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**HURRICANE RECOVERY EFFORTS IN
PUERTO RICO AND THE U.S. VIRGIN ISLANDS**

HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED FIFTEENTH CONGRESS
FIRST SESSION

NOVEMBER 14, 2017



Printed for the use of the
Committee on Energy and Natural Resources

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HURRICANE RECOVERY EFFORTS IN PUERTO RICO AND THE U.S. VIRGIN ISLANDS

TUESDAY, NOVEMBER 14, 2017

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The Committee met, pursuant to notice, at 9:33 a.m. in Room SD-366, Dirksen Senate Office Building, Hon. Lisa Murkowski, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, everyone. The Committee will come to order.

We are here this morning to review ongoing recovery efforts in Puerto Rico and the U.S. Virgin Islands (USVI) in the wake of Hurricanes Irma and Maria as well as efforts to rebuild the electric grids on those islands in a smarter and, hopefully, a more resilient manner.

We are now over two months removed from when Hurricane Irma devastated St. Thomas and St. John on September 6, and it has been nearly 60 days since Hurricane Maria hit St. Croix and Puerto Rico. It was just a little over a week ago that Senator Cassidy, Senator Franken and I, along with Senator Carper, who was just here, and Senator Harris as well as some of our House colleagues, visited both St. Thomas and Puerto Rico.

I want to thank both Governor Rosselló and Governor Mapp for your hospitality and the time you gave us during that visit. It was incredibly important, I think, for all of us to see, to be on the ground, and to be hearing directly from you and those you are working with. I know that some other members of our Committee have traveled to Puerto Rico previously, and I thank them for that as well.

What I think we certainly observed is that the destruction is still very, very evident. When you consider the totality of the recovery work that still needs to be done, I think in a word it can be said that it is “overwhelming.” It is one of those “where do you even begin” moments, and I think we certainly felt that in Puerto Rico. We felt that in the USVI. I mentioned when we were in Puerto Rico that I have seen my share of natural disasters, but really nothing like this. Nothing like the scale that you see when you see an entire island that has been devastated.

As we had an opportunity to be up in the air and fly over some of the impacted areas in Puerto Rico, it seemed like we never left

an area that had not been, not only hit, but devastated in terms of the impact.

We have put some posters up on the dais here. Over to my left here is a solar field that we flew over in Puerto Rico. You can see, closer to the front, the panels that remained intact and, while the resolution is not that good, the impact to the arrays in the back. It just looked like somebody smashed through them.

[The information referred to follows:]



In front of Senator Cantwell, here, are solar panels—a field we saw when we were in the USVI driving by, but again seeing the impact there.

[The information referred to follows:]



Right below Senator Cortez Masto, there is a picture of some apartments that we drove by in St. Thomas, where the buildings had been blasted through from one side to the other—so a clean sweep through these apartment buildings. It was just extraordinary.

[The information referred to follows:]



Below Senator Heinrich there, you can see some of the devastation again in Puerto Rico. The blue tarps are certainly coming to be a symbol of the devastation that we see post-hurricane, not just here in the Caribbean, but certainly as we have seen the devastation following Harvey in Houston and in Florida. I think you can see just how these properties have been impacted in a way, and in a manner, that is just, again, devastating.

[The information referred to follows:]



Below Senator Franken is an area that we toured where the road had been taken out by landslide. Not only did we see this particular scene, but another area where the only access to some 200 roads had been cutoff by horrible landslides, stranding homes on the other side. We had an opportunity to visit with a young woman whose home was on the other side and she had not been able to visit her home since the hurricane had happened—a very, very touching story, one that I think all of us will remember for a long time.

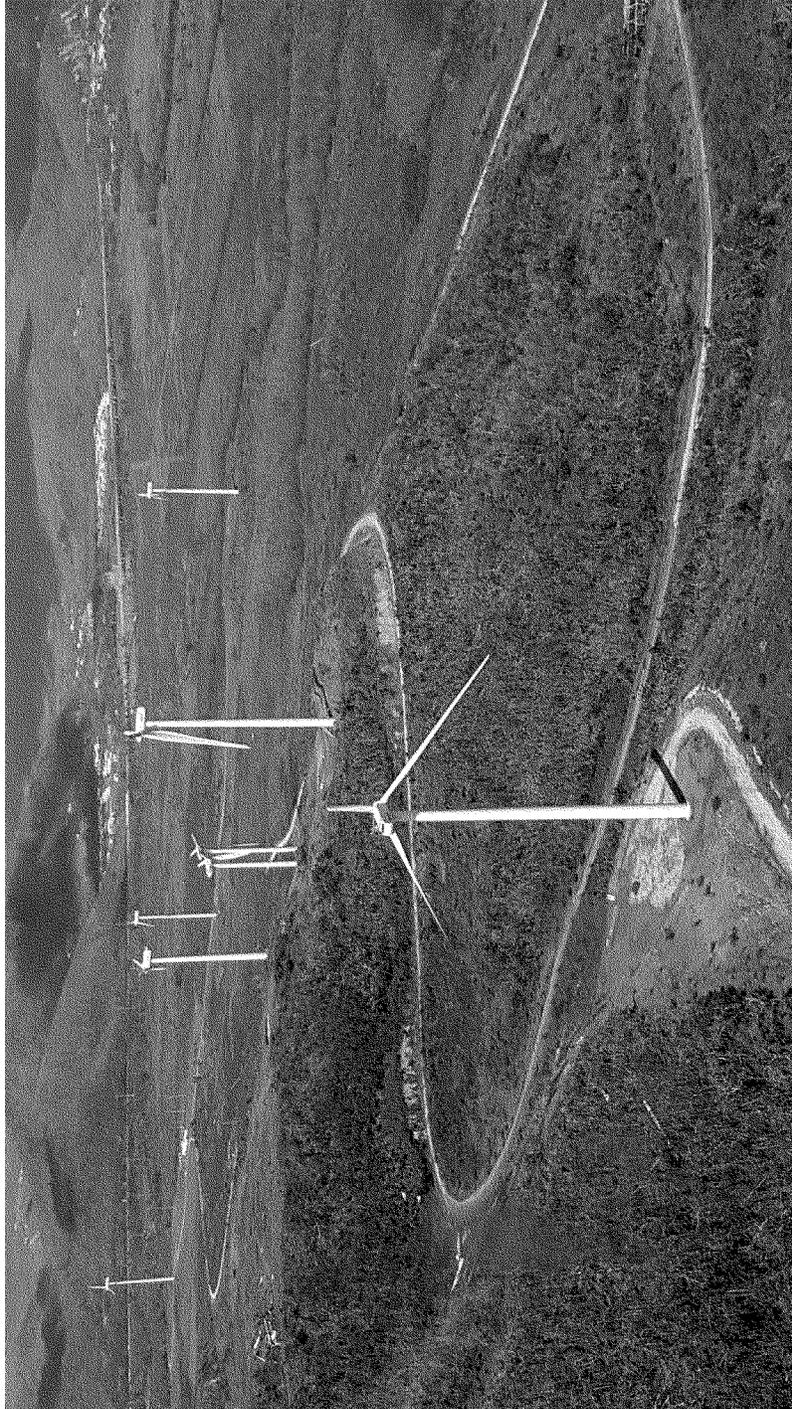
[The information referred to follows:]



But I think we also recognize that while we were in Puerto Rico looking at the damage from the landslides and appreciating that, particularly in the interior where you have such mountainous areas, this is still the rainy season. And with the number of trees that have been taken down, the slope stability during the rainy months is very uncertain. The damage that we are seeing today may not be the damage that we are dealing with in days and weeks from now knowing that more can happen. So again, very, very, very sobering.

And when you look at this and realize that these pictures were taken just last week, it is clear evidence that there is much, much, much to do.

[The information referred to follows:]



But as daunting as the recovery effort is, I think it is matched by the spirit of those who live on the islands. And we saw that; we felt that.

I don't know whether I am doing some promoting here or not, but while we were over there in Puerto Rico, we were reminded that there is a resiliency in the people. Members have been given a can of soda this morning that was manufactured and bottled in Puerto Rico with the hashtag that says, Fuerza Puerto Rico, which is "Puerto Rico Strong".

I thought that was pretty cool, that even in the midst of all this they were coming together. They were working to remind each of us of the resiliency of the people of Puerto Rico, the people of the U.S. Virgin Islands, that this is their home and to reinforce our commitment to our fellow Americans that we need to do what we can to help rebuild these islands.

Today's hearing will also look at ways to make the electric grids on the islands more resilient to future storms. I think we all agree that it makes no sense to spend hundreds of millions of dollars in Stafford Act funding to rebuild these grids to pre-storm conditions, as the Stafford Act currently requires. Puerto Rico's electric grid was already antiquated before the storms hit. So you really have to ask the question, why? Why would we rebuild it to that standard?

I think that there is broad agreement. I have talked with colleagues in the other body and the other side of the aisle here. Congress needs to provide greater flexibility in how Stafford Act funds can be used. I am certainly going to work with my colleagues and the Administration to help implement that change.

We also know that more hurricanes will impact the islands in the years to come. We are going to see poles that will break, lines that will come down and roads and bridges that will wash out. Residents will face flooding and mudslides. Communities will be disconnected from each other and from a central grid. And, you know, some of that is the reality of living on an island in a tropical location.

But, again, the question that we need to be probing is, what can we do about it now? Right now. Right now. Restoring electricity is the immediate priority. It has been out for far too long, and it is harming the health of both local residents and their economy. When I say health, I think about things like mental health. Think about being without power for 60 days plus. Think about what that means. We see pictures of kids who are trying to do their homework using the little flashlight on their cell phones. But in Puerto Rico where we were, their schools were not open. Schools were not open and have not been open for two months now. Think about what happens just from an educational perspective.

So when we talk about health, I think we need to be more expansive in our understanding of what the impact to these islands has been. These conditions are awful. They are tragic, but they are also an opportunity for us to be working together to rebuild the grids in a smarter manner, whether through microgrids, distributed generation, burying the lines where possible, direct current versus alternative or some other manner.

I think we need to be looking at this going forward with a few things in mind: making the grid more resilient to future weather events; and in case of damage from future storms, bringing that timeframe for repair on the grid on par to what we see here in the United States. I think we recognize that any one of the fifty states here, whether you are on the mainland or, like Hawaii or Alaska, apart from the continental United States, nowhere would we accept the fact that the people, the residents, have been without power for two months, particularly the numbers of people that we are talking about. But we also need to be working to bring down the overall cost of electricity, certainly compared to the pre-storm prices.

We are fortunate to be joined by a very distinguished panel this morning, and we will have an equally distinguished panel as this one concludes. These folks are here today to help us better understand the conditions on the ground, what more needs to be done at the federal level and what a future electric grid could look like. All of our witnesses can be part of the solution, and I am hopeful that this hearing will be a step in that direction.

I will turn to Senator Cantwell for her opening remarks, and I look forward to a very informative discussion this morning.

Senator Cantwell.

**STATEMENT OF HON. MARIA CANTWELL,
U.S. SENATOR FROM WASHINGTON**

Senator CANTWELL. Thank you, Madam Chair, and thank you for scheduling this important hearing to examine the hurricane recovery efforts in both Puerto Rico and the U.S. Virgin Islands. I would like to thank all our distinguished witnesses for sharing their thoughts today.

It has been 69 days since Irma struck and 56 days since Maria struck, and both the U.S. Virgin Islands and Puerto Rico continue to operate in emergency mode. They are struggling with even the most basic needs—providing drinking water, turning on the lights and delivering adequate healthcare. This is unacceptable.

The United States is a strong nation and it needs to take care of its citizens. Approximately 3.4 million United States citizens in Puerto Rico and over 100,000 United States citizens in the U.S. Virgin Islands face challenges as we speak. The Federal Government needs to do more, and it needs to plan in advance.

Inequitable treatment under Medicaid and Congress' unpredictable and haphazard treatment of territories under the tax code have dramatically harmed these economies. As a result, Puerto Rico and the U.S. Virgin Islands have suffered from economic contractions in recent years.

In response to Puerto Rico's debt crisis, Congress passed the PROMESA legislation of 2016. To be clear, I did not support that legislation. One of the reasons was because it favored more of the interests of the hedge fund shareholders than it did the U.S. taxpayers.

But by far the most far-reaching, debilitating impact of the hurricane damage is to our electricity grid. And this Administration, which has been responsible for restoring the electricity grid, along with local partners, needs to do more for the people of Puerto Rico.

I welcome Mr. Walker today here. I supported your nomination and I am sure you are the right man to help, but you should hear, loud and clear, that we need to do more.

The Whitefish contract in Puerto Rico raised particular concerns. In addition to the GAO reviewing the matter, the Inspector General and the Department of Homeland Security are reviewing the matter and, according to a Wall Street Journal report, the FBI is also investigating. According to a New York Times report, the Florida electrical workers subcontracted by Whitefish were paid \$42 an hour, linemen, \$63, and yet Whitefish billed the government and utility \$319 an hour. Even if that figure is abnormally high because it included exorbitant charges for room and board, why would a contract specify a separate charge for room and board?

The welfare of the Puerto Rico people, to rebuild the island, is my number one concern, but I will not stop making sure that the U.S. taxpayer is not gouged in this process.

Let's be very clear about this. My state has many storms and many natural disasters. The reason why you have mutual aid contracts is to rebuild at cost. That is what a mutual aid contract is, rebuilding at cost. So the notion that someone comes in there to gouge the Puerto Rican government and the U.S. taxpayer, charging them an exorbitant rate and then writing a contract so that it cannot be reviewed properly was a great injustice to the U.S. taxpayer.

When you look at how the situation occurred, we must understand that the Federal Government here also needs to change its process. I have seen this time and time again in my state, whether it is fire or a mudslide, where failed communication systems can't even be restored to communicate to the public because someone is saying, who will pay for this?

So, in the gap, Puerto Rico made a decision to go with an entity that gouged the U.S. taxpayers. It should have been clear from the very beginning that FEMA and the U.S. Government would pay on those contracts and it should have been done with mutual aid at cost.

We are going to get to the bottom of this, if it takes a long time. Why? Because we never want to see this happen again. We do not want to be a country where interests of the private sector are patrolling the U.S. economy looking for a disaster and then saying, I'm going to go in there and capitalize on it.

People should read and understand case law. Case law on price gouging has this very instance. In a blizzard in the Northeast, someone came in and tried to charge more for snow blowers. Why? Because they knew people had to buy them.

So we are not going to put up with this kind of behavior in the United States of America. When people are in a crisis, in a disaster, the U.S. Government should have responded and should have said they would be there to restore the utility grid and do it at cost. We will have lots of time for questions.

There is a fundamental problem with removing the authority of the grid from the people and handing it over to an unelected oversight board. This is what was brought up in a court case yesterday. The mission of the board is to achieve fiscal responsibility and access capital markets which means playing nice with bondholders.

This is not what our priority is which is getting the lights back on and preventing a continuing humanitarian crisis.

Those are the things that we must understand as this debate continues. Only a strong, independent regulator can assure that the grid operates efficiently, consumers pay low prices, utilities move toward a sustainable business model and that will be a very long process.

