR is connected to mitigation and an overview of the CDBG-MIT program as well.

And so with that, we're going to start with our presentations on successful activities that have been undertaken in the past and with any hope you should trigger some good ideas for strategic use of both your CDBG-DR and CDBG-MIT dollars. I think opportunities for collaboration across agencies and communities and ways to structure federal investments to reduce risk long term, which is the ultimate goal. And so with that, I'm going to hand it over to Mary Beth Caruso who's going to talk about the connection between planning and projects. Mary Beth?

Mary Beth Caruso: Hi, hello. Thank you, Brandy, I appreciate it. I'm glad to be here this afternoon. I am the division director for mitigation in Region 5 Chicago and I will be talking about connections between planning and projects.

So as mentioned before, mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The purpose of mitigation planning is for state, local and Indian tribe governments to identify -- sorry about that -- to identify actions and activities to reduce any losses from those hazards and to establish a coordinated process to implement the plan taking advantage of a wide range of resources.

The two benefits of mitigation planning lays within the community driven planning process that increase awareness and understanding of risks and therefore better buy in and implementation of targeted mitigation investments. Developing hazardous mitigation plans enable state, tribal and local governments to increase education and awareness around these threats and hazards and vulnerabilities, build partnerships for risk reduction involving government organizations, buildings and the public.

Identify long term broadly supported strategies for risk reduction, aligned with reduction with other state, tribal or community objectives. Identify implementation approaches that focus resources on the greatest of risks and vulnerabilities and communicate priorities to potential sources of funding.

Planning requirements. With the Disaster Mitigation Act of 2000, which amended the Stafford Act, it provides the basis for communities to undertake risk-based approaches to reduce hazard risk of planning. In 44 CFR subchapter 201 contains the federal regulations for what must be included for a FEMA approached plan. The main elements of a mitigation plan include public involvement. Public involvement leads to planning, creates a way to solicit and consider input from diverse interests and then promotes discussion about creating a safer, more resilient community.

The involvement of stakeholders is essential to building community wide support for the plan as you well can imagine. In addition to emergency measures, the planning process involves other government agencies, businesses, specific groups, environmental groups and, of course, schools.

Risk assessment. Mitigation plans identify the natural hazards and risks that can impact a community based on historical experience, estimates the potential frequency and magnitude of disasters and assess potential loss to life and property. The risk assessment process provides a factual basis for the activities proposed in the mitigation strategy.

Based on public input, identified risks and available capabilities, communities develop mitigation goals and objectives as a part of a strategy for mitigating hazard related losses. The strategy is a community's approach for implementing mitigation activities that are cost effective, technically feasible and environmentally sound, as well as allowing strategic investments of limited resources. Next slide.

Helping communities make risk-based decisions. Risk assessments are repositories of information. They contain detailed descriptions of natural hazards that can potentially impact the community. Inventories of community assets that may be at risk, risk analysis that involves evaluating vulnerable assets describing potential impacts in estimating loss for each hazard. Risk for the purpose of hazard mitigation planning is a potential for damage loss or other impacts created by the interactions on natural hazards with community assets.

Impacts on the consequences or effects of hazard on the community and its assets. The type of severity of impacts are based on the extent of the hazard and the vulnerability of the asset as well as the community's capabilities to mitigate, prepare for, respond to, and recover from the event. Next slide please.

Developing a mitigation strategy. The mitigation strategy section is the hazard and mitigation plan presents mitigation goals and proposes mitigation actions to achieve these goals. The mitigation strategy should include a wide range of mitigation actions that will reduce vulnerabilities to hazard events. Mitigation actions are typically presented in general terms without specific project details. You can go to the next slide please.

From plans to projects. As more and more communities develop plans and update existing plans, they build capacity to better understand their risks. They build partnerships with subject matter experts. They learn about capacities and resources to move mitigations forward. We see this reflected increasing hazard mitigation assistance grant obligations. So there is -- we do have a best practice portfolio which helps our states and local communities plan better. You can go to the next slide please.

Mitigation plan requirements for state, tribal and local governments applying for FEMA grant. FEMA requires state, tribal, territorial and local governments to develop and adapt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance including funding for mitigation projects. Jurisdictions must update their hazard mitigation plans and resubmit them for FEMA approval every five years to maintain eligibility.

Through the hazard mitigation assistance grants programs, FEMA offers planning grants that support state, tribal, territorial and local governments in developing and updating mitigation plan. This table summarizes how FEMA's mitigation plan requirement applies to states, federally recognized tribe governments applying directly to FEMA for assistance as applicants or to local or tribal governments or non-federally recognized applying for FEMA assistance through a state as sub-applicants.

So most of our public assistance requires a plan except for what we call Categories A and B debris removal and emergency protective measures and then individual assistance. But all other funding for projects does require a plan. You can go to the next slide.

FEMA approved mitigation plan status. So 87 percent of the nation's population lives in communities with current mitigation plans. As you see on this map, there's a lot of red. There are some states that do not get federally declared disasters or have not had them in a while. For instance, Illinois has not had a federally declared disaster until recently, so they did not have the wherewithal to apply for grant money for rebuilding their plans. But recently they are using the money that they received from the last disaster to apply for these mitigation planning projects. The next slide.

The path forward. Planning integration is a process by which, state, territorial, tribal and local governments look critically at their own planning efforts and align them with mitigation concepts, principals and actions with a goal of building resistance. Hazard mitigation plans could be the basis for or influencer of numerous other community plans. Hazard mitigation plans and actions do not stand alone but can have a positive echoing impact on numerous types of plans such as land use, transportation, climate change, sustainability, natural and cultural resource protection, water shed management and economic development.

And with that, Derek Fellows will now discuss the dos and don'ts for effective flood mitigation BCA. Derek.

Derek Fellows: Thank you, Mary Beth. Can you everyone hear me?

Brandy Bones: Yes.

Derek Fellows: Thanks. So good afternoon, welcome all to the WebEx. I am happy to be here. But let me start off by saying that I should replace BCA on this slide with cost effectiveness to have a more accurate title and I'll go ahead and explain that in the coming slides. But for those of you who are not familiar with FEMA's mitigation grants, most require passing a cost effectiveness test.

So the cost effectiveness test required data related to facilities being mitigated and data describing the hazards associated with and quantifying the risks associated with those facilities. In my region, we cover over 3,000 communities and counties so the reviewers that I work with who reviews these types of projects aren't familiar with every worthy facility that could benefit from a mitigation grant. So we rely heavily on grantees and subgrantees to tell the complete story of the mitigation project.

When assembling the grant application, it's important to tell the project's complete story and plenty of details of the mitigation action that you'd like to undertake. These details can be important characteristics and the associated value with those characteristics used to satisfy the cost effectiveness test: Map, pictures, data sources of all sorts contribute to telling the story for your facility.

FEMA's cost effectiveness tests can be daunting for your first time using so I would urge you to seek guidance early in the process if it's required for your grant. Guidance can help navigate the cost effectiveness tests and even suggest other things to consider while you're assembling your grant application. And since, like I said, reviewers are not familiar with your county, city, town and all of your facilities, yes, details in the application could be missed opportunities to be used in the cost effectiveness steps. And this reinforces the idea that all the details can be contributing to the project and necessary for passing cost effectiveness tests.

At the end of this presentation there are technical assistance and training resources that you can use if you need to do a benefit cost analysis or satisfy one of the cost effectiveness tests. Finally, when reviewers are looking at applications, don't guess at any of the values or fail to put documentation into your application that supports those values, that's one of the first things that will spur a question about your application if there is any questions to be had.

So specifically, flood mitigation projects. I like to think about flood mitigation projects in two ways: First, we have the acquisition, elevation and reconstruction project. And this will be covered in more details in the presentation so I don't want to dwell too much on it, but elevation acquisition and reconstruction, usually when we're moving, removing, relocating or elevating structures that have been damaged by flood or are at high risk of being damaged by flood. And in this is type of flood mitigation, there's no change to the flood conditions being experienced at that site. We are simply taking that building or that structure and relocating it away from the hazard.

The second way I think about flood mitigation is the localized flood control project. A localized flood control project is when we actually are changing the flood conditions at that site and we can change it in several ways. We could do a drainage improvement project where the draining improvement project can increase the capacity for the areas to allow a flood to pass or we could do a flood way diversion or storage and you can think about these two -- the localized flood control project by the addition of the culvert bridges pumping stations, flood walls, levies or retention structures. And like I said prior, these projects are designed to reduce the flooding conditions.

So let's briefly discuss the cost effectiveness test for acquisition, elevations and reconstruction project. If your acquisition or elevation project is comprised of a building or even multiple buildings in one application, and those buildings are all located in a special flood hazard area, that's denoted in FEMA's flood insurance rate map as being located in an A zone or a B zone, and the average cost of the structure is less than \$276,000 for an acquisition or \$175- if you're doing the elevation or reconstruction project, you do not have to do a BCA.

FEMA has conducted analysis determining that projects under these dollar thresholds are cost effective and have adopted this as a policy. If any part of the building is in a special flood hazard area, or the lowest floor of the structure or the building is lower than the base flood elevation, you may use this policy to establish a cost effectiveness test.

So if your project consists of building or multiple buildings that are actually above those dollar thresholds, 276- for acquisitions or 175- for elevation, your only option is to actually perform a benefit cost analysis, or BCA. I'll refer to it as a BCA from now on.

So what happens if your buildings are not in a special flood hazard area? You have to do that BCA. So if you're above the threshold or outside you actually have to go through the benefit cost analysis process, and you can use the FEMA BCA tool that's available on the benefit cost analysis website. And that link is included at the end of this presentation today.

So what if your project consists of buildings both inside and outside of a special flood area? Well, you have two choices. You could perform a BCA on all the structures is one, or you could split the project in two, you could use FEMA's policies for cost effectiveness for those that are in the special flood hazard area or -- and then those that are outside the special flood hazard area, you could conduct a BCA just on those structures.

So how do we actually conduct a BCA from the acquisition and elevation project? We use flood hazard data, that can come from a flood model, that can come from a flood insurance study, that can come from an H&H study that's been conducted by an engineer. The data that we need to see this can appear in those models or those flood studies has characteristics of the stream, like the stream bed elevation, flood height and flood discharges, the volumes of water that's flowing at various difference recurrence intervals that's associated where the location -- where those structures are located.

There's a second option if you don't have the flood model or the H&H studies, or flood insurance study. You could actually do a benefit-cost analysis using passed or expected damages. Those damages can be documented, the insurance documents from previous flood, repairable invoices from flooding events or documentation that shows what the flood heights were associated with that structure.

Based on those flood heights, we can go through calculations and calculate damages that occurred to the structure, occurred the contents associated with the building and as well as we include things like displacement costs, the costs of relocating your residence temporarily while you're in the rebuilding process. So all these things can be included as benefits when you're doing your benefit-cost analysis.

Depending on project specific, either of these two analysis procedures could produce a different result. Here at FEMA, if one of them is proved to be a cost-effective project, we'll go with that method. And in addition to some of the flood data that you would need for conducting the BCA, you'd also need to have building data, like the price, the size, does it have basement, what is the first floor elevation, what is the building replacement costs. Things like what type of utilities and the contents associated with that building.