I know our colleagues here want to talk about how we modernize this for the future. I do, too; but in the meantime, I am going to make sure that the U.S. taxpayer is well-protected and that we do everything we can to flatten any kind of process that exists between bureaucracies and the government of Puerto Rico to make sure that they are not having to play 20 questions about financial assistance and aid. The answer from the U.S. Government should be yes, and we should be doing it at cost.

Thank you, Madam Chair, and I look forward to hearing from our witnesses.

The CHAIRMAN. Thank you, Senator Cantwell.

Our first panel this morning will be led off by the Governor of Puerto Rico, the Honorable Ricardo Rosselló Nevares. He will be followed by the Governor from the U.S. Virgin Islands, the Honorable Kenneth Mapp. We welcome you. Mr. Bruce Walker is the Assistant Secretary for the Office of Electricity Delivery and Energy Reliability at the U.S. Department of Energy (DOE). I will note that he has been on the job here for about a month, I believe, and as soon as he was sworn in he was sent to Puerto Rico, or he volunteered to go to Puerto Rico, and has been there on the ground for much of the time. I think he will have a great deal to share with us this morning. We are also joined by Major General Donald E. Jackson, Jr., the Deputy Commanding General for the Civil and Emergency Operations for the U.S. Army Corps of Engineers that has been tasked to address the grid system there in Puerto Rico.

Gentlemen, we welcome you to the Committee. Governors, we certainly appreciate that you have traveled to be with us this morning and appreciate your time.

Governor Rosselló.

**STATEMENT OF HON. RICARDO ROSSELLÓ NEVARES,
GOVERNOR, COMMONWEALTH OF PUERTO RICO**

Mr. ROSSELLÓ NEVARES. Thank you, Chairwoman Murkowski and Ranking Member Cantwell and all of the members of the Committee for inviting me to testify today before you.

I would also like to give special thanks to Senator Murkowski and all of the members from both the House and Senate who have taken the time to come to Puerto Rico to bear witness to the horrific conditions on the island as well as the unbreakable spirit of the people of Puerto Rico.

It is impossible to describe the fury and violence of the storm to the people who did not experience it. Irma impacted the island and Maria left no corner of Puerto Rico untouched causing the full failure of the power grid, major damage to our water systems, ports and airports were rendered unusable, roads and bridges were washed away and virtually all communication systems were shut down.

I was there when we had to rescue 2,000 people from rooftops in Toa Baja after flooding reached massive proportions several hours after the hurricane hit. I saw mothers holding their infant babies on rooftops praying that somebody would pick them up. A few days later I had to drive several hours northwest to the part of the island and through the mountainous regions to personally warn folks that their dam could collapse because there was no other way to communicate. No phones. No radio. No water. No power. No businesses open. Little access to roads and little access to fuel. I flew over parts of Puerto Rico that looked like a Category 5 hurricane went through it. Others looked like a bomb was dropped. I personally took food, water and medicine to the people of Puerto Rico, in all corners of the island, that had lost their homes.

Notwithstanding these challenges and the widespread devastation, we are resilient and we're making progress. We're moving from life sustainment phase to the recovery. Water restoration is now at 90 percent. Telecommunications is at 75 percent. Almost all supermarkets and gas stations are open.

I called for aggressive milestones for energy generation and called out everyone involved to make sure that we could do everything humanly possible to power Puerto Rico as quickly as possible. And tomorrow, we will have met our second milestone of restoring 50 percent of the energy grid by November 15th. Fifty-nine of the sixty—58 of the 68 hospitals are connected to the grid and we have started to steadily open schools—now we have 839 schools that are open.

It is important to note that this event has no parallel in American modern history with risk models categorizing this a 200- to a 1,000-year storm that caused between \$90 and \$120 billion in damages. This was not a partial disaster; this was a total catastrophe. Had these twin storms blasted through another state, a catastrophe would have ensued as well.

I became Governor earlier this year with the challenging task of correcting decades of misplaced priorities and insufficient leadership. As you are aware, long before this hurricane season had started, Puerto Rico and its people had been battered by long storms of economic, fiscal and demographic challenges.

I've worked tirelessly since taking office just ten months ago embarking on an aggressive agenda of fiscal, economic and government reforms. Within six months of taking office my administration has obtained the approval of Puerto Rico's PROMESA—a required ten-year fiscal plan—and enacted the first budget compliant with that plan. Although we've had our differences with the board, we have worked together.

In addition, we also implemented an aggressive array of policies for economic and social growth, including a gold standard P3 law, labor reform, permits reform, government as a single employer, pensions reform and are currently working on a new government downsizing model, procurement reform and the transformation of the electric utility.

Even during the recovery and restoration process we are focused on developing a plan for future electric energy in Puerto Rico. We are working with members of PREPA, our governing board, to

bring together top minds in the industry and provide best-in-class thinking on the future of our electric utility.

Our team is evaluating all options including public and private ownership, or a combination, in order to achieve grid reliability and resilience for the long-term. We aim to revamp completely the delivery of electric energy in Puerto Rico. This includes aggressively incorporating technological advancements and alternative energy sources, creating frameworks for distributed energy resources, virtual power plants, achieving customer engagement and developing a robust regulatory framework that creates the right market and competitive signals to assure electric power is delivered reliably and efficiently and at a sustainable cost structure.

Therefore, I call upon Congress to approve by December an emergency supplemental legislation that provides equal treatment for the people of Puerto Rico compared to what any state in the country would have expected had they experienced similar devastation.

Attached to my written testimony I have provided an extensive analysis and documentation of the devastation of the hurricanes and the federal resources necessary to build a more resilient Puerto Rico, worked along with third party groups of reputable institutions and organizations. In doing this I am committed, I commit to you today, that I will lead the most transparent disaster reconstruction in American history.

Toward that end I have issued an Executive Order creating the Central Office of Recovery and Reconstruction of Puerto Rico which has been tasked with ensuring full accountability and transparency for all state and federal funds directed toward the island reconstruction. To foster a culture of accountability we will create a recovery transparency portal that will not only track the status of recovery but will also provide information to the public about how and where the funds have been used. This great country of ours has always prided itself on leadership, moral values and principles. It has also responded to extraordinary times in extraordinary ways.

Madam Chairwoman, the whole world is watching. It is time to show that we mean what we say when American citizenship is one and only one. It is time for our homeland to show that we can walk the talk.

As Governor of Puerto Rico, but more so, as a proud U.S. citizen of this great country, I ask you to once again rise to the call as you have done so many times before.

Thank you. God bless you, God bless Puerto Rico and God bless America.

[The prepared statement of Mr. Rosselló Nevares follows:]



Written Statement
Hon. Ricardo Rosselló
Governor of Puerto Rico
U.S. Senate - Committee on Energy & Natural Resources
Hearing, "Hurricane Recovery Efforts in Puerto Rico and the U.S. Virgin Islands"
November 14, 2017

Introduction of Hurricanes Irma and Maria

Hurricane Irma struck Puerto Rico on September 6, 2017 leaving over 70% of the people of Puerto Rico without power for a substantial time. Two weeks later on the morning of September 20, 2017 Hurricane Maria, the strongest hurricane to hit Puerto Rico in close to 100 years, made landfall south of Yabucoa. The storm moved west-northwest across Puerto Rico pounding us with torrential rain and sustained winds of roughly 150 mph for the next 30 hours.

It is impossible to describe the fury and violence of the storm to people who did not experience it, but the aftermath told the devastating story. The storm left no corner of Puerto Rico untouched. The electric grid experienced a complete failure with damage to every major transmission line, thousands of towers and poles were down, and generation facilities were damaged. For a significant period of time, 100% of the electric grid was down throughout the island. The communications networks were almost all destroyed, meaning 100% of the island had no traditional cellphone service for a period of time. All of the island's ports and airports were unable to operate. Nearly 100 % of fields and crops were wiped out—a devastating blow for a society that already imported much of its food. Small and large businesses were forced to close, wiping out any source of economic activity and revenue for the Government of Puerto Rico. Roads and bridges were swept away. Supplies were limited and the ability to get critical items to the Island was challenged by the lack of access caused by the damage to the infrastructure.

AIR a worldwide, a global leader in catastrophic risk modeling, estimates that the damages caused by Maria correspond to a storm that happens once in 250 to 1,000 years, while Moody's has estimated the damages to be up to \$95 billion.

This is an event that has no parallel in modern American history. During Hurricane Andrew, Tallahassee was up and running, Katrina left Baton Rouge functioning, and Harvey left Austin unscathed. Unfortunately, Maria left all of Puerto Rico completely devastated. For the people of Puerto Rico Maria was not a disaster, it was a catastrophe. A catastrophe whose origins can be traced not only to the storm's horrible winds, waves and rains, but to the societal conditions that Puerto Rico has been subjected to for over a century.

Puerto Rico's Economic Situation Pre-Hurricane

I became Governor earlier this year with the unenviable task of correcting years of misplaced priorities and insufficient leadership, because as you know long before this hurricane season had started Puerto Rico and its people had been battered by a decades long storm of economic, fiscal, and demographic challenges.

A decade-long recession resulted in a loss of over half of the manufacturing jobs. More than half of the population was living below the federal poverty line. Puerto Rico lacked sufficient capital to repair and modernize its energy transmission infrastructure, which was vulnerable to outages, even under normal conditions. On the eve of Hurricane Maria, Puerto Rico was literally bankrupt—having sought Title III protection for the Commonwealth and certain of its instrumentalities, including the Puerto Rico Electric Power Authority (PREPA), due to a mountain of over \$80 billion of debt that it could no longer service with available revenues.

The dire financial condition of the island created an outmigration movement to the United States that has been underway for a decade now. During the last ten years, roughly 500,000 people have left Puerto Rico for the mainland. In the last year alone, that number has jumped to over 70,000 people leaving Puerto Rico. As you know, outmigration and the loss of human capital only makes rejuvenating the economy of Puerto Rico that much more difficult. That said, my administration entered office leaning on the strength of the people of Puerto Rico and determined to address the myriad of issues ailing the island.

Although local mismanagement was certainly a significant factor in those crises, their root causes can ultimately be traced to the unequal treatment of the U.S. citizens of Puerto Rico by the federal government. It is an undeniable fact that under Puerto Rico's current territorial status Congress can and does treat the island unequally under multiple federal laws, programs, and other policies. Laws that we are subject to, even though we have no voting representation in the U.S. Congress that makes them, and cannot vote to elect the President that is responsible for executing them.

As the recent passage of Veterans Day reminds us, for over a century in times of war when America has needed us the most, the brave U.S. citizens of Puerto Rico have served, bled, and died for this country. Yet somehow, the people of Puerto Rico cannot count on an equal amount of federal support to what citizens stateside receive, but we are still expected to perform economically at the same level while being subjected to an uneven playing field.

It is evident that the cumulative impact of this unequal treatment and incoherent federal territorial policies were fundamental factors that limited investment in Puerto Rico's critical infrastructure, debilitated our response capacity, and rendered the territory more vulnerable than necessary in the face of this massive hurricane.

Governor Rossello's Reforms Following PROMESA

Recognizing the importance of addressing Puerto Rico's pre-hurricane challenges, I've worked tirelessly to bring forth strong local leadership and a clear vision for our island. Upon taking

office just ten months ago I embarked on an aggressive agenda of fiscal, economic, and government reforms. Within three months of being in office my administration obtained the approval of Puerto Rico's 10-year Fiscal Plan by the Financial Oversight and Management Board as required by PROMESA, and three months later we enacted the first PROMESA-compliant state budget. All of this with the goals of putting Puerto Rico on a path to fiscal sustainability, responsibly restructuring our debts, rightsizing and modernizing our local government, and restoring the island to economic growth by unleashing the full potential of our talented and passionate people through the private sector. However, even with all this progress the extraordinary destruction and devastation that Hurricane Maria created in Puerto Rico has created a situation where without a massive federal investment there is no way Puerto Rico will ever fully recover.

Request To Congress & Commitment to Transparency

Therefore, I call on Congress to approve by December an emergency supplemental legislation that provides equal treatment for Puerto Rico compared to what any state in the country should expect if they experienced a similar level of devastation. Attached to my written testimony I have provided an extensive analysis and documentation of the devastation caused by the hurricanes and the federal resources necessary to build a more resilient Puerto Rico.

In doing this I commit to you today that I will lead the most transparent disaster reconstruction in American history. Toward that end I have issued an executive order creating the Central Office of Recovery and Reconstruction of Puerto Rico, which has been tasked with ensuring full accountability and transparency for all state and federal funds directed toward the island's reconstruction. To foster a culture of accountability we will create a Recovery Transparency Portal that will not only track the status of recovery, but will also provide information to the public about how and where funds are being used. Puerto Rico needs swift and robust action from Congress to show the 3.4 million American citizens still in Puerto Rico that there is hope for a better future.

FEMA and the Stafford Act Moving Forward

I would also like to speak to the immediate disaster response by this administration and specifically Administrator Brock Long and FEMA. Administrator Long with other top officials have been in close contact with me and my government throughout this recovery process. Thousands of relief workers have been working hard to save lives and alleviate human suffering long into the night for seven days a week for well over a month now. These efforts must not go unnoticed, the people of Puerto Rico are truly grateful for the work and sacrifices made by these heroic first responders.

That said, the initial response from the federal government was far too slow. This delay has nothing to do with the efforts of the first responders, but rather the spirit of the Stafford Act and Congressional failure to envision a storm the magnitude of Maria hitting Puerto Rico. Unlike normal disasters facing the United States, such as Katrina in Louisiana, which left Baton Rouge fully functioning, or Harvey in Texas which left Austin firing on all cylinders, Maria wiped out San Juan, leaving our state government unable to communicate and effectively in the dark.

Specifically, the Stafford Act authorizes FEMA to work in conjunction with the state and local governments to respond to a disaster. Therefore, much of the bureaucratic red tape and arcane agency approval process of FEMA is driven by the assumption that the state level government dealing with a disaster will have functioning computers, telephones, and workforce that can navigate these obstacles. Furthermore, FEMA is set up to purely assist the state level government, therefore when the state level employees become first responders themselves, it leaves FEMA paralyzed to jump into action. One example is the backlog we experienced at our ports due to a lack of available truck drivers in Puerto Rico. Under a more robust Stafford Act, FEMA and the federal government would have been able to better help deal with this situation, whether it be in pre-disaster funding and planning or with providing more help to resolve the situation on the ground. Simply put, a more robust Stafford Act that helps state and local governments work with FEMA more closely pre-disaster, while also expanding FEMA's authorities in the most severe disasters is something that is necessary.

I would like to work with Congress and Administrator Long to help improve the Stafford Act so that the federal government can learn from the difficulties that first responders faced in the immediate aftermath of Hurricane Maria.

The Task of Rebuilding Puerto Rico

The reality of the conditions on the ground highlights the fact that the job of rebuilding Puerto Rico is the responsibility of its people and elected leaders, including myself. Outside support from the federal government, this Committee, volunteers, relief agencies, and the Oversight Board are critical and of tremendous benefit. They are, however, temporary. Puerto Rico's people and government are enduring. Outside assistance, while welcomed, cannot substitute or displace the self-determination and self-governance necessary to truly create a sustainable recovery and future for Puerto Rico that will benefit all its stakeholders.