And one other data point that we would need for an elevation, is the height of the elevation. This slide here includes photos on a completed acquisition project. The large picture on the left side of the slide is the before picture. You see a single family, one-story brick home and in the top right

corner there's a map of the special flood hazard area overlaying an aerial photo from Google Earth.

It may be hard to see but there's a yellow push pin where the single-family home is located. In this example, the home is located in the red and blue hatched area. This hatched area is the highest risk area identified on a flood insurance rate map called a floodway. This floodway is also part of the special flood hazard area and located in an A zone.

This specific project [sic] were under the \$276,000 project costs, therefore the FEMA policy exempted the need for a BCA. So this project was approved for a grant. And then you can see in the picture at the bottom right shows a vacant lot where the home was demolished and then we have a completed project.

In this next slide, I have an example of an elevation project. Again, the large picture in the top center of the slide is the before picture. You see a single-family two-story wood framed home. The bottom right corner is the map that shows the special flood hazard area with the Google Earth aerial map and then again that small little yellow push pin that shows the location of the home.

Again, because this is in -- the blue area denotes the special flood hazard area or an A zone and the project costs being under 175- therefore we didn't have to do a benefit cost analysis again, we just used the policy to exempt it. And you can see the picture at the bottom left shows the home elevated on wood piles. The home elevation height in this case was probably in the neighborhood of 10 feet plus because you can see really small there on the left side of the house, there's a car parked underneath the elevated home.

The next slide that I have talks about localized flood control projects. Culverts, bridges and pump station can be used to improve drainage and increase capacity to allow larger floods to drain high-risk areas and reduce damages. Flood water diversions are used to move flood waters away from high risk areas while flood water storage increases capacity to hold flood waters and slowly release flood waters over time to prevent large floods from inundating high-risk areas and thus reducing damages.

So how do you complete a cost-effectiveness step for a localized drainage project? The only way is a BCA. The BCA for flood control projects must compare current conditions or the pre-mitigation condition to the proposed condition or the post-mitigation condition. The current condition can be determined with model damages or historic damages. The proposed conditions could be modeled with a flood model or with professional expected damages.

In this case we're looking for some kind of a report usually from an engineer or a hydrologist that says, if we undertake this project, whether it's a culvert, bridge, pump station, flood wall levy, when we complete this project we're going to expect that the heights of the flooding will be reduced for this area and that the difference between the pre- and the post-condition are the benefits of doing this project and then that is compared to the costs of construction, that being what is needed to complete a benefit cost analysis.

So what kind of conditions or damages in these pre- and post-conditions can be used? Well, you can use the damages that would be experienced by a flood to buildings; those could be residential, commercial or government buildings. It could include critical services, utilities, roads or bridges. Remember in the previous slide I talked about some of the things we need for the residential buildings, stuff like the type of the structure, the size, basement, low floor elevations and such. For non-residential buildings you could give us a count or a survey of the types of building. In the FEMA BCA tool we can model different types of non-residential buildings including retail, hotels, school, industrial, warehouse, etcetera.

Some of the utility infrastructure that we can model inside the BCA tool includes potable water systems, waste-water systems, electrical. We can also include critical structures like police service, fire, ambulance, hospital, as well as loss of function of roads and that would be based on the amount of traffic that you would see, detours and the extra time to complete detours.

That completes my presentation. So up next is Heather Lagrone. Heather will now discuss a coastal flooding mitigation project and the McFaddin project.

Heather Lagrone: Thank you so much. As mentioned, I'm going to actually talk about a project that we did here in the state of Texas related to our CDBG-DR program, in particular our Hurricane Ike dollars. So for those of you who aren't aware, the state of Texas has been unlucky enough, lucky enough, I'm not sure the way to describe it, to have had the last five years straight declarations that rose to a supplemental allocation level and we've gotten about \$10 billion in the last five years.

Today I'm talking about this Ike funded project that ran from 2008 to 2016. During Hurricane Ike a storm surge washed away about 20 miles of a coastal dune system in the McFaddin National Wildlife Refuge in Jefferson County Texas. For those of you who aren't familiar with Jefferson County, that is where Beaumont is located. If you're not, it is east of Houston towards Louisiana from Texas.

So the McFaddin dune system, as you all are aware, it was a typical dune system. It protected our residents from wind and waves and storm surge. Twenty miles of this dune system was destroyed by Hurricane Ike. Hurricane Ike had a huge storm surge associated with it and it just obliterated this whole entire area. The dune system during events like Ike protected us from big things like that but on a daily basis it does slow the rate of the coast retreat and protects the absorbent marsh land behind. Behind this project were and are still almost a quarter million people in Jefferson County.

The funding came together in a very interesting way for this project. Twenty miles of dune restoration is a lot of project to try to cover. So we got quite creative with the county in trying to put this together. We had almost \$20 million that went into this program. It spans multiple years of funding and it's also spans multiple parts of funding. As is always the case when you try to layer funds, you've got different regulations, sometimes dulling regulations; whose regulation is more strict? Whose regulation is the one to take precedent?

Those dollars are never on the same timeline. In some cases, those dollars are advanced immediately to the community. In other cases, they're reimbursement driven. There's cost shares and first in and first out kind of requirements. All of our funds say that we're kind of last resort. They're trying to figure out all of those issues, along with the budget constraints just that naturally come into a project like this one was quite interesting. And then we had multiple change orders that occurred.

So as is required as a CDBG-DR allocation, the county did do a workshop and a public hearing related to project selection. They identified this as a need. It was going to be an urgent need as opposed to an LMI or [inaudible] eligible national objective. So they actually did not immediately decide to use their CDBG funds on it. They were going to do what they could from other funding sources at first. But they did go through ultimately the public hearings and they did allocate the DR funds for the dune restoration. As they made all of these determinations, the project continued to change and continued to need additional financing, so it became necessary to pursue alternate funding sources.

So the project itself was in the McFaddin Wildlife Refuge which is the federal property or federal land, which over and above the normal environmental permitting and requirements that are necessary just underneath in Part 58, we had considerable interest from the Army Corps, from Fish and Wildlife Service and the Historic Commission.

The Historic Commission weighted very heavily in this project. The environmental became much more detailed as in a normal environmental would normally and it resulted in extra expenses. This was the reason that we had to go to a change order to be able to fund those particular environmental costs.

One thing that came up during this that we still talk about today is the Historical Commission came to us and they did not like the site selection of a sand resource or sand material to utilize to build these dunes. But we were looking at four miles out into the gulf. If you haven't dealt with a restoration in the past, it's a very rare commodity to find sand that's appropriate for this type of a project. We found it four miles out.

The Historic Commission got very interested in it because they realized that four miles out off of the Texas Gulf Coast was an ancient riverbed. So we were pulling sand from four miles out in the gulf and we were told that that was an ancient riverbed and we had to stay in the middle of that riverbed.

We could not pull sand from what would have been the banks of that riverbed, even though it was four miles out and under water, and as the sand came back to dry land, so to speak, we had to sift through the sand and look to see if there were artifacts present. There were several times during this project that we stopped work on the project due to the presence and/or the inability to sift for these artifacts along the way.

The project timeline is quite lengthy, and I think that's a definite lesson learned as it relates to mitigation, particularly when you're doing mitigation and layering multiple programs together. The project timeline started with Hurricane Ike when it was destroyed in September of 2008 and

the project was not completed until December of 2016. As you can see, we did all of the soft costs or the regulatory details associated with this project up until 2015. So once we got the go ahead to build the project, we were able to build 14 miles of the damaged 20-mile berm in about a year's time, yeah and a half maybe.

When we first started building the project, we built the first two miles and we came up on a change order, so we delayed a bit there. In that little bit of time that we had built those two miles, the natural marshes behind the berm had already started coming back. So that marsh land works very well in retaining the storm surge.

It serves a purpose; it protects everything behind it, and in doing so, we saw the freshwater fish coming back, we saw the marshland grasses starting to come back. Now that we're a couple of years out, behind the berm has re-established as that marshland. Overall, lessons learned is that we needed to have very strong communications, both internal to the project, as well as with the citizens that we were serving.

We were very careful in making sure that our community members knew what we were doing in the project. We took opportunities to brag on the project when we could. And going through the project we celebrated opportunities where we can. The environmental, like I had mentioned before, became a very complex undertaking. The Historic Commission got extremely involved in the creation of that berm system; not so much in the creation itself, but in where we were getting materials to be able to do so.

As you can imagine, as a result of the requirements that were placed on us in the delivery of the sand, we found considerable cost increases. We had to go deeper out into the gulf to pull that sand up, which increased costs, of course, from the depth as well as in mileage and, you know, equipment and all of those things. We ended up having an archeologist, who was part of the project who helped us to identify any artifacts or lack thereof in the project as we were building it.

And there was considerable time delays associated with that environmental process. And that's over and above what we would have normally done with Fish and Wildlife and with, you know, Army Corp and all of those normal things that are in that Part 58 test list. The construction itself also, when you look at it only took us about a year and a half once we got to the construction. That year and a half, however, was impacted by severe weather events. As we were working there along the coastline, there were several times where we had to stop and in some cases for additional tropical storms. So that definitely plays into it.

We were super excited when mitigation funds came out with that 12-year window on them. Obviously spending half of your money in six years but having 12 years to spend the money sounds like a very long time to our constituents and to our elected officials; however, for those of us who work in this program, it took us almost eight years to do this berm system that I'm talking about. So we would not have been able to do that as an example with our more current dollars that have a six-year spending requirement on it. Our Hurricane Ike dollars did not have that restriction.

So all of those things need to play into your project selections. You need to consider timelines, you need to pad those timelines for the unknown and I would suggest that you consider looking across the board at project management type things like critical paths and all those things to be sure that your dual passing everything that you can because these things are going to take longer than you ever expect. And they won't make any sense to anybody who's in -- or should I say outside of what we do.

When we were awarded these funds my boss turned to me and I told him congratulations, you're late. Because, everything that we do takes longer than it should in the eyes of the public. But since then, we've established this berm.

Like I said, the critical wildlife and protections and the sanctuaries are back in place. We are protecting a quarter million Texans behind this berm. We have, because we do get hit on a pretty regular basis, seen it come to work very well in subsequent events. And we are currently protecting our intercoastal waterway which is huge for us for shipping as well as a large portion of the Texas refineries that exist here along our coastline.

I'll be glad to answer questions at the end if anybody has particular questions or my contact information is available if anybody wants to talk more in depth but in the meantime, Christine Meissner is going to talk to us about buy-out mitigation projects from the FEMA perspective.

Christine Meissner: Thank you so much Heather. Can you hear me okay?

Heather Lagrone: Yes, got you and you have control.

Christine Meissner: Okay, great. Well, thanks again. My name is Christine Meissner, I'm the resilience officer in the mitigation division of FEMA Region 5 which is located in Chicago, and I'm going to talk about a specific case study in Minnesota that really underscores how acquisition projects can be an effective means for achieving disaster resilience. And also just want to make sure you're seeing my slides change, correct?

Heather Lagrone: Yes. Yes.

Christine Meissner: Great. So as Mary Beth mentioned, hazard mitigation is any action taken to reduce or eliminate long-term risks to people and properties from national disasters. And you already heard a lot of different ways in which communities can do that to reduce their long-term risk. And there's so many different projects that we fund, so it could be purchasing flood insurance, safe rooms, bearing electric lines is a large variety that we see especially in Region 5.