I know that the government has the will, vision and commitment to achieve this. We are prepared to chart the course for our future, in collaboration with the Oversight Board, and the support of this Committee, Congress, FEMA, the Army Corps of Engineers, and other federal relief agencies that are hard at work to assist us. In this time of humanitarian crisis, it is important that we work together and with respect—not seek to replace or diminish the government elected by the people of Puerto Rico—to achieve those goals.

The Government of Puerto Rico Is Leading the Recovery Effort

Despite the difficult and challenging circumstances, the Government of Puerto Rico has led the Island's recovery efforts in close collaboration with the federal government, relief organizations, and other states to procure emergency funding necessary for the immediate implementation of emergency projects. We have a long road ahead but much has been accomplished, in extremely difficult and challenging circumstances.

In the less than two months since Hurricane Maria, I am proud of the fact that the airports and ports are working, that the reconstruction of the water supply is over 85% complete, that over 70% of the communications and cell towers are back in operation, and almost 90% of the

supermarkets and 85% of the gas stations are open. Over 42% of the power grid has been restored and, despite substantial disruption to the process, the restoration efforts met the initial targets that I established. Some approximate numbers follow:

- Approximately 15,000 federal civilian personnel and military service members, including approximately 2,000 FEMA personnel, are on the ground in Puerto Rico engaged in response and recovery operations from hurricanes Irma and Maria.
- 35 states are supporting 143 requests for mutual aid in Puerto Rico.
- Aid relief and personnel have been put to good, constructive use.
- Approximately 85% of wastewater treatment plants are working on generator power. Improvement will come as the electrical grid is restored.
- Approximately 80% of banks are open.
- The San Juan financial district is fully connected to the electrical grid.
- Approximately 400 generators have been installed in Puerto Rico by the U.S. Army Corps of Engineers for critical infrastructure.
- Approximately 1,507 miles of Puerto Rico's 5,073 miles of roads are open, allowing for passage through the outer ring of the Island.
- Over 95% of hospitals are open in Puerto Rico.

The work continues every day and progress is being made. We are working tirelessly and will not stop until the job is done.

Puerto Rico Has Implemented Compliance Measures

In order to ensure that aid and financial resources are properly utilized, I have appointed an independent compliance officer with a background in procurement for the Government. In addition, the Government is developing a Contracting and Procurement Protocol consistent with the Oversight Board's contract approval rights as adopted at its last meeting on October 31, 2017. Pursuant to this Protocol, all contracts with a value in excess of \$10 million will be submitted to the Oversight Board for approval, and the Oversight Board has committed to responding to such approval requests within 7 days, so as to avoid delay in the recovery process.

Financial Restructuring and the Role of the Oversight Board

As we rebuild our infrastructure, the work of financial restructuring continues. The new facts and circumstances that emerge from Title III are even more important for Puerto Rico. Without near-term certainty about the economic future of Puerto Rico, the inherent economic problems that existed prior to the hurricanes will continue and become increasingly more difficult to solve.

There is no doubt that the March Fiscal Plan will require significant revisions, including new assumptions and revisions to Puerto Rico's future growth trajectory. These will likely be negative. The Government is working to gather information and make revised projections so that we can revise the fiscal plans and resubmit to the Oversight Board. The Government is also committed to providing transparent information to creditors regarding the assumptions used in revised projections. Although most creditors will not like the outputs, we will ensure that they know and understand the inputs.

The Oversight Board can help Puerto Rico through revising the Fiscal Plan, lobbying, moving the Title III case forward, and offering helpful recommendations, as it is permitted to do under Section II of PROMESA. The Oversight Board can also expedite the permitting process as it relates to PREPA and other critical infrastructure projects as provided for under Title V of PROMESA.

But disaster recovery remains within the sole purview of the Government, which comprises elected officials responsible for coordination across the multiple entities and agencies that are rebuilding Puerto Rico. The Government should continue to have the responsibility to set and execute its policies within the confines of the certified Fiscal Plan and subject to Board review and approval rights. The Oversight Board would be an inefficient and ineffective mechanism for driving the policy choices underlying the reconstruction of Puerto Rico.

Although PROMESA provides a mechanism for the Oversight Board to be involved in emergency response, the Government is supposed to and must lead recovery efforts with the Oversight Board, reviewing and assessing Government actions to ensure compliance with the certified fiscal plans and budgets. The Oversight Board is entitled to review Government actions and to be informed of all recovery efforts in real time. However, even the Oversight Board, in an October 19 letter to me, stated that it “does not intend to impede the Government’s implementation of any federal programs, particularly those related to disaster response and recovery.” Accordingly, instead of expanding the Oversight Board’s powers to take over Government functions, this Committee should in the first instance focus on what the Government has been doing to lead the recovery efforts (as previously discussed) and how the Oversight Board can be utilized to assist and enhance those efforts. Collaboration, not control, is the key to a successful future for Puerto Rico.

Despite these challenges, at the moment Hurricane Maria hit Puerto Rico, the Government was making good progress with the Financial Oversight and Management Board on the road to achieve fiscal responsibility and access to the capital markets within the context of the statutorily mandated requirements of PROMESA, which became effective June 30 of last year. Over the last ten months we have worked collaboratively with the Oversight Board. For example:

- On February 28, 2017 (only 58 days after taking office), my administration submitted a proposed fiscal plan to the Oversight Board. On March 13, 2017, after extensive collaboration and negotiation, the Oversight Board certified the fiscal plan submitted by the Government. Thereafter, the Government proposed and the Oversight Board certified fiscal plans for PREPA and the Puerto Rico Highways Transportation Authority (“HTA”), among other entities. In that regard, we have succeeded where my predecessor failed.
- Then in July 2017, the Government and Oversight Board again worked together to develop and approve the Commonwealth’s budget for fiscal year 2018.
- This past Summer, Title III cases were commenced by the Oversight Board for the Commonwealth, HTA, PREPA, the Puerto Rico Sales Tax Financing Authority, and Employees Retirement System of the Government of Puerto Rico at the request of

those entities. Our professional advisors worked closely with the Oversight Board's advisors to prepare those entities for Title III.

- Almost from the start of those Title III cases, the bondholders unleashed, unrelenting litigation against both the Oversight Board and Government disputing nearly every issue in the case. The Oversight Board and Government worked closely together in responding to litigation fending off attacks by a multitude of law firms and professionals representing various bondholder constituencies.
- The Government and the Oversight Board are completely aligned in defending against fundamental legal challenges raised by the bondholders concerning the legality of the fiscal plans certified by the Oversight Board and the constitutionality of PROMESA under the Appointments Clause of the Constitution.
- The Oversight Board and the Government have worked collaboratively with the mediation panel of five federal judges appointed in the Title III cases to work with the bondholders to reach a consensual resolution of disputed issues.

Clearly, the storms have altered the dynamics of the restructuring process, given the uncertainty of the impact of economic growth over the life of the Government's fiscal plans. While both the Government and Board are still assessing the impact of the storms' damage and the impact of that damage on the Island's future economic health, we have agreed that the Title III proceedings should not be delayed.

Moreover, the Government has been completely transparent with the Oversight Board from the beginning of my administration.

- We have endeavored to respond promptly to all requests for information from the Oversight Board and have never withheld information from the Board that it requested.
- The Government has and continues to submit periodic status reports to the Oversight Board.
- In addition to requests for documents and other information, the Government and its advisors have engaged in near constant dialogue with the Oversight Board and its advisors. The Government and its advisors have joined the Executive Director in weekly meetings where tasks and assignments are given for the Government officials to produce information to the Oversight Board or to undertake necessary financial analysis. Working groups have also been formed with Government representatives and Board representatives meeting to develop long-term plans with points of agreement for PREPA and HTA.
- The Government has agreed to comply with the Oversight Board's contract compliance policy as recently announced at its tenth public meeting and is willing to give the Oversight Board transparency into Government requests for federal funds. All contracts with a value in excess of \$10 million will be submitted to the Oversight

Board for approval, and the Oversight Board has committed to responding to such approval requests within 7 days, so as to avoid delay in the recovery process.

- Moreover, I recently issued an executive order directing the appointment of an independent compliance officer at PREPA with a background in procurement.
- The Government has also worked closely with the Oversight Board to advance transparency and provide information to the creditors. To that end, thousands of documents have been made available to creditors in a data room.

Yet I must express disappointment that in the face of the great lengths the Government has gone to cooperate with the Board, my ex officio designee to the board has been routinely excluded from executive sessions and not given the benefit of gaining insight into the Board's deliberative thinking as well as the Board hearing my positions and views on issues vital to Puerto Rico. The fact is that the Oversight Board is not on the ground dealing with everyday issues and problems in the recovery effort. In order for the Oversight Board to be fully engaged with the Government, it is essential that my designee be given better access to information so as to avoid confusion and misperceptions. In other words, transparency works best when it goes both ways.

I realize that there continue to be disagreements with the Oversight Board with respect to certain narrow issues under PROMESA, but the fact is that the Oversight Board and Government have been united on a vast majority of issues. I respectfully disagree with the Executive Director's statement that these "disagreements between the Oversight Board and Government have resulted in costly delay and litigation."

PROMESA intended that the Oversight Board and the Government work together in the spirit of collaboration to return Puerto Rico to fiscal responsibility and not as "petty rivals for power." Our current point of disagreement with the Oversight Board relates to the appointment of a Chief Transformation Officer for PREPA. There is no other litigation in which the Oversight Board and the Government are adversaries in any of the other Title III cases, including that of the Commonwealth. The real source of litigation delay and cost has been the widespread bondholder litigation that both the Oversight Board and the Government have jointly defended and countered.

We believe that the Oversight Board's request that Congress intervene by mandating the appointment of a CTO for PREPA and other proposed changes because its mission has organically changed from fiscal recovery to disaster recovery is seriously misplaced. In particular, Ms. Jaresko requested that Congress take four actions to expand the Oversight Board's powers under PROMESA:

1. Require that the Oversight Board "certify all requests for liquidity advances" from federal loans or relief funds;
2. Provide additional tools to monitor the expenditure of federal funds as part of a plan that makes sense for Puerto Rico's future;
3. Grant the Oversight Board the authority to control the Government and its instrumentalities through the appointment of chief executive officers that are accountable only to the Board; and

4. Grant the Oversight Board authority to veto legislation enacted by the Puerto Rico legislature to the extent the Board determines, in its sole discretion, that such legislation is inconsistent with the fiscal plan.

If the Oversight Board's proposals to this Committee are adopted or somehow acknowledged or linked as a condition to future critical funding for Puerto Rico, they would effectively undermine the Government's disaster recovery efforts and create unnecessary confusion. In effect, the Oversight Board as an unelected body with no connection to the people of Puerto Rico would displace a government of elected leaders at a time it was addressing an unprecedented humanitarian crisis.

For these reasons, I would urge that no such actions be taken by Congress. Instead, the Government and the Oversight Board should be left to resolve any differences themselves without resort to litigation given that there is much more that unites than divides us in delivering for the people of Puerto Rico at this most critical hour.

Conclusion

This is a transformative moment in the history of Puerto Rico. We recognize that your leadership, along with that of leaders from both parties, will be essential to our recovery, and the future economic and fiscal health of the island. To that end, we are committed to fully engaging leaders from the private sector and Non-Governmental Organizations in the design and implementation of this rebuilding program. We will Build Back Better, not just in terms of the physical and economic reconstruction of the island, but through a true public-private partnership with a process that is open, transparent and accountable to our community, to the Federal government and the American people, who are showing such tremendous and heartfelt support for our efforts.

Puerto Rico has been treated equally in times of war, sacrificing like any other state, now in our time of greatest need we call on Congress to treat us equally as we work to recover, and ultimately rebuild a new and stronger Puerto Rico. We have the will and the spirit needed to continue contributing as part of the great American family. Help us help ourselves, and in doing so you can live up to America's greatest ideals. Our future is in your hands.

With sustained federal assistance and your leadership and support, I am confident that in time the people of Puerto Rico will recover and grow stronger than ever.



Request for Federal Assistance
for Disaster Recovery

Build Back Better Puerto Rico

November 2017

Ricardo Rosselló
Governor of Puerto Rico



ACKNOWLEDGEMENT





In preparing our document the Government of Puerto Rico is greatly appreciative of the support of the New York Governor's Office of Storm Recovery (GOSR) and other agency experts who provided technical capabilities for our analysis of the sectors and estimation of damages, along with advising on the preparation of the report. In the interest of supporting the recovery strategy and its impact on PR, the Rockefeller Foundation, The Ford Foundation, Open Society Foundations and Rockefeller 100 Resilient Cities provided funding for Deloitte to aid in this project. Deloitte, in addition to providing their technical assistance and expertise, provided consultation on the information gathered in preparation of the report.

This document represents an aggregation of the best available disaster damages and is an initial assessment of the cost to rebuild a stronger, more resilient Puerto Rico. Over the next few months as more data becomes available from our efforts and those of our federal partners, we will refine and rework our estimates of the impact of this disaster.



LETTER FROM THE GOVERNOR



November 13, 2017

The Honorable Donald J. Trump
The President of the United States
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Dear Mr. President:

I thank you again for your leadership and action on the emergency supplemental package that you signed into law on October 26th, 2017. That package represented a critical first step by your Administration and Congress to address the most immediate emergency needs in Puerto Rico. As you are aware, much more remains to be done in order to stabilize Puerto Rico and set the island on a path to full recovery and reconstruction.

The scale and scope of the catastrophe in Puerto Rico in the aftermath of Hurricane Maria knows no historic precedent. The island-wide devastation presents an extraordinary challenge to the American citizens of Puerto Rico, our local government and to the Federal government. A challenge that I am certain we can overcome together, as the United States is the undeniable world leader in disaster response and the resolve of the people of Puerto Rico is strong.

As you know, the devastation in Puerto Rico has strained resources beyond FEMA's Disaster Relief Fund (DRF) and associated programs. To support the resiliency and mitigation efforts necessary for the reconstruction phase of Puerto Rico, we are calling upon your administration to request an emergency supplemental appropriation bill that addresses our unique unmet needs with strength and expediency.

Specifically, the people of Puerto Rico respectfully request that Congress provide \$30 billion within the FEMA DRF to recover critical infrastructure; \$46 billion to restore housing and economic viability through the Community Development Block Grant - Disaster Recovery (CDBG-DR) program; and \$17.9 billion in other Federal grant programs for long term recovery with the intent to reconstruct a stronger, more resilient Puerto Rico.

In addition, based on the per capita financial impacts of our recovery efforts across the island, consistent with the historical precedents of Hurricanes Andrew and Katrina, Puerto Rico requests Congressional authorization of 100% funding for Stafford Act Programs. With the required use of the Section 428 of the Stafford Act for Permanent Work under FEMA, the overall Public Assistance funding will be capped to the mutually agreed upon estimates. Furthermore, additional funding will be needed through the Community Disaster Loan Program (CDL) to overcome the liquidity needs of the Government of Puerto Rico and our local municipalities. Data on the amounts needed from this funding source will be provided to your Administration and to Congress as soon as it becomes available.