As you can see from this chart, though, acquisitions are leading in terms of the most common type of mitigation project across the country also here in Region 5. FEMA considers acquisitions to be a hundred percent effective against future property damage because it physically removes the at-risk asset from the hazard area, which means less damage in the future and communities are spending less resources and have less impacts post event.

So when we say acquisitions, or sometimes referred to as buy-outs, there's really two types. There can be acquisition demolition project which entails the purchase of land structure and the demolition or relocation of the structure, removal of utilities and its deed restricted. There can also be -- so that's acquisition demolition, just removing the structure and maintaining its open space. And then the second type is acquisition relocation, which involves relocating the structure outside of that flood hazard area. And in both cases also has to be deed restricted in perpetuity and it's maintained as open space.

Derek reviewed these project types in his presentation when he was discussing BCA, so now we'll just move right into the case study in Austin, Minnesota and their experience with mitigation acquisition projects to increase their resilience. I really like this particular example because they used both acquisition demolition and acquisition relocation, and they used a variety of different funding streams to finance their project including HUD CDBG.

So Austin is a city of about 25,000 people and it's located in Mower County, Minnesota. It's right on the south eastern boarder of the state of Iowa, just to visualize that. The city is located at a confluence of three water bodies. So it's the Cider River and the two creeks, the Turtle Creek and the Dobbins Creek, and that really creates the conditions for regular flooding for them.

The first mitigation projects in Austin were implemented in 1978, that's kind of when their flooding history really started and they -- buy-outs wasn't necessarily their trajectory in the beginning. They worked with the Army Corps of Engineers to look at levy systems and other kind of major flood control systems, and those did not turn out to be cost effective, so they did not move forward with those projects with the Army Corps so they pivoted to what they could do to address the flooding impacts.

The ultimate goal of the city was to develop a floodplain management strategy. Buy outs was kind of the cornerstone of that strategy, and they wanted to make sure that specific key objectives were hit in their risk strategy, their flood risk strategy. And so that was voluntary buy-outs of homes that had the most severe and repetitive flooding problems. They wanted to offer pre-flood market value to homeowners who experienced flooding.

They auctioned off acquired sound structures for relocation and then used that money to buy-out more damaged homes. They wanted to improve flood water discharges by removing structures from the floodway and they wanted to convert land into permanent open space reducing flood levels and future threats. And as you'll see on this slide, this town is also known as Spam Town USA because that's the headquarters of the company that makes spam meat.

Okay. So just a little review on their flood history to give you context for their project. So as I mentioned, 1978 kind of prompted the city's first mitigation efforts and then it continued throughout the '90s -- '80s, '90s and 2000s basically.

They were one of 56 declared counties in the Midwest that got hit by the great floods of '93, one of the most damaging in the state's history. Austin also experienced flooding pretty much every year between the year 2000 and 2012. And as you'll see on the USGS gage chart, their peak

record floods were 2004, 2008 and 2000. So they repeatedly got hit not just with flooding but high peak flooding.

So preventing future damage. The city bought out their first set of homes in the '70s using HUD CDBG. They continued to do flood purchases throughout the '80s, '90s and 2000 but then using FEMA funds. But to kind of start off, in the beginning in 1978 the city's housing and redevelopment authority administered the acquisition of the homes and they received a \$1.7 million grant from HUD CDBG. As the primary agency for Austin to buy property, the Housing Authority coordinated all the acquisitions and they worked closely with Minnesota's homeland security and emergency management agency.

Homeowners were given the option to relocate their structures out of the floodplain while other structurally sound structures were auctioned off with the condition that they also be moved out of the floodplain. The money raised by the auction was then reinvested to fund more acquisitions. So using the HUD CDBG the city purchased 58 flood-prone residential properties. And, again, that was back in the '70s.

And then moving forward into more recent history, following the great floods of '93, they used FEMA funding to acquire 101 additional homes because of the devastating impacts of that flood. And they used FEMA's hazard mitigation grant program which is available to communities post disaster in a presently declared declaration. And for that kind of buy-outs, the city was actually able to use Minnesota's Department of Natural Resources, it's a state agency. They used funding from that state agency for their local match to our FEMA funded programs. So they didn't actually have to end of using any money at the local level to fund that project.

And really what sets Austin apart from other buy-out communities is that they did have a myriad of different ways for funding buy-outs. They didn't just leverage federal and state programs, but in 2004 they wanted to increase their own local financial capacities so they instituted a local option sales tax of 5 cents and the city used that revenue for a variety of different services and investments but it did also help them to acquire flood prone homes.

And they did a study on themselves and since 2008 the city reported that their special sales tax generated over \$1 million for them and that is something that will continue to be -- that tax is going to go through until 2027, so they have ongoing revenue for future flood projects.

As in other communities, acquisitions of such a large number in scale does lead to housing shortage. And in response, the city while they were, you know, buying out homes that were at high risk or more severely damaged, they also built two market rate housing facilities and each of those facilities contained around 100 units each. So some homeowners that had their homes bought out were able to relocate to those units and then, of course, some people left the city.

So this is just an interesting slide I wanted to show you guys because often when we talk about acquisition and relocation people imagine homes, but this is a really cool example of relocating a whole church. So the St. Paul Evangelical Church was an architectural landmark in the city, it had been so since the '50s and it suffered extensive damage in the great floods of '93. So the

church leaders decided to sell the church in the mass acquisition projects that I've been discussing, and they relocated it to a safer, dryer and less costly land.

Instead of demolishing the church, the city saved the structure, they gutted it and converted it to a closer space that can no longer be damaged by flood waters. And the city celebrates important events there. They have 4th of July celebrations; they call it the Veteran's Pavilion. People have weddings there, graduation ceremonies, so it's a great example how the stone [inaudible] -- you know what they're able to do when they work together to solve a problem and retain some of the important cultural identity components of the community but also reduce on their flood risk.