This is a transformative moment in the history of Puerto Rico. We recognize that your leadership, along with that of leaders from both parties, will be essential to our recovery, and the future economic and fiscal health of the island. To that end, we are committed to fully engaging leaders from the private sector and Non-Governmental Organizations in the design and implementation of this rebuilding program. We will Build Back Better, not just in terms of the physical and economic reconstruction of the island, but through a true public-private partnership with a process that is open, transparent and accountable to our community, to the Federal government and the American people, who are showing such tremendous and heartfelt support for our efforts.

With sustained federal assistance and your leadership and support, I am confident that in time the people of Puerto Rico will recover and grow stronger than ever.

Sincerely,

Ricardo Rosselló
Governor of Puerto Rico

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EXECUTIVE SUMMARY

Hurricanes Irma and Maria devastated Puerto Rico, bringing sustained winds well in excess of 150 miles per hour, heavy rains, and catastrophic flooding the likes of which the island had never seen before. The storms caused nearly complete devastation, including the catastrophic failure of the island's power grid, water and wastewater infrastructure, and communications networks. The economy of the island ground to a halt in the face of physical damages, loss of supporting infrastructure, and the absence of power and water. Roads and bridges failed or were blocked by debris across the island, leaving communities stranded and unable to obtain life-saving aid, food, water and medicine for a period of weeks. More than 472,000 housing units were destroyed or experienced major damages, forcing hundreds of thousands of Puerto Ricans to seek refuge in shelters and the homes of family and friends. The agricultural sector was devastated, with near total destruction of the sector's infrastructure and loss of almost 80% of planted crops. Even today, approximately 60% of the island is still without power, and until recently 70% of the potable water is either unavailable or has yet to be certified as safe to drink, hundreds of schools have yet to reopen, and thousands of businesses are closed or have limited operations including the pharma manufacturing industry, which may cause serious shortages of drugs supplies in the US inasmuch as pharmaceutical products made in Puerto Rico account for nearly 10 percent of all drugs consumed by Americans.

Needless to say, these numbers do not capture the depth and breadth of the Puerto Ricans' suffering. Power outages and the decimation of cell tower capability prevent regular communication or access to wireless internet services. Damage to roads and bridges and blockages caused by debris continue to render the hardest-hit areas of the island virtually inaccessible. Hospitals operate at a reduced capacity at a time when health services are most needed. Hundreds of thousands of Puerto Ricans are displaced and most children have not yet returned to school. All levels of government, as well as the police and fire departments, are hampered by the destruction of their buildings and infrastructure. The hurricanes also robbed thousands of Puerto Ricans of their livelihoods. Manufacturing, agriculture and tourism, pillars of the Puerto Rican economy, will be devastated for years. And the fabric of Puerto Rico's communities has been torn, as tens of thousands of Puerto Ricans left the island to escape their post-hurricane hardships.

The task ahead is as daunting as it is urgent, and recovery cannot be accomplished unless Puerto Rico receives substantial federal assistance. In this Request for Supplemental Appropriations, Puerto Rico is requesting a total of \$94.4 billion, targeted in the areas where assistance is most needed.

EXECUTIVE SUMMARY

Requested Amount by Category

Housing	\$31,068,532,671
Power Grid and Resiliency	\$17,789,375,000
Health and Healthcare	\$14,946,507,962
Agriculture	\$2,076,500,000
Social Services	\$288,262,193
Economic Development	\$3,194,677,600
Communications Infrastructure	\$1,500,000,000
Roads & Bridges	\$4,497,725,000
Ports and Airports	\$1,345,700,000
Public Building Revitalization	\$153,100,000
Water and Water Control Facilities	\$1,280,822,003
Sanitary Sewer and Storm Drainage	\$1,409,716,413
Education and Schools	\$8,413,208,822
Environment and Natural Resources	\$1,581,050,000
Public Safety & First Response Coordination	\$486,990,571
Long-Term Recovery Management and Coordination	\$9,000,000
Cost Share	\$4,358,445,905
Grand Total:	\$94,399,614,140

EXECUTIVE SUMMARY

Requested Amount by Funding Source

CDBG-DR	\$46,052,313,558
DOL	\$55,000,000
DOT	\$1,696,925,000
EDA	\$228,750,000
EPA	\$300,000
FAA	\$540,000,000
HHS	\$11,364,232,225
HM	\$2,150,000,000
HSGP	\$4,866,000
PA	\$28,237,727,357
SSBG	\$126,000,000
USACE	\$1,830,000,000
USDA	\$2,080,500,000
USFWS	\$33,000,000
Grand Total	\$94,399,614,140

ENSURING TRANSPARENCY AND STRONG FINANCIAL CONTROLS

In the aftermath of Hurricanes Irma and Maria, Puerto Rico recognizes that the commitment of funding from Congress necessitates an equal commitment from Puerto Rico to manage those funds with great efficiency, transparency, and accountability. The Governor and his entire Administration are dedicated to delivering on this promise, and the appropriate organizational structures, controls and processes are being put in place to protect the federal investment in the recovery.

An extraordinary demonstration of this commitment is found in the recent creation of the Central Recovery and Reconstruction Office of Puerto Rico. The need to coordinate across the traditional agencies of government and the commitment to strengthen financial controls and the oversight of the recovery process led the Governor to issue an Executive Order establishing the Office that has been established with all necessary authority, powers and capability to: (a) identify, procure and administer all state, federal and/or private resources for recovery; (b) direct and coordinate efforts and activities of the Government of Puerto Rico related to the recovery; (c) fund and execute recovery and related infrastructure projects; and (d) advise the Governor and provide technical assistance to other entities across the Government related to recovery efforts, as required. This new office will provide the centralized oversight and financial controls that the Government of Puerto Rico and the U.S. taxpayer expect for the recovery effort. It will also ensure the Government can implement reconstruction efforts with efficiency and transparency, and capitalize on opportunities to build back in a manner that makes Puerto Rico better, smarter, stronger, and more resilient.

The operation of this Office will also centralize the recovery procurement activities of the Government so that additional controls can be implemented to ensure those actions will be in full compliance with Federal and state requirements, approached with consistency, occur under the watchful eye of procurement experts, and are consistent with purchasing process best practices. It will ensure that all procurements are performed in a manner that achieve full and open competition and will make public information about procurement decisions available to the public.

Puerto Rico is committed to implementing specialized tools, expanding the use of expert consultants and accounting support, utilizing proven grants management systems to support the program and financial management funding requirements that provide accountability to the island's recovery investment. A program that provides technical assistance to state agencies, municipalities, and other recipients of recovery funds is being implemented to increase awareness of financial and programmatic requirements and to assist with documentation management. Puerto Rico has engaged and is leveraging best practices from states such as Louisiana, New Jersey, New York, and Florida from past disasters. The Government will continue engaging with FEMA and other federal agencies, including with their respective Offices of Inspectors General, as it designs and implements programs and spends resources. Puerto Rico will also be developing and implementing processes, procedures, and protocols designed to manage the significant funding that is expected to be made available in the aftermath of the hurricanes to permit the Government to monitor those implementation efforts, ensure legal, regulatory, and policy compliance and ensure the appropriate use of funds.

Finally, Puerto Rico is planning to create a Recovery Transparency Portal that will track the status of recovery and provide information to the public about how and where funds are being used. This will provide transparency related to the recovery effort, and will support a regimen and culture of accountability.

DISASTER SUMMARY

Hurricanes Irma and Maria dealt a devastating blow to Puerto Rico, resulting in the largest and most complex disaster response and recovery effort in U.S. history. Hurricane Irma skirted the northern coast of the Island from September 6-7, 2017 as a Category 5 storm, causing significant flooding, regional power and water outages, and other significant impacts. Before response operations had even concluded however, an even more devastating Hurricane Maria slammed into Puerto Rico on September 20, making a direct strike as a strong Category 4 storm and causing widespread devastation and destruction the likes of which the island has never seen.

Maria represented a “worst case scenario” for Puerto Rico, tracking east-to-west across the island and leaving no one and no thing untouched. Within a matter of hours, 100% of Puerto Rico’s population, economy, critical infrastructure, social service network, healthcare system, and even the government became casualties of the storm. All power was lost across the Island as a direct result of the catastrophic failure of the Puerto Rico Electric Power Authority’s (PREPA’s) transmission and distribution infrastructure to the point that experts estimate it could take as long as a year to bring even temporary power back to all Island households and businesses. This produced a cascading effect that impacted critical infrastructure and services that relied on power to operate (such as airports, seaports, hospitals, water systems, communications networks, hotels, traffic and street lights, etc.), plunged homes and businesses across the Island into darkness, and caused a devastating blow to Puerto Rico’s fragile economy – an impact that continues to be felt throughout the island even today and that is expected to last for many years.

The powerful winds, storm surge and localized flooding from Hurricane Maria caused significant damage or even complete destruction of over 472,000 housing units across Puerto Rico. This has forced hundreds of thousands of island residents to seek shelter in hotels, with friends and family or in congregate shelters. The magnitude of housing losses produced a housing emergency throughout the island due to the insufficient remaining housing stock to shelter all of those who have lost or have been forced out of their homes. This reality, added to the power and water outages, forced tens of thousands of Puerto Rico residents to flee to the continental United States, further impacting the island’s ability to recovery and rebuild its communities and economy.

In addition, both storms also created a severe threat to public health and safety – a condition that continues to this day. Hurricane Maria produced more than 6.2 million cubic yards of both vegetative and construction and demolition debris across Puerto Rico, impacting transportation, restricting access to hard-hit areas, and creating an environment that is ideal for rodent infestation and the spread of disease. Nearly all of the water and wastewater treatment plants in Puerto Rico were rendered inoperable, resulting in the release of millions of gallons of untreated waste into the environment. Furthermore, many hospitals and primary care facilities were forced to close, nursing homes were left without power or resources, the social service “safety net” fell apart, and basic resources such as clean and potable water, food and medicine became scarce and turned the emergency on the island into a humanitarian crisis.

DISASTER SUMMARY

More than six weeks after Hurricane Maria struck the island, both Puerto Rico and its federal counterparts remain heavily focused on response activities to protect public health and safety and meet basic needs. In fact, the Irma and Maria disasters represent the longest period of joint federal and state life saving and sustaining response operations to a natural disaster in U.S. history. But there is light at the end of the tunnel. Emergency assistance is having an impact, and the provision of generators and temporary work is beginning to stabilize conditions on the island.

As the focus turns from response to recovery, the scale of the devastation also provides Puerto Rico and the United States Government with an unprecedented opportunity to rebuild portions of the island's infrastructure, housing, and economy in a way that makes Puerto Rico stronger, smarter, safer, better, and more resilient than before. Due to the unparalleled and widespread devastation, the disaster recovery period in Puerto Rico represents a chance to "begin again" and rethink the design of major components of the Island's critical infrastructure, invest in the quality and survivability of its housing stock and public buildings, and restructure, modernize and reform how it delivers basic services to its residents. Puerto Rico can also improve its resiliency and sustainability to protect the federal and state investment in the recovery and produce benefits for the island's residents for generations to come. To achieve these goals, however, the people of Puerto Rico will need assistance above and beyond that available from FEMA. This is the basis for this Request for Supplemental Appropriations.

OVERVIEW OF PUERTO RICO AND RECONSTRUCTION APPROACH

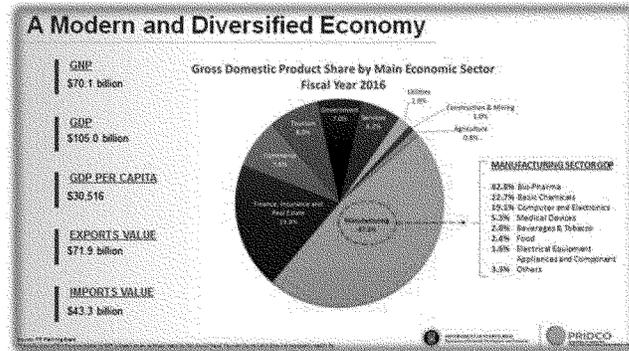
Puerto Rico is a territory of the United States located in the Caribbean approximately 1,030 miles southeast of Miami, FL. Puerto Rico has an area of approximately 3,500 square miles and a population estimated at 3.41 million by the United States Census Bureau as of July 1, 2016.

Puerto Rico, one of the largest economies in the Caribbean, offers a stable legal and regulatory framework where major U.S. and foreign multi-national corporations have historically operated, benefiting from its favorable investment environment. The economy includes a sophisticated financial system, has a high concentration of pharmaceutical and life sciences manufacturing, biotechnology, medical devices, agriculture, rum, aerospace, and electronics and contains strong consumer, retail and service sectors.

KEY PUERTO RICO FACTS 2016	
Population	3.41 million
Land Area	8,959 sq. km
Currency	US Dollar (USD)
Language	Spanish, English
GDP Per Capita (USD, Current terms)	\$30,516

However, the Government of Puerto Rico, its agencies, public corporations and instrumentalities (the "Government") are currently facing the unprecedented devastation caused by Hurricanes Irma and Maria. In addition, the Government had embarked on profound fiscal adjustments that limits the amount of reconstruction funds from its own government sources.

OVERVIEW OF PUERTO RICO AND RECONSTRUCTION APPROACH



The Government of Puerto Rico has a strong foundation to effectively receive and deploy infrastructure funds and capital. The devastation of Hurricanes Irma and Maria places the highest level of urgency on the need to effectively fund and invest in critical infrastructure. For this, the Government's aligned policies to encourage infrastructure investment together with coordinated Federal efforts conform a solid foundation for infrastructure reconstruction. Puerto Rico's strong Private Public Partnership ("P3") framework, one of the most comprehensive in the U.S., together with close inter-agency coordination, and effective and transparent funds monitoring promises to be a powerful combination to accelerate and deliver transformative reconstruction in Puerto Rico's infrastructure. In fact, no other state has offered innovative infrastructure delivery tools such as P3s to be part of the entire 'tool box' to fund, invest, deliver and monitor infrastructure reconstruction like Puerto Rico is proposing.

Although the recent natural disasters represent a devastating blow to Puerto Rico, the Government is committed to maximize funding opportunities with a comprehensive framework which will effectively deploy, fund, invest in and execute much needed infrastructure projects.

SECTORAL IMPACTS AND PROJECTS





HOUSING

Hurricane Irma and Maria took a huge and unprecedented toll on the island's home and housing stock. It is estimated that over 472,000 housing units have received major damage or been destroyed by the hurricanes. This forced tens of thousands into congregate shelters and hundreds of thousands more into hotels or into the homes of family and friends. As of early November, more than 1 million Puerto Rican households have applied for FEMA individual assistance, with many more expected to apply in the coming months.

While damage was widespread and impacted people of all economic and social strata, many of the most severely damaged or destroyed housing units sheltered lower-income populations, were of poor quality and/or were not constructed to modern building code requirements and resiliency standards. The loss of power, water, and access challenges across the island have further complicated matters, making housing that otherwise could be occupied uninhabitable.

One of the major challenges in Puerto Rico is that a substantial portion of housing stock was made uninhabitable or taken off-line, reducing supply at the same time that demand for safe and decent housing increased due to the storm effects. This has created a situation in which there are insufficient housing resources to support the needs of displaced populations. This problem is particularly acute for individuals and families of low-income or who have special needs. Because Puerto Rico is an island, this situation has left tens of thousands of Puerto Ricans with no other option but to leave for the mainland United States to secure safe and habitable housing.

Given the extent of housing losses, Puerto Rico is looking to build back a more resilient housing stock that can correct some of the deficiencies and problems that contributed to the massive damages. Substantially-damaged structures located in the 100-year floodplain will need to be reconstructed, elevated, or bought out (of the total occupied housing units, approximately 58% are situated in mapped floodplains). Puerto Rico will be adopting an updated hazard resistant building code that will ensure that housing repairs and reconstruction will result in safer and more secure housing across the island. As required by FEMA, the Government of Puerto Rico will use the recovery period to address the problem of "informal housing" – a term used to describe homes built by people on government land without permission and without following building code requirements – by supporting the development of safe and decent replacement housing away from government land where these individuals and families can be relocated. Puerto Rico will also implement programs for single-family, multi-family, and public housing repair, restoration, and reconstruction to facilitate replacement of the housing stock.

The Puerto Rico Department of Housing manages existing public housing projects and offers housing assistance to more than 40,000 low-income housing units housing over 100,000 households. The Department of Housing is currently assessing the damage to the affordable housing stock. Low-income households have fewer options in securing safe and decent housing especially in times after a major disaster given their limited resources. Considering the magnitude of damage caused by the hurricanes, it is anticipated that temporary housing solutions for those affected by the hurricanes will be needed for months or, in some cases, years. This produces a temporary recovery need for residents that includes rental assistance as well as repair and mitigation.

It is critical for the island's recovery that there be adequate funding for housing resources that can meet the needs of all its residents and permit those who have been displaced and who were forced to leave Puerto Rico to return to their communities. Currently, the FEMA Individual Assistance program inspections are not representative of the damages as the total inspections are predominately in the metropolitan area and only include 7% of the overall housing inspections required. At this time, it is estimated that Puerto Rico suffered almost \$37.41 billion worth of damage to its owner-occupied and rental housing stock. After taking insurance into account, the estimated unmet need based on damage estimates and the need for mitigation is approximately \$31 billion.

Owners units by damage	Number of units	Estimated Cost
Destroyed	57,482	\$6,926,596,954
Major	254,564	\$8,909,730,522
Minor	205,293	\$3,079,399,950
Affected	205,293	\$1,026,466,650

Tenants units by damage	Number of units	Estimated Cost
Destroyed	29,612	\$3,568,246,915
Major	131,139	\$4,589,861,178
Minor	105,757	\$1,586,357,550
Affected	105,757	\$528,785,850

This estimate was based on information regarding the housing stock prior to the hurricanes, open source housing data, FEMA Individual Assistance data, US census data, insurance info, and assumptions based on local knowledge. Below are the assumptions made in developing the housing estimate:

- The percentage of damage level (Destroyed, Major, Minor, Affected) were based on Hurricane Hugo and Georges
- Cost for repair/rehabilitation by category (i.e. 120,500; 35,000; 15,000; 5,000) based on median home prices and input from PR housing agency.
- Puerto Rico insurance industry provided insurance rate of 31%
- The mitigation factor of 30% is based on the HUD standard of 30% of Major and Destroyed properties

For additional information on the methodology, please see the appendix.

CATEGORY	ESTIMATED COST
Housing	\$31,068,532,671



POWER GRID AND RESILIENCY

Hurricanes Irma and Maria caused the complete failure of Puerto Rico's power grid. Generating facilities include 6 fossil and 21 hydroelectric power plants, owned and operated by the Puerto Rico Electric Power Authority (PREPA), as well as privately owned facilities including 2 cogeneration plants, 2 windfarms and 5 solar farms. The transmission and distribution system consists of 2,478 miles of transmission lines, 31,485 miles of distribution lines, and 344 substations. The storms decimated both transmission and distribution lines across the island, with 847 poles and transmission towers destroyed, and nearly 900 conductor and insulator failures system-wide. 74% of substations, both primary and secondary control centers and all power generation plants incurred moderate to severe flooding and varying levels of wind damage. These systemic failures caused the longest sustained power outage in U.S. history that continues to this day on approximately 60% of the island. According to the PREPA and the U.S. Army Corps of Engineers (USACE), it may take considerable time to provide temporary power to all points on the island and several years to rebuild the entire grid. This cataclysmic failure of the power grid has produced some of the most costly and impactful consequences of the hurricane disasters, creating ripple effects throughout the housing sector, communications, critical infrastructure, health care and economy.

The failure of the grid provides both Puerto Rico and the United States the unique opportunity to rebuild the power infrastructure and rethink how power is generated and distributed across the island to make the system more efficient, resilient, and sustainable. The system can be modernized to include state-of-the-art technologies while incorporating renewable energy sources such as wind and solar along with energy storage to reduce system costs, improve resiliency and decrease "last mile" costs of the distribution system. The grid can be built with smaller generation units that are distributed so as to provide redundancy and a series of micro-grids that are multi-directional (vs. one-way). The system can also be sized to meet the forecasted decreases in load over the next decade, which will allow PREPA to modernize the system in order to provide stable energy at a low cost. This model could also serve as a laboratory for the future development of power production, transmission and distribution systems and the incorporation of renewable resources.

The rethinking of the power grid has broad implications for Puerto Rico's citizens, businesses and government. Our summary for estimating the need was as follows:

POWER GRID AND RESILIENCY

Power & Grid Resiliency Investments	Qty	Unit Cost	Total Cost	Comments
Substation Rebuild and Hardening	340	\$15,000,000	\$5,100,000,000	Replacement control buildings, flooding protection, a few substation relocations, upgrade structures and insulators to 158mph, replace end of life circuit breakers. Harden and upgrade relay protection systems, T/D SCADA, and security
TRANSMISSION LINE RECONSTRUCTION AND HARDENING				
115kV & 230kV replacement	1000	\$400,000	\$400,000,000	Includes hardware upgrade on 1000 poles
38kV poles replacement	1000	\$20,000	\$20,000,000	Includes hardware upgrade on 1000 poles
Distribution line reconstruction and hardening	1200	\$2,000,000	\$2,400,000,000	1200 feeders * \$200k/mile * 10 miles/feeder = \$2.4B Including addition of distribution automation
CONTROL CENTERS REBUILD AND HARDENING				
Primary Control Center rebuild and hardening			\$10,000,000	
Backup Control Center relocation, rebuild and hardening			\$24,000,000	
Spares inventory	10	\$800,000	\$8,000,000	Transformers
IT/OT systems			\$50,000,000	EMS, ADMS/DERMS, GIS, AM, Cybersecurity
Comms/Fiber/Wireless			\$400,000,000	
GENERATION				
Generation rebuild and hardening			\$2,059,500,000	Six gen plants; one replacement; T&L Rebuilds, Spares replacement
Fuel infrastructure rebuild			\$1,000,000,000	
DER build out			\$1,040,000,000	Assuming microgrid investment to get 10% of peak load (comes to 260 MW) on microgrids at \$4/W. The \$4/W breakdown is: -\$0.5/W for generator, -\$1/W for storage, -\$1.5/W for PV, -\$1/W for software, controls, and comms

CATEGORY	ESTIMATED COST
Power Grid and Resiliency	\$17,789,375,000

POWER GRID AND RESILIENCY

OFF GRID ENERGY PROJECTS



Estimated Cost

\$150,000,000

Proposed Funding Source

HM

Other Possible Funding Sources

CDBG-DR, EDA

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Development and installation of renewable energy sources that will ensure that water and energy can continue to be provided during emergency stations.

IMPACT

Approximately 90% of the Island water system collapsed due to damages of the electrical grid.

LONG-TERM BENEFIT AND OPPORTUNITIES

Critical water facilities will be resilient to blackout allowing the distribution and sewer services to function properly even in future hurricane scenarios.

IMPACT TO HEALTH



HEALTH AND HEALTHCARE

The damage to Puerto Rico's existing healthcare system was significant. Each of the 68 hospitals and 107 health clinics across the island experienced significant structural damages and power loss, and in many cases pre-existing generator back-up systems were either damaged or destroyed due to the storms or the duration of the power outages. One hospital in Vieques was completely destroyed. The island's network of primary and critical care centers all but closed down due to power and damage issues, requiring the expenditure to date of over a hundred million dollars by the Federal Government to activate the National Disaster Medical System, a Combat Army Surgical Hospital and other temporary medical facilities, provide air-lift support for critical patients, and even mobilize the U.S. Navy Hospital Ship Comfort to fill the gaps. Nearly six weeks after the storms, twelve (12) hospitals remain on back-up generator power, and many are operating at reduced capacities due to power and water limitations and damage. Only 72 of the original 107 health clinics are known to be operating; 33 of which are on generator power.

Puerto Rico is now facing a public health crisis. Vector control remains a significant concern, as does the potential for disease outbreak due to contaminated or compromised water supplies, and the presence of nearly 6.2 million cubic yards of debris that can serve as an ideal breeding ground for rodents and other disease-carrying vermin. There is an unknown number of people potentially affected by ingestion of contaminated water and the secondary effects of infection and long-term toxicity from ingesting dissolved or suspended toxins. Puerto Rico should also expect increased morbidity and mortality of those suffering from chronic diseases such as asthma, hyperglycemia/diabetes, kidney failure requiring dialysis, hypertension, chronic depression, and those who have more limited access to healthcare providers and medications. The chronic impacts of the disaster on the population's health may take years to manifest.

One of the most significant and immediate challenges faced by the Government of Puerto Rico is the impact that the storms has had upon its already fragile Medicaid program. After many years of structural underfunding, the Medicaid program has been further hobbled due to the hurricanes causing widespread public health impacts that are expected to generate significant increases in usage of Medicaid by program participants. These impacts include health problems associated with hazardous conditions, insect-borne disease, health and safety issues associated with debris and damaged facilities, and increased risk of infections. The increase in unemployment and other social factors is expected to increase the population eligible to participate in the program. This situation is further complicated by the exodus of tens of thousands of Puerto Ricans to the mainland because of the lack of safe and decent housing on the island; these individuals will be seeking medical services in their adopted homes at costs that run 4-5 times higher than that of similar care in Puerto Rico. The Government must either expand coverage under Medicaid to assume these unanticipated costs, or strand its residents away from home without access to necessary health care services.

HEALTH AND HEALTHCARE

In the aftermath of these events, the Government of Puerto Rico needs sufficient funding resources to implement its Medicaid program to address the immediate and longer-term healthcare needs of the island's population. The Government of Puerto Rico is planning to restructure its health care delivery system to permit a more rapid assessment and response to health crises and disease outbreaks, and build a modern and resilient healthcare system that can sustain the load from crises. The goal is to regionalize response to health issues in the future by establishing regional healthcare "hubs" to provide high levels of care and to serve as a regional resource centers for other health facilities to ensure they always have access to critical supplies, medicines, equipment, and surge capacity support. Puerto Rico seeks to "harden" hospitals and other critical healthcare facilities to make them more resilient, ensuring their availability immediately before, during and after a disaster occurs.

The government has identified specific restoration projects that total the amount specified below. The following projects illustrate a few of the ways in which Puerto Rico is planning to implement measures designed to achieve these objectives.

CATEGORY	ESTIMATED COST
Health and Healthcare	\$14,946,507,962

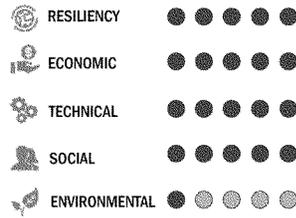
MEDICAID ASSISTANCE



Estimated Cost
\$11,350,000,000

Proposed Funding Source
HHS

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Obtain necessary funding to augment the existing Medicaid program in Puerto Rico to address disaster-related costs and reduce the burden of structural financial burdens that impede recovery.

IMPACT

The hurricanes produced significant unanticipated costs for medical care for participants in the Medicaid program due to expected increases in program usage as well as increased system costs as displaced Puerto Ricans access much more expensive care on the mainland (4.5 times the cost on island). Also, the structural underfunding of Puerto Rico's Medicaid program combined with the massive disruptions to economic activity and tax / fee collections make alleviating the structural financial burden of Medicaid in Puerto Rico necessary.

LONG-TERM BENEFIT AND OPPORTUNITIES

Providing additional funding for Medicaid over the coming five years will improve the health of many hurricane survivors who will need increased medical care. Also, the financial relief from providing this assistance will free up resources to help the Government of Puerto Rico pursue recovery in an expeditious and effective manner.

HOSPITALS IMPROVEMENTS



Estimated Cost

\$141,906,000

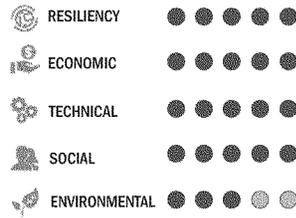
Proposed Funding Source

CDBG-DR

Other Possible Funding Sources

EDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Puerto Rico is planning to build a modern and resilient healthcare system that can sustain the load during and after crises. Hardening of hospitals and other critical healthcare facilities will be undertaken as well as other mitigation efforts. This project will maximize the use of renewable power generation which will be able to better withstand storms and flooding and modernize equipment and services.

IMPACT

One hundred percent of the 68 hospitals and 107 health clinics experienced significant structural damage and lost power. In many instances, pre-existing generator systems were either damaged, destroyed, or failed. The National Disaster Medical System was activated and utilized a Combat Army Surgical Hospital and other temporary medical facilities, provided air-lift support for critical patients, and even mobilized the US Navy Hospital Ship Comfort to fill the gaps in need.

LONG-TERM BENEFIT AND OPPORTUNITIES

Making the island's healthcare facilities and services more resilient will permit for more rapid response to health issues and improve continuity of services especially in times of disaster and reduce the need for extraordinary measures to ensure the residents of Puerto Rico have access to healthcare.

STATE EMERGENCY STOCKPILE

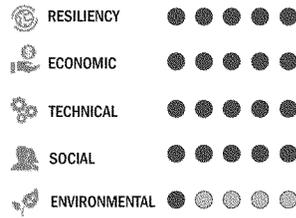


Estimated Cost
\$5,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
HLS

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Funding to ensure that medical personnel have immediate local access to critical medical supplies even if the island's transportation network is disrupted in an emergency.

IMPACT

In the immediate aftermath of Maria, clinics and hospitals did not have efficient access to critical medical supplies and medicines due to the disruption of the medical supply chain. These disruptions delayed treatment to injured and sick citizens, exacerbating the already difficult conditions.

LONG-TERM BENEFIT AND OPPORTUNITIES

Well stocked and well managed localized supply stockpiles of essential medical supplies and medicine will ensure prompt medical treatment in the event if future disasters.



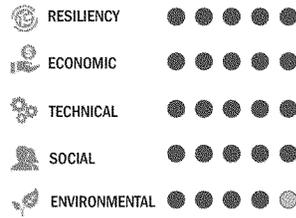
HOSPITAL REPAIR & REFURBISHMENT

Estimated Cost
\$3,445,735,962

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
EDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Funding to rebuild, repair, and modernize storm-impacted or destroyed hospitals and medical clinics across Puerto Rico.