Okay. So since the overall topic of this webinar is effective mitigation projects, I wanted to share with you how we know that acquisitions effective. So you heard my colleague Derek talk about the benefit cost analysis and that's used during project development to predict probable cost effectiveness of a project that hasn't happened yet. But another tool in the toolbox for determining effectiveness is the loss avoidance study. And this is different because it looks back at completed projects and estimates how much damage was prevented from an actual event. So it can assess the actual project performance.

With significant investment being made by the city of Austin they obviously really wanted to demonstrate the cost effectiveness of their investments and maintain continued support to do so. So the methodology for their loss avoidance study was based on the analysis of actual flood hazard events that occurred after they did all of their buy-outs. And the result is losses avoided ratio, which compares the damages prevented from recent disasters after the mitigation project was completed.

In areas that don't repeatedly flood, it could be hard to do a loss avoidance study but as I mentioned, Austin experiences regular flooding almost yearly so they have had multiple opportunities to quote test for projects. In 2013 FEMA funded the loss avoidance study and worked with the city on that and the state, and the study determined -- they looked at the benefits of a particular period of time.

So 103 acquisitions between 1978 and 2001 that's reflected on this chart. And they looked at the peak flood events of 2004, 2008 and 2010 and according to that study the total acquisition cost was 14,425 and some change. That's how much they spent on those 163 acquisitions, but they were able to determine that the losses avoided were over 38 million. And so that showed a 2.65 return on investment.

I really like the quote, too, that's at the bottom of this slide from the Public Works director because while we can quantify losses avoided in terms of physical damage to structures, we can't quantify peace of mind and helping people avoid the mental anguish of losing a home and that's not reflected in these numbers but it's so important to keep in mind.

Okay. And then a common question in projects such as acquisitions, of course, is how is that acquired land going to be used moving forward. So for a FEMA perspective, as I mentioned, that space is required to be maintained in open space and perpetuity. And there's limited amount of

general allowable land use options and they're all in the green space arena so it'd be like natural forest preserves, outdoor recreation use, gardens, wildlife and habitat management, for example.

So for continuity purposes, the city of Austin really tried to focus on buying homes that was next to each other and that were highly severely damaged property. There was some checkerboarding that happened that they primarily focused on buying out homes that were along the Cedar River, Turtle Creek and Dobbins Creek in the floodplain and those acquired lots were deeded back to the city and are now being managed by their Department of Parks and Rec as part of the city's comprehensive linear park system. So much of the land went back to serve as parks and trails and designated prairie and wetland restoration.

So as you can see in this case study, the city's efforts demonstrate not just the cost effective approach to flood risk reduction but a resilient approach that really factored in the co-benefits of intentional open space management so that it could continue to be an asset to the local community.

So now we're going to switch gears from flood to earthquakes and I'm going to turn it over to my colleague Roosevelt Grant who is going to talk about other effective seismic mitigation strategies.

Roosevelt Grant: Okay. Thank you, Christine. So half of United States lives in an active seismic zone but most of our grantees, our local communities may not necessarily be familiar with that risk. In contrast, the discussion that we've had today with floods and coastal flooding and then dos and don'ts associated with buy-outs, likewise when related hazards such as tornados or the hurricanes that occur on an annual basis, certainly the hurricane season coming up in the next few weeks, suggest a little bit of a different frequency. They occur more often, and the impact can range from moderate impact to extreme.

So I wanted to take a few minutes to walk you through some lessons learned, some best practices to address seismic mitigation, code standards and then finally some lessons learned with respect to code enforcement. I'm going to do a case study on Puerto Rico and a lot of that is focused on the fact that Puerto Rico was ground zero for Hurricane Maria which was a very significant event.

But if you take a look here, you'll see some arrows here in yellow near the Caribbean Sea and this is kind of like just gives you a very quick explanation of the seismic activity that happens near Puerto Rico. So if you look at the yellow arrows here, you'll see that the Caribbean plate, the crust there slides underneath the island, and you'll see a large red dot there with concentric circles that indicates where the epicenter was for the earthquakes that happened recently.

So essentially that's one major area for risk for the island, and the other is where you'll see near the Atlantic Ocean, that North American plate runs into and slides underneath the Caribbean plate. So those are essentially the two major areas that potentially impact risk for the island related to seismic activity.

So in December of 2019, late December, that was a sequence of events. Essentially, we had over 3500 recorded earthquakes in the southwestern portion of the island. The most significant event occurred on January 7th and that magnitude was a 6.4. So roughly 12 earthquakes occurred that had a magnitude of 5 or greater, as you can see, bearing near the [inaudible] region and also Ponce Bay, again in the southwestern portion of the island.

Roughly \$3.1 billion of damage occurred as a result of these events. FEMA's public assistance and individual assistance paid roughly or obligated a half a billion dollars. And 8,000 residents or so were displaced as a result of this event. So again, not something happens frequently but when it does it certainly can be a very impactful event.

I just wanted to walk you through some quick pictures to show you some of the damages that occurred after these events starting in late 2019 and ending February of this year. Here's a church. Here are some residences that were significantly impacted and substantially damaged. Those buildings are essentially rendered uninhabitable. Here's a school, a complete loss of function, substantially damaged.

So Brandy kind of defined mitigation. It's very similar to the definition that's used by FEMA. With respect to mitigation for a seismic event, particularly through the hazard mitigation grant program after a presidential major declaration, there may be funding available for a grantee or a community to retrofit the existing building. And that is essentially modifying the structure to reduce or eliminate future damage and to protect the building's inhabitants.

So there's various techniques that can be used to support structural retrofits, this includes fortifying the foundation, adding additional load bearing walls, beams, making sure that the floors and the roofs and the connections between these elements are very fit and tight. The general intent here is to try to make sure that you [inaudible] or reduce the amount of vertical load and horizontal load that occurs from the seismic event. And these two pictures here on the right can show you examples of that bracing that would be considered eligible under FEMA for the mitigation program.

So structural retrofits are clearly a very important component of seismic mitigation, but I'd like you to take step back and think holistically. When you look at your entire building spots, when you look at the ability to be able to retrofit structures that were damaged that are technically feasible to be able to be retrofitted, we want to make sure that our grantees are leveraging and incorporating various codes and standards to try to make sure that not only are you bringing that building back to a higher level of protection but that you're reducing risks to loss of life, that you're improving the quality of the building stock and then also to reduce the potential for future damages and damages costs related to that.

So the American Society of Civil Engineers has put out various publications to rehabilitate and address seismic evaluations for existing buildings. And this is not an exhaustive list here, I just wanted to give you a quick snapshot. FEMA has several publications that it's put out over the years, again, to try to address commercial and residential risk and make sure that we are providing best technical information that we can to our communities and our grantees.

Again, that concept of mitigation, the intent is to try to break the cycle. So not just simply providing funds to restore a structure back to its existing level but going beyond that and trying to make sure that we're reducing risk to loss of life, protecting that structure, and then certainly bringing down disaster costs. Bottom line, "an ounce of prevention," quote-unquote, "is worth a pound of cure" and that's what these codes and standards are intended to do above and beyond just simply a structure retrofit.

I'm going to shift our attention to building code enforcement. So for those of you that's had an opportunity to spend some time in Puerto Rico, probably one of the first things that you have observed, particularly after the impacts of Hurricane Maria in 2017, was that a number of the residential structures were damaged and impacted by that event. And so roughly there was approximately the island is expecting at least \$130 billion or so to help facilitate their recovery.

One of the challenges with respect to their recovery is the fact that there's a prevalence of what we call informal constructions. Particularly for residential structures it's estimated that approximately 55 percent of the island's residential structures could be categorized as informal. So that means that potentially those are a set of buildings, structures that are particularly susceptible to particularly flood risks, wind, and certainly seismic. And the structures are not built to withstand those types of forces.

The island, the leadership there, has been working with FEMA, with HUD and other federal partners to try to identify ways to move forward. And one of the first steps, important steps that they've made is to adopt the 2018 International Building Code, or IBC.

And in addition to that, FEMA has been working with the island to establish a more robust code enforcement structure and footprint on the island. And certainly HUD has been coordinating with them as well to their programs to try to make sure that they're looking at incorporating the appropriate codes and standards for retrofits of existing housing and certainly new construction that will occur as they continue to go through their long-time recovery process.

Just wanted to give you some quick pictures to show mitigation at work. Here is a project that happened in 2004, roughly 95 public schools were quote unquote mitigated. And this was for a project cost of roughly almost \$15 million. Again, you can see that quote unquote that mitigation works, and Christine talked about loss avoidance. Here you can see some examples of how the mitigation was able to provide some long-term risk reductions. Again, you see some seismic retrofits here. This school went through the earthquakes, it went through Hurricane Maria and still structurally sound.

So to wrap this up, the cultural of resilience doesn't just apply to Puerto Rico, although the island does have some unique challenges. This code of resilience is something that supports that whole community concept, the private sector, non-profits, federal agencies, such as HUD, such as FEMA working in tandem to try to make sure that we're significantly reducing the risk to the built environment protecting against loss of life and certainly trying to drive down disaster costs.

So this certainly can incorporate seismic retrofits but we are recommending and suggesting that adoption and incorporating of above code requirements and certainly standards can help facilitate

that long-term resilience; certainly making sure that you have a footprint in your respective community that implements building code enforcement. Instances where there's informal construction, certainly trying to eliminate that. Again, a whole holistic approach as far as trying to address the risks for seismic activities and certainly other hazards requires this forward thinking.

And what I wanted to wrap up with is that in general there are studies that put out that talk about the value of mitigation. And in particular, there's a categorization that the value of mitigation in general is for every dollar federal investment of dollars spent it yields roughly \$6 in benefits. And this goes up to 11 to 1. So every federal dollar spent upwards of \$11 of benefits are yielded when you incorporate building codes particularly as part of your recovery plan after an event.

So I would like to turn this back over to Ms. Brandy Jones [sic] and Lauren Nichols [ph] and they will now run the question and answer period for our webinar. Thank you.

Brandy Bones: Thank you, Roosevelt. Let me see, when I have controls and I'll move the slide along. Thank you. Cool. Well, so, some really great presentations. I'm going to wrap up and kind of go through the resources and also I think recap from all of that because I think, again, there's a really nice solid connection between all of the project examples, the [inaudible], the lessons learned and holistic thinking that I think we see from all these presentations, but first let me walk through the resources.

So there are like a number of resources that are available on the HUD exchange. I'm sure most of you heard about this webinar by being a part of the mailing list, but there's a lot of things that you can tap into to learn more about CDBG-DR more generally, CDBG-MIT specifically. There's also a lot of resources and I have been actually spending a lot more time looking at these and FEMA hazard mitigation plan resources, state mitigation planning and local websites, so you can click on those to kind of get more information about how to think about mitigation as well.

And then technical training and additional resources, so specifically there was a whole series in the fall that HUD hosted on CDBG-MIT that you can tackle and look into that Jenn was a part of. There's also some great resources related to benefit cost analysis, BCA, that you can check out.