IMPACT

Each of the 68 hospitals and 107 health clinics across the island experienced significant structural damage, including destruction of existing back-up power supply systems. These damages significantly degraded or fully obstructed the ability of these critical facilities to provide basic medical care to Puerto Rico's citizens, including the elderly and children.

LONG-TERM BENEFIT AND OPPORTUNITIES

A fully operational health care system is a cornerstone in any modern society. When significant capital investments are made to repair health care facilities, these facilities should be upgraded in accordance with current health care design practices and up-to-date medical technologies.



AGRICULTURE

The agricultural sector in Puerto Rico was severely impacted by the rains and winds from Hurricanes Irma and Maria. Agriculture holds an important aspect of the island's culture and history. Roughly a quarter of Puerto Rico's land is divided into over 13,000 farms that employ many workers and supply food to the communities nearby and across the island. Most farms are small, family-owned operations that have been completely devastated by both the destruction of their planted crops and the physical losses of equipment and buildings. Approximately 80% of the crop value on the island has been destroyed, representing a loss of nearly \$250 million to the Puerto Rico economy and far more in the years to come given the time it takes for some crops to reach maturity. This impact is further spread across the island due to the loss of locally-grown foods in the marketplace, which has limited nutritional options and driven up costs to consumers. The loss to livestock and other animals is equally as devastating, with over 2.2 million animals lost due to the storm, representing an animal mortality rate between 45-50%. Feed, water, and energy necessary to maintain and manage the remaining herds is in short supply due to the loss of power in many rural areas and the disruption to supply chains. Also, agricultural infrastructure such as buildings and machinery experienced damages in excess of \$1.8 billion, which represents 40% of the total value of such infrastructure in all of Puerto Rico (using data from the National Agricultural Statistics Service). Greenhouses, controlled-environment facilities, and production and processing buildings all experienced catastrophic losses.

Hurricanes Irma and Maria demonstrated that Puerto Rico needs to promote a higher level of food security and more efficient production of agricultural goods on the island through the restoration and strengthening of the agricultural sector. Puerto Rico will promote the hardening of agricultural infrastructure (particularly buildings), strengthening farm-to-market connectivity, and facilitating the incorporation of new technologies to increase productivity and decrease costs. Making available the necessary capital to allow farmers and others in the agricultural sector to re-establish operations and attract new providers to the field is also a top priority.

The Government of Puerto Rico is expecting to initiate a variety of projects that total the amount specified below, including the examples that follow:

CATEGORY	ESTIMATED COST
Agriculture	\$2,076,500,000



SOCIAL SERVICES

The effects of the 2017 hurricanes in Puerto Rico go beyond the physical and economic impacts on the island; they also produced a humanitarian crisis that places significant added stress and costs on the island's public and private-non-profit social service providers. Beyond physical damage to their facilities, many agencies and organizations are experiencing significant increases in demand for their services, which is straining budgets and available resources at the very time that they are most needed. This is particularly true for organizations that provide food and sheltering services to at-risk populations, early childhood education, indigent medical care, aid to children and families, senior care, sexual assault and domestic abuse response services, support for special needs populations, and other critical services. Despite the fact that the hurricanes occurred over six weeks ago, it is expected that the need for social services has not reached its peak – recent major studies indicate a 5-15% increase in need for mental health and other social services in the aftermath of major disasters.

Now that the hurricanes have passed, providing ongoing support to social services providers is a critical need that must be addressed. Puerto Rico also hopes to assist agencies both at the governmental and non-profit level in rebuilding their facilities and technology systems in a manner that produces added resiliency, reduces future losses and ensures the continued availability of critical services in the immediate aftermath of similar events. In addition, Puerto Rico seeks to build capacity to provide both ongoing and emergency support to the "independent elderly" across the island – a population whose needs require priority attention during times of crisis.

A selection of projects and initiatives are provided below as examples of the types of efforts that Puerto Rico wants to initiate in support of the social services sector:

CATEGORY	ESTIMATED COST
Social Services	\$288,262,193



**RELOCATION OF HEAD START/CHILD CARE,
ACF REGIONAL SERVICE FACILITIES
TO CLOSED SCHOOL IN ISABELA**

Estimated Cost
\$6,900,000

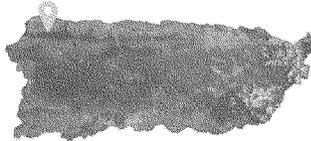
Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
HHS

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

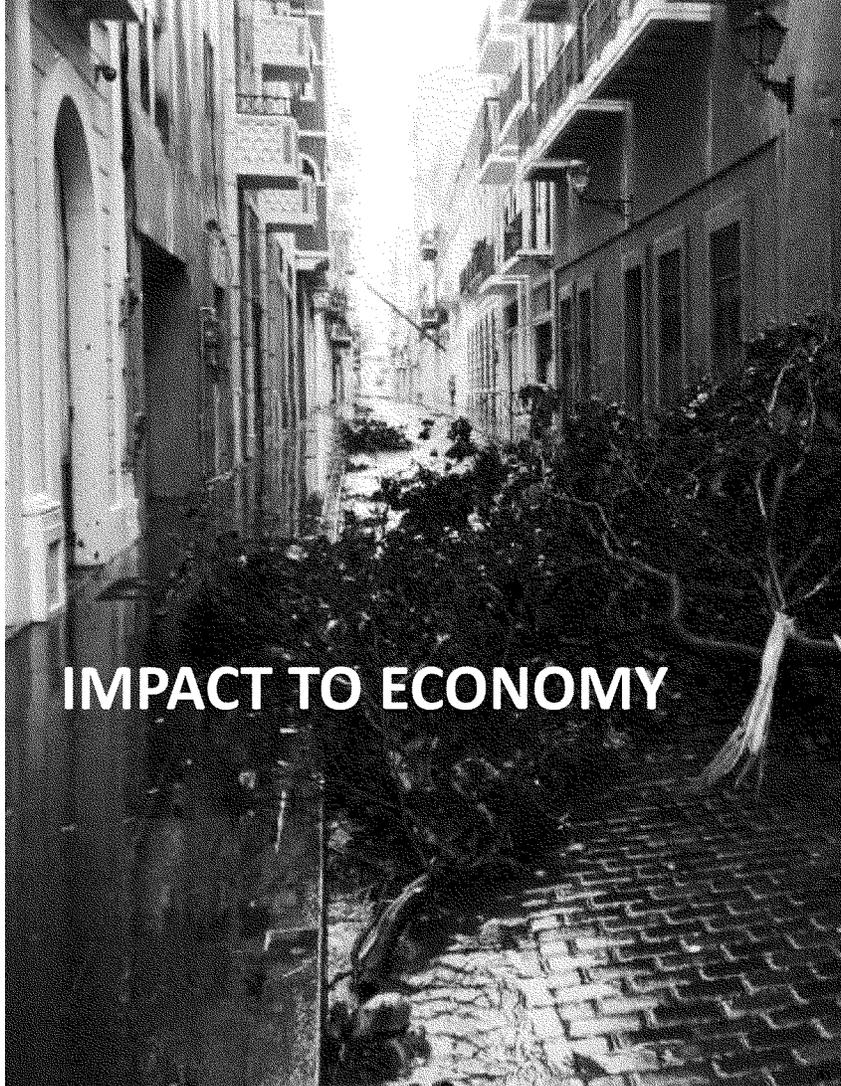
Relocation of Head Start center to renovated bunker type school structures to serve as possible shelters for weather events.

IMPACT

The municipality of Isabela is located in the northwest of the island. Over half of the residents live below the poverty line. During Hurricane Maria, the north shore of the island was ravaged by high wind, storm surge and rain. This resulted in damages including coastal erosion and cracks in the Guajataca Dam, forcing residents to evacuate. The storm caused major damage to the local head start center preventing its use.

LONG-TERM BENEFIT AND OPPORTUNITIES

Quickly rehabilitating facilities that provide essential early education programs will provide greater opportunities for the young children whose lives have been disrupted by this massive storm. These vital facilities will also allow working parents to have reliable child care as they contribute to Puerto Rico's economic recovery.



IMPACT TO ECONOMY

ECONOMIC DEVELOPMENT

One of the biggest casualties of Hurricanes Irma and Maria is the devastating impact on Puerto Rico's economy. Facing major challenges due to eleven straight years of economic depression, the economy of the island was further impacted by the combination of physical damage to industrial and commercial facilities, the long-term loss of power and water, the damage to transportation infrastructure, and the impact on the customer base on which they rely. This has caused thousands of businesses in Puerto Rico to either close or reduce operations, resulting in a substantial loss of jobs and increase in the island's unemployment rate.

Small businesses have been particularly impacted from the inability to open their businesses due to the loss of power. With limited ability to remain a viable concern after a prolonged period of closure, this will have a lasting impact on both economic activity and the associated labor force on the island. Since the Department of Labor reopened its offices on October 6, at least 10,000 people have applied for unemployment benefits due to the hurricanes. That number is expected to keep growing. In just one week, from October 19-26, the total number of unemployment claims doubled. Unemployment is currently above 10%.

The impacts to the Puerto Rico economy are also confirmed through same-store sales, which are down 30% in September. The decline predominately includes Irma impacts with the most severe impacts coming in the last 10 days of the month with Hurricane Maria.

According to the US Census Bureau, in 2014 Puerto Rico's private sector consisted of 44,169 businesses, mostly small and medium enterprises. In the case of manufacturing, approximately 1,600 out of roughly 1,800 manufacturing business in Puerto Rico employs 200 individuals or less. The extensive damage to the power grid, infrastructure, social services, and facilities across Puerto Rico have caused severe disruption to all business sectors on the island, including manufacturing (life sciences, aerospace, electronics, food processing, etc.), retail, trade, tourism, banking and finance, insurance, and real estate among others. Nearly all businesses in the Commonwealth closed their doors in the aftermath of the hurricanes, with many still out of operation even today; in fact, as many as 50% of all small and medium sized businesses are either unable to open or are operating at a significantly reduced capacity, and 15% of the large multi-national companies in the life sciences and aerospace industries remain out of operation. For many, product supply chains have been disrupted and the ability of companies to obtain the capital needed to support recovery has dried up. The storms caused the loss of tens of thousands of jobs, and while it is not yet known how many of them will eventually be restored some major employers have already moved production off the island and each passing day makes it less and less likely that pre-existing businesses will ever be able to reopen their doors. Furthermore, this damage and disruption have put Puerto Rico in a disadvantaged position when it comes to attracting foreign direct investment in sectors such as manufacturing and commerce because of the real and perceived added risk of making such a decision. As a demonstration of this challenge, a number of companies that had previously announced expansion plans in Puerto Rico are re-evaluating their future capital investments on the island.

In addition, the highly visible consequences of the hurricanes have resulted in dramatic reductions in the island's tourism, which before the storms was a primary economic engine in Puerto Rico that provided an estimated \$1.8 billion annually to the Puerto Rico economy and accounted for almost 8% of the island's gross national product. Approximately 40% of the island's lodging inventory is now unavailable due to a combination of physical damage and the loss of power and water; in addition, many of the existing available units – mainly occupied by

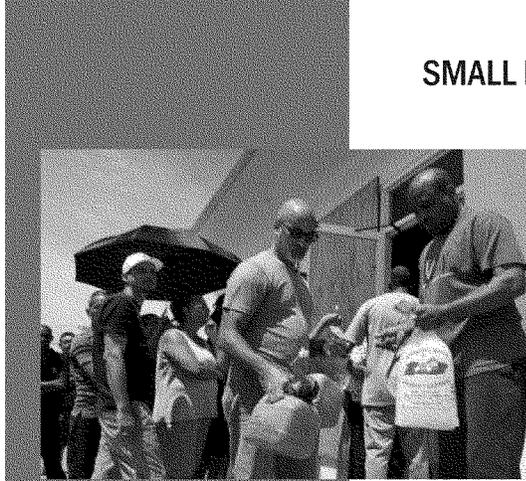
recovery workers - sustained damages that will require them to be taken out of the marketplace for repairs sometime in the months ahead. Puerto Rico's well-publicized disaster has also stalled new bookings to visit the island.

A comprehensive approach needs to be taken to begin addressing these challenges. During the recovery period, Puerto Rico plans to develop and implement new and innovative economic incentives to attract investment, including those designed to target infrastructure investments where they can produce the maximum "spin-off" value to the economy, as well as those that can reduce the cost of establishing operations and producing jobs on the island. Training programs need to be developed and implemented to provide residents with the skills and experience needed to fill jobs both in support of recovery and to capitalize on longer-term employment opportunities in growth sectors. Programs to provide low or no-cost capital to small and medium-sized businesses looking to re-establish operations on the island will be a key component of this effort, given the duration and severity of business closures across the island. Puerto Rico plans to assist thousands of storm-impacted small businesses by providing robust grants or loans for working capital assistance, inventory losses, equipment and fixture replacement costs, storm repairs, and most importantly, mitigation projects to increase small business resiliency in the event of future storms. A small business mentoring program can improve existing small business practices by providing training on improved accounting, fiscal management, marketing, and disaster planning. New investment must be encouraged both in the manufacturing and tourism sectors to increase jobs and improve facilities and infrastructure. Puerto Rico also hopes to utilize the recovery period to reintroduce the world to what the island has to offer, implementing new outreach and marketing efforts to regenerate consumer interest and increase awareness.

The projects listed below are just a sample of the initiatives of the Government of Puerto Rico will implement to promote job creation, generate capital investment and attract tourism to replace what was lost and strengthen the economy in the years to come:

CATEGORY	ESTIMATED COST
Economic Development	\$3,194,677,600

SMALL BUSINESS GRANTS



Estimated Cost
\$2,651,227,600

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
SBA, EDA

EVALUATION CRITERIA

-  RESILIENCY ● ● ● ● ● ● ● ●
-  ECONOMIC ● ● ● ● ● ● ● ●
-  TECHNICAL ● ● ● ● ● ● ● ●
-  SOCIAL ● ● ● ● ● ● ● ●
-  ENVIRONMENTAL ● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Programs would be created to assist thousands of storm-impacted small businesses by providing grants for working capital assistance, inventory losses, equipment and fixture replacement costs, storm repairs, and, importantly, mitigation projects.

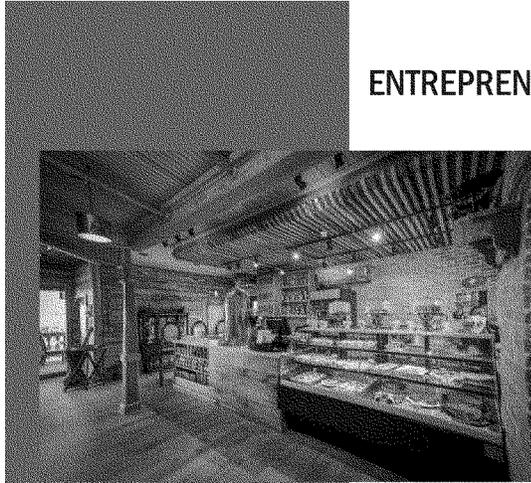
IMPACT

The economy of the island was crippled by the combination of physical damages, the long-term loss of power and water, the damage to transportation infrastructure, and the impact on the customer base on which they rely. Small businesses are a particular vulnerable population when it comes to recovery from a disaster and impacts from sustained closures. As many as 50% of all small and medium sized businesses are still either unable to open or are operating at significantly reduced capacity.