There was a recently updated BCA release and there's training materials on that that gets more into the details of what Derek covered during his presentation. And then finally very specifically you can reach out to FEMA for technical assistance with BCA through their BCA helpline if you have questions about that. And, of course, their headquarter point of contacts and region point of contacts as needed as well.

So I also want to share that we also will be having an ongoing -- you know as Jenn introduced there's still a webinar series that this is just the first of a webinar series for CDBG-DR specifically. We'll be having a few more this coming June, and then there's a CDBG-MIT webinar series that is kicking off with the first one on May 21st and three more to follows. So a lot more information. This is just the beginning of kicking off a lot of resources made available for mitigation and related topics.

And then with that, I think it would be nice to kind of -- and here's our thank you and contact info as everyone has said, they're available to answer more questions, but some of the things I heard from the presentation is like, really the importance of a multi-hazard risk assessment where you can define the problem statement that you're trying to figure out as a starting point and from there create and identify the solutions that makes sense for each specific community that you work with or work in and address those risks and put them into actions to implement.

I think we also heard a lot about how thoughtful planning and how we rethink how we build in the first place can have far reaching positive impacts. And in the project examples and practices that were shared, I think there's a real connection between insuring that you're not only dealing with all the various hazards, but taking a multi-prong holistic approach that incorporates forward thinking risks and the future disaster steps that each community faces.

We also heard a lot about the importance of setting expectations that these projects take time and you need communities, the public and officials to understand that and be brought in from the beginning. And then also the importance from a variety of ways to show the positive economic benefits and impacts and co-benefits of mitigation activities, whether that's through a BCA or these loss avoidance strategies or the study that Roosevelt mentioned. There's so many impactful ways to share how mitigation can really improve communities' economic outlook and their long-term resilience and sustainability.

So with that, let's turn over to Lauren and see if we have some questions we can address with the last nine minutes of our time together.

Lauren Nichols: Thank you, Brandy. Yes, so we have a question here that just came in for Christine Meissner. So on the buy-out program in Austin, Minnesota, do you know what legal process the city used to buy-out the buy-out properties? And specifically, did they use [inaudible]?

Christine Meissner: No. So to clarify the process, this is a FEMA-funded project, but FEMA does not directly interact with homeowners. We don't approach homeowners; we don't solicit homeowners. This is a process that's really driven from the local level up. So our state partners are the ones that administer the grant program. We finance it but it's state administered. And homeowners are not eligible to apply directly to FEMA for our mitigation grants; only local governments can, and they would apply to the state and then the state would manage that project and work with us in terms of compliance. So it's all very locally driven.

It's a voluntary program. So it's usually homeowners who are interested in it and they're approaching their local government to determine if they're eligible, how it fits in with some of the priorities for the disaster recovery effort.

And then if they are eligible and the local government decides to move forward and submit an application to the state, there's usually a lot of like community outreach and public announced meetings that are a part of that dialogue. It's not -- it tends to be a very community driven process. And then they would submit an application to the state if they decide they want to move

forward. And if they do, then they're offered pre-disaster fair market value based on standard appraisal process. So thank you.

Lauren Nichols: Thanks, Christine. For Derek Fellows, for flood control projects, we heard a lot about the use of data. Are there any data sets that grantees should be asking for from FEMA in order to help them with their cost benefit calculation process?

Derek Fellows: So there is a system, it used to be called Bureau Net. It's been replaced by a new system called Pivot, and there is a lot of flood related damages that can be found in that system. If there's a data sharing agreement, some locals and certainly individuals at the state level; local being the local floodplain administrator or the local floodplain manager as well as maybe someone with the state office of the NFIT. They would have access to be able to get some of those data on damages.

Also, I would suggest that if you need data, say for an acquisition elevation a lot of times the homeowner may have some data or there could be other data sources found at the local level. A good example of data would be if the local community did have a FEMA declared disaster, or a presidentially declared disaster, and they received reimbursement through public assistance, a lot of the documentation of damages can be found in some of those projects.

And I always urge some of our local communities that are applying for FEMA grants that if they have that type of documentation, that is great stuff to use in an application. But there are resources all across the web that can be found. You can even find some of the flood insurance studies in the FEMA map service center. If you do an internet search for FEMA map service center, you'll be able to find that website. You can type in your address or even your GPS location and it'll take you to the most applicable flood insurance study and the flood insurance rate map for that location.

Lauren Nichols: Great. Thank you. And then we have another question here for Mary Beth Caruso. In the CDBG-MIT federal register notice, HUD encourages grantees or states specifically really to use their CDBG-MIT funds for an enhanced hazard mitigation plan. Can you give a little description of what an enhanced hazard mitigation plan is and how it's different from a regular hazard mitigation plan?

Mary Beth Caruso: Sure. First of all, there's 15 states that have an enhanced versus the regular. So to receive approval for an enhanced plan, a state or a tribe must show that it has developed a comprehensive mitigation program and is capable of managing increased funding for its mitigation goals. So when there's a federally declared disaster, those with a regular state plan get 15 percent of what has been spent on a disaster minus administrative costs. Those with an enhanced plan get 20 percent of that. I hope that answers the question.

Lauren Nichols: Helpful. Thank you, Mary Beth. And with that I'm going to hand it back to you Brandy.

Brandy Bones: Thank you. Again, thank you everyone for your attention. Thank you to all the presenters for sharing all the amazing strategies, best practices and lessons learned they've gained

through doing mitigation planning and implementing mitigation projects. I know we've had a number of questions, but we have this recorded. We will have the webinar materials including the slides as well as the recording and a transcription posted on the HUD exchange so you can refer to it whenever you'd like. You can provide it to your colleagues as needed.

So that'll get posted shortly and you'll be notified. And that's true for all the webinars we'll be doing in both the CDBG-DR and CDBG-MIT series. So thank you so much.

(END)