LONG-TERM BENEFIT AND OPPORTUNITIES

This program will allow businesses to re-establish operations, rebuild, recover, and grow. In addition, providing much needed assistance to help these businesses stay open will also help communities recover and continue to have access to goods and services.

ENTREPRENEURSHIP INITIATIVE

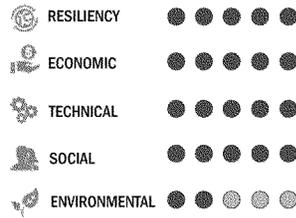


Estimated Cost
\$50,000,000

Proposed Funding Source
EDA

Other Possible Funding Sources
CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Encourage entrepreneurship among unemployed or displaced workers who were affected by the hurricanes. Participants who complete the program will have the skills necessary to create and manage their own business.

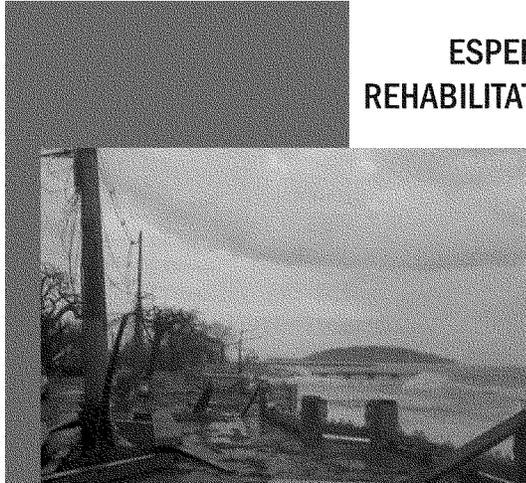
IMPACT

The devastation left by hurricanes forced some workers out of their jobs. This number may increase as it is not known yet how many businesses will eventually re-open or restore operations to the size they were prior to the hurricanes.

LONG-TERM BENEFIT AND OPPORTUNITIES

Providing job skills and opportunities can curb an increase in the island's unemployment rate due to the hurricanes. Residents whose employment was affected by the effects of the hurricanes will be provided with skills and training that can be utilized in long-term employment.

ESPERANZA BOARDWALK REHABILITATION (WATERFRONT)

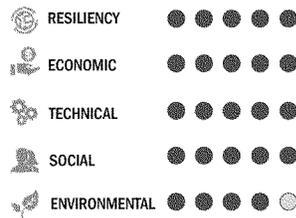


Estimated Cost
\$10,000,000

Proposed Funding Source
EDA

Other Possible Funding Sources
SBA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Revitalization of the waterfront as well as providing assistance to the neighboring businesses to re-open their business and build them to be more resilient and to better protect against future storms.

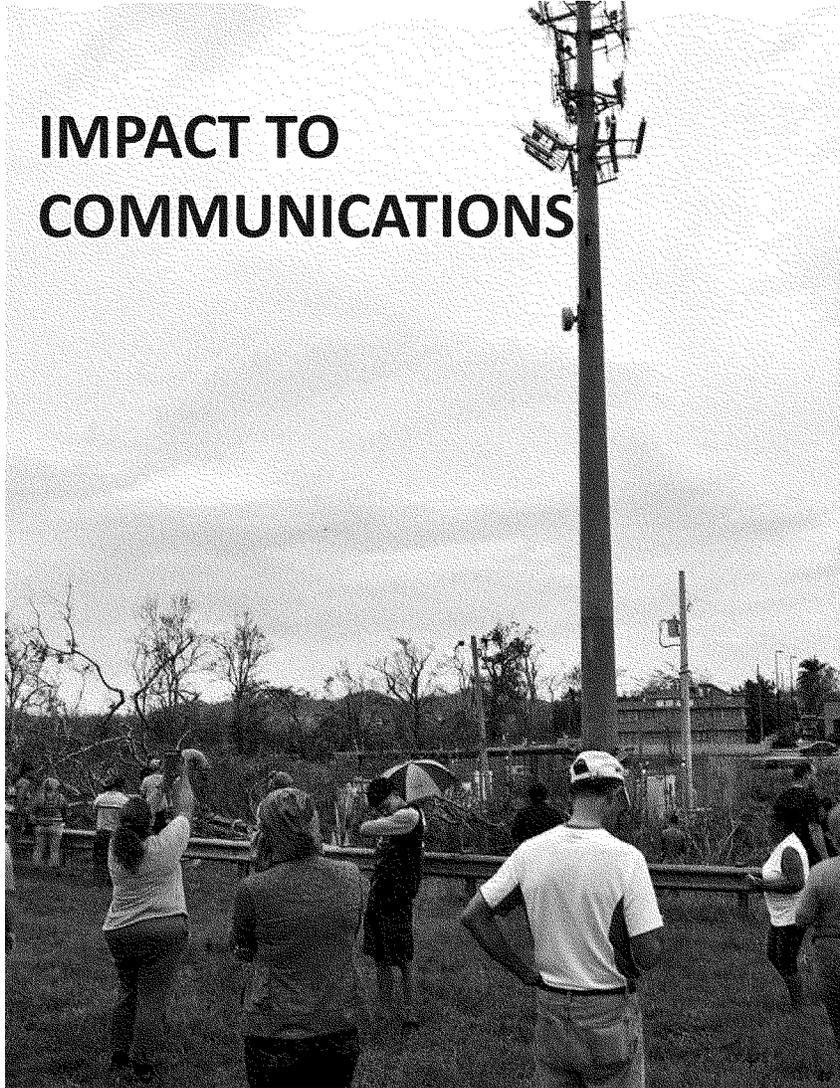
IMPACT

After Hurricanes Irma and Maria hit the island of Vieques, the famous waterfront (the "Malecón") in Esperanza received significant damage. Most visitors to the island of Vieques enjoyed this waterfront and after Hurricane Maria, it is no longer open for visitors. Most restaurants and businesses were also damaged.

LONG-TERM BENEFIT AND OPPORTUNITIES

An area that is enjoyed and has a lot of traffic from both locals and visitors will be able to re-open and be better protected against future storms. Businesses will be built back better and will benefit from the visitors to the popular waterfront.

IMPACT TO COMMUNICATIONS



COMMUNICATIONS INFRASTRUCTURE

The failure of the communications network across the entirety of Puerto Rico was one of the most consequential impacts of Hurricanes Irma and Maria. The two storms destroyed communications towers, repeaters, and communications centers across Puerto Rico, and the infrastructure that remained was hobbled by the loss of the power grid that supports its operation. This situation caused nearly a complete failure of the emergency communications needed for public safety and disaster response operations. The fiber network that supports cell sites and communications towers across the island was decimated, which along with physical tower and equipment failures and power loss resulted in approximately 91% of the cellular towers were lost due to damages or loss of power, 45% of which remain inoperable even today. Other public communications channels such as television and radio were similarly affected, disrupted by losses at towers that contained its communications equipment. Reconstruction of the fiber network and the replacement of damaged cell sites alone is estimated to cost \$1.5 billion.

The experience of the hurricanes has led Puerto Rico to rethink how the communications network is built and managed. The island needs to identify the means to restore its communications services more quickly after a disaster and take aggressive actions to implement initiatives to ensure this happens. The permanent restoration of Puerto Rico's communications system will need to involve a substantial investment of resources to increase the functionality and capability of the emergency communications networks in the face of future storms. Back-up power with battery back-up will also be needed to ensure that critical public safety networks remain functional.

The challenges that Puerto Rico encountered to receive replacement parts and supplemental equipment to improve the communications capacity from the mainland due to the lack of logistics planning and production lead-time means that the Government must have more robust stockpiles of inventory that can be more easily and rapidly accessed during times of emergency. Finally, the restoration will require a detailed study of how to deploy communications infrastructure faster and more efficiently in the future, taking into account the unique geography and terrain of Puerto Rico, including funding for initial implementation.

The government has identified specific restoration projects that total the amount specified below. The following projects are the types of initiatives that Puerto Rico plans to pursue to restore, protect and improve the island's communications network:

CATEGORY	ESTIMATED COST
Communications Infrastructure	\$1,500,000,000



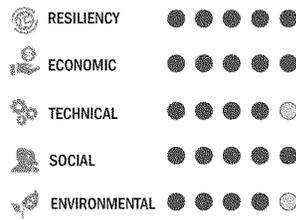
COMMUNICATION SYSTEMS IMPROVEMENTS

Estimated Cost
\$1,500,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
USDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

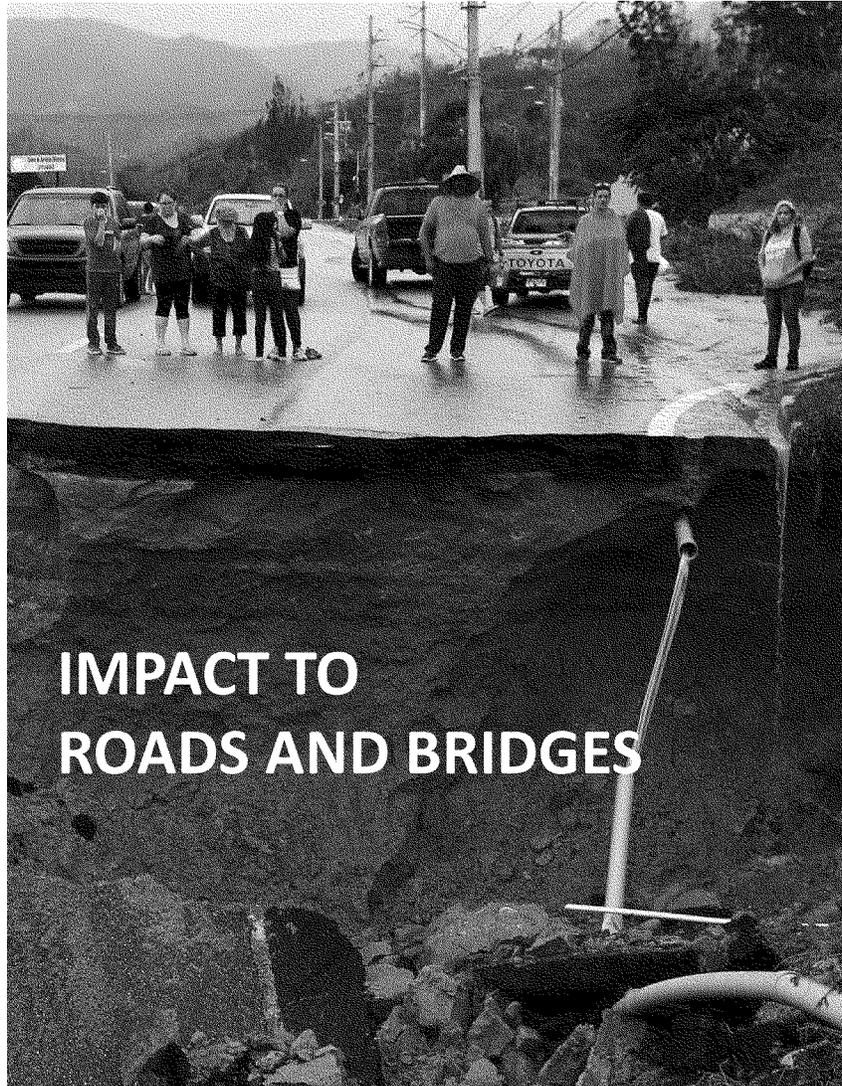
A fully functional and improved telecommunications network is absolutely essential for public safety, economic recovery, and the restoration of day-to-day life in Puerto Rico. This project envisions replacing the existing storm-devastated telecommunications network (e.g., distribution systems, towers) with modern technology, such as fiber optic.

IMPACT

The telecommunications network was rendered completely non-functional by Maria. This widescale communications "blackout" significantly increased the risk to public safety, hampered emergency response and recovery efforts, and shutdown Puerto Rico's economy.

LONG-TERM BENEFIT AND OPPORTUNITIES

Repairing and modernizing Puerto Rico's telecommunication network will have a direct impact on the life of every Puerto Rican citizen and business. Building this system in a more resilient manner will reduce the risk of widespread outages in the future.



**IMPACT TO
ROADS AND BRIDGES**

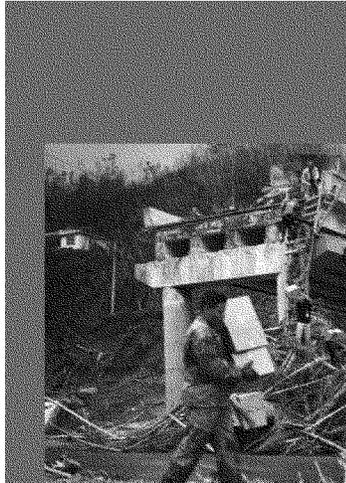
ROADS & BRIDGES

Puerto Rico's transportation infrastructure was one of the more significant casualties of the hurricane disasters. The combination of debris, flooding, downed power lines and mudslides caused by the hurricanes severely impacted roads and bridges across the island's nearly 16,700 mile transportation network, restricting ingress and egress to some communities and limiting access to critical island infrastructure and resources. At its peak, only 392 miles of Puerto Rico's roadways were open. More than a dozen bridges remain closed to traffic as a result of the complete structural failure or significant scour caused by Hurricanes Irma and Maria. Assessments are not yet completed so it is anticipated that significant damage will be further identified. These failures resulted in significant threats to public health and safety that continue to this day, triggering tens of millions of dollars of additional response costs and the need to temporarily rebuild and repair damaged bridges and roadways to permit the passage of emergency vehicles and aid convoys. Nearly all of the traffic signaling across the island was destroyed. Public transportation in the San Juan metropolitan area has been halted since Hurricane Maria, as the Tren Urbano System, which serves as the backbone that links the Buses, Paratransit, BRT's and Ferries has not been operational due mainly to the loss of power. This impacts over 50,000 users that have since been unable to access their jobs, universities, medical services, schools, or commercial establishments on their everyday lives. Bus terminals suffered damages that subject patrons to degraded service levels on an already fragile system. The ferry service which serves as the only link between Puerto Rico and the Islands of Vieques and Culebra had to be discontinued the night before the Hurricane and could not be reestablished for 4 days after the storm and damages have limited the service as of today.

In the aftermath of these disasters, Puerto Rico intends to rebuild its transportation network in a manner that ensures the interconnectivity and vitality of the entire island to, amongst other things, boost economic activity. However, to accomplish this Puerto Rico must construct them to be more resilient in the face of future disasters of all kinds (hurricane, flood, earthquake, etc.), and build them to current best practices and design standards. This should also include investments designed to improve drainage, strengthen and/or elevate bridge abutments, expand culverts and pursue erosion protection. Additional infrastructure also needs to be built or improved to better guarantee access to communities that experienced access problems during Irma and Maria so that Puerto Rico can avoid the humanitarian crisis and response costs associated with the delivery of medicine, food and water to inaccessible areas.

The government has identified specific restoration projects that total the amount specified below. The projects listed below are representative of the type of work that is needed during the recovery period:

CATEGORY	ESTIMATED COST
Road and Bridges	\$4,497,725,000



BRIDGE RECONSTRUCTION AND IMPROVEMENTS, INCLUDING ADEQUATE SCOUR PROTECTION

Estimated Cost
\$1,900,000,000

Proposed Funding Source
PA/HM

Other Possible Funding Sources
DOT, CDBG-DR

EVALUATION CRITERIA

-  RESILIENCY ● ● ● ● ● ● ● ●
-  ECONOMIC ● ● ● ● ● ● ● ●
-  TECHNICAL ● ● ● ● ● ● ● ●
-  SOCIAL ● ● ● ● ● ● ● ●
-  ENVIRONMENTAL ● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Projects will include bridge repairs and preservation. The first 25% of projects are anticipated to start construction within one year of receiving funding and the total program is expected to have started construction within five years.

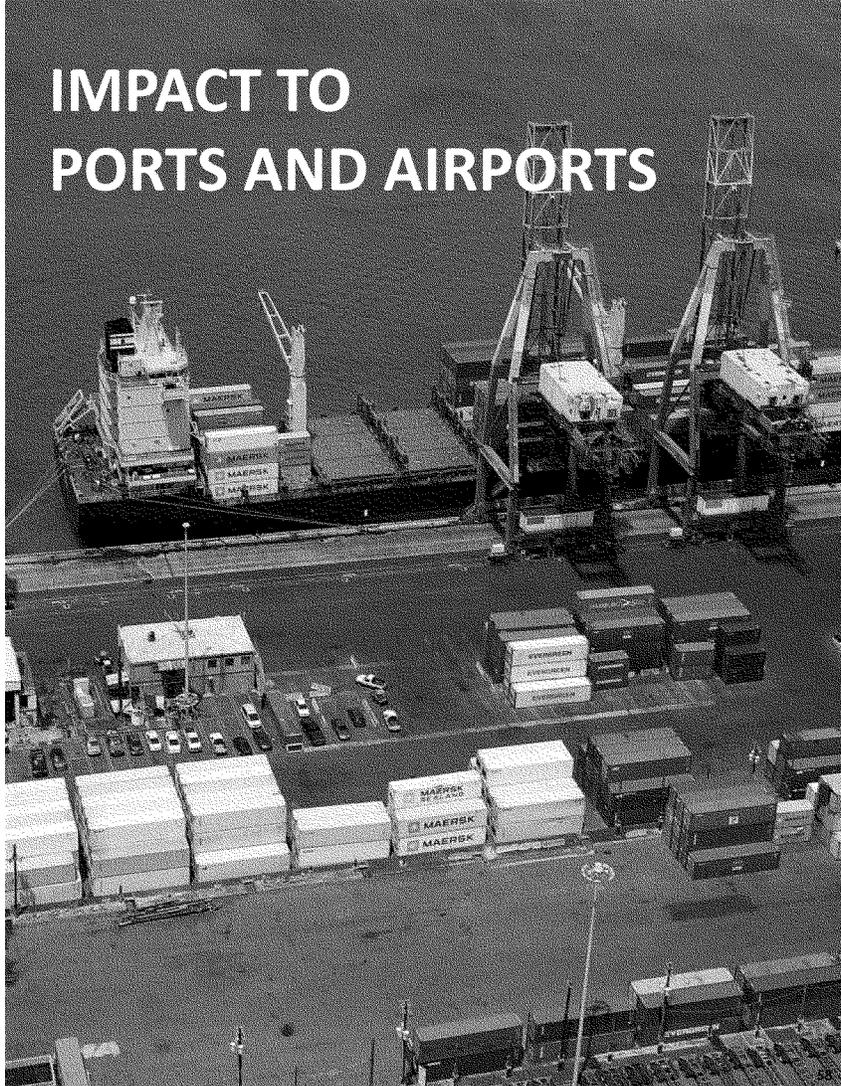
IMPACT

Floods generated by the hurricane affected road and bridge network island wide. A large number of bridges were destroyed by the water. Water also eroded state roads disrupting communication and access between towns and communities.

LONG-TERM BENEFIT AND OPPORTUNITIES

The repair of bridges and roads will help communicate isolated towns and communities promoting the recovery and the restart of the economy island wide.

IMPACT TO PORTS AND AIRPORTS



PORTS AND AIRPORTS

The Puerto Rico Ports Authority (PRPA) owns and operates nine regional airports and seaports around the island. Ports and airports were severely impacted, suffering both physical damage and disruption of operations. Most of the warehouses, piers, hangars and other seaports and airports were damaged by the force of the wind. Furthermore, the absence of power and the loss of radio communications resulted in the suspension of services and reduced operational capacity in many locations, including airports which were forced to halt operations for a period of days, making it impossible for Puerto Ricans to leave the island. In addition, wave action, storm surge and marine debris have created a need for dredging most of the island's seaports. This limited the PRPA's ability to properly operate according to the federal standards and regulations. The disaster also demonstrated the vulnerability of Puerto Rico's port operations, showing that capacity could easily be exceeded by the requirements of response operations. In fact, the restoration of commercial operation at some ports and airports has been slowed because of the competing needs to bring in equipment and resources from the mainland for the recovery.

Due to this experience, Puerto Rico recognizes the opportunity to optimize its infrastructure and reduce its vulnerability to future storms. The importance of the island's transportation (private / commercial shipping and flights) networks for both people and commodities is crucial to the island's sustainability. The Government seeks to rebuild and repair damaged facilities in a manner that makes them less susceptible to wind and wave action by incorporating hazard mitigation measures into every facility whether damaged or undamaged. Puerto Rico will invest in its seaports and airports around the island to provide alternate means of port and airport traffic, thereby reducing reliance on the San Juan port and airport and reducing the risk of "bottlenecks" negatively impacting future recovery efforts. The redevelopment of the Roosevelt Roads property will increase shipping and air capacity while also producing significant economic benefit on the island. Puerto Rico seeks to improve road access to ports outside of San Juan to permit their expanded use. Also, Puerto Rico will dredge those ports to both alleviate damage caused by the storm and to increase capacity of channels and ports.

The projects below are included in the list of those that Puerto Rico is planning to pursue to address the challenges and needs of the island's seaports and airports in the aftermath of the hurricanes:

CATEGORY	ESTIMATED COST
Ports and Airports	\$1,345,700,000

RAFAEL HERNÁNDEZ INTERNATIONAL AIRPORT (BQN) REHABILITATION

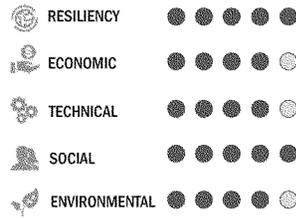


Estimated Cost
\$540,000,000

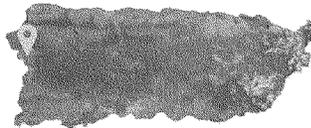
Proposed Funding Source
FAA

Other Possible Funding Sources
DOT, CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

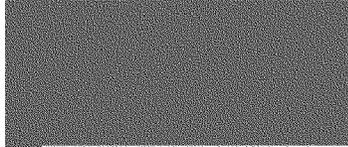
Runway Reconstruction to comply with current FAA regulations and codes. Rehabilitation of the structures damaged by the wind including: terminals, Boarding Bridges, Cargo Apron at the South Area, and Hangars.

IMPACT

Accumulated water from the hurricane created water ponding that resulted in severe physical damage to the airfield pavement, lighting, navigational aids, fences, and others airport equipment. Buildings at the facility suffered damaged from wind.

LONG-TERM BENEFIT AND OPPORTUNITIES

This will restore the airport capacity and readiness to accommodate larger simultaneous operations and ability to respond during emergencies, while guaranteeing a more secure operation.



REHABILITATION OF BERTH 2, 3 & 7 AT PONCE PORT

Estimated Cost
\$100,000,000

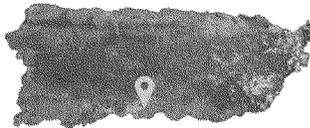
Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
DOT, HM

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Realignment and reconstruction of the Berths 2 & 3 and reconstruction of Berth 7 and their dredging to 50 feet making the port capable of manage more that one vessel at the same time.

IMPACT

The Port of San Juan is currently the only entrance for containerized cargo in Puerto Rico, creating a bottleneck and potential single point of failure during a crisis. During the hurricane, the Port of San Juan was overly congested and critical supplies could not reach some parts of the island.

LONG-TERM BENEFIT AND OPPORTUNITIES

The principal long term recovery benefit is to provide the island with an alternative containerized fully operational cargo port (supply chain entrance point) to support any emergency response in case that the San Juan Port is not available.



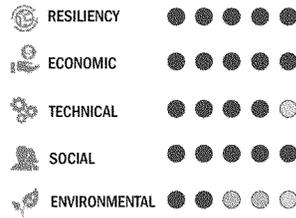
REGIONAL AIRPORTS OPTIMIZATION

Estimated Cost
\$24,500,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
FAA, HM

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Terminal and Runways Improvements to regional airports island wide. In addition the airports will be provided with alternate and redundant power during emergency situations.

IMPACT

Hangars and terminals at regional airports were damaged by the wind and water generated by the Hurricane. The emergency caused an increase in cargo movement and demand for these services, as well as commercial, relief and passenger flights, which prompted the need to rebuild the hangars and terminals.

LONG-TERM BENEFIT AND OPPORTUNITIES

This will increase the level of aircraft category and operational service, and will represent an alternative to provide emergency assistance to deliver food and goods to residents in the Islands of Vieques, Culebra and the Virgin Islands.



**IMPACT TO
PUBLIC BUILDINGS**

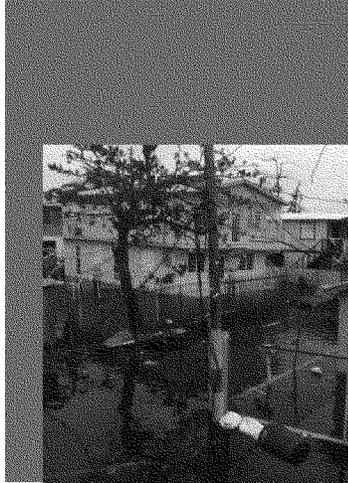
PUBLIC BUILDING REVITALIZATION

Puerto Rico expects to have hundreds of storm damaged older buildings will no longer be needed, are in disrepair, or are outdated in design and function. The sheer number and distribution of these facilities across Puerto Rico create an unacceptable risk of contributing to the creation of slum and blighting conditions around the island. These conditions will be addressed as part of the recovery.

The majority of the damaged facilities that will need to be repurposed are schools, which are distributed throughout the 78 municipalities and are ideally located to serve as community centers, social service facilities, business incubators or support other economic and community interests. Other buildings and sites, such as the Department of Justice building in San Juan, are no longer suitable for their intended governmental purpose. These properties could be redeveloped to meet other needs and they will require significant investment.

Puerto Rico hopes to keep these damaged facilities and redevelopment sites from falling into progressive disrepair through an aggressive redevelopment program that includes direct investment, infrastructure improvements and other measures designed to restore these facilities to productive use and/or redevelop the property for new construction. This will not only avoid the blighting of Puerto Rico communities, but it will also contribute to the public welfare and serve as an economic driver across the island.

CATEGORY	ESTIMATED COST
Public Building Revitalization	\$153,100,000



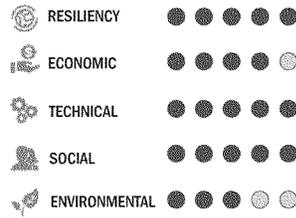
REHABILITATION/RECONSTRUCTION OF COMMUNITY BASED INFRASTRUCTURE PROJECTS

Estimated Cost
\$100,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
USDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

CDBG-DR funds will be used to reconstruct 752 rural and low income communities water and sewer infrastructure system including, pipes, pumps, small water tanks (reservoirs).

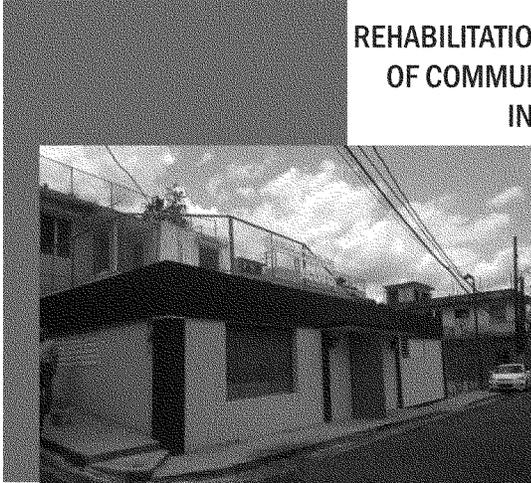
IMPACT

Hurricane Maria had a great impact on rural infrastructure projects putting at risk sanitation, drinking water, and transportation services. Damage to sanitation facilities and infrastructure has created health issues to 752 Low Income communities Statewide.

LONG-TERM BENEFIT AND OPPORTUNITIES

Reconstruction of the infrastructure will protect 543,000 individuals and the environment by reducing the possibility of sewage releases to buildings and streets. The projects will be rebuilt to 21st century codes and will include power generators with sufficient fuel supply to last for 7 days in case of power interruption.

REHABILITATION/RECONSTRUCTION OF COMMUNITY CENTERS AT LOW INCOME COMMUNITIES

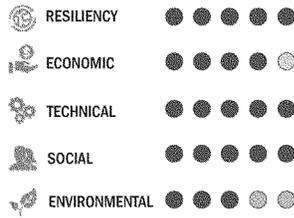


Estimated Cost
\$9,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
USDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

This project consists of the rehabilitation/reconstruction of 300 community centers statewide. After the rehabilitation or reconstruction, each of the centers will be capable of providing shelter, limited medical services, and internet services, in addition to the regular uses. Each center will be provided with backup generators.

IMPACT

The hurricane impacted 300 community centers statewide. Most of the centers were used as a multipurpose facilities, such as shelters and food distribution centers during the emergency.

LONG-TERM BENEFIT AND OPPORTUNITIES

Create stronger, resilient and self sufficient communities. These projects represent an array of facilities that will be retrofitted to continue operating during severe storm events and other emergencies.

REHABILITATION/RECONSTRUCTION OF COMMUNITY TECHNOLOGY CENTERS STATE WIDE

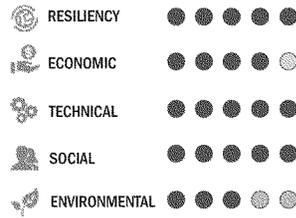


Estimated Cost
\$10,800,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
USDA

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Funds will be allocated to reconstruct resilient structures and provide them with computers and access to the internet. Each center will be provided with backup generators. This project would establish technology centers with resilient lighting and power, the ability to distribute supplies, coordinate efforts with government agencies, and host trainings and capacity building initiatives.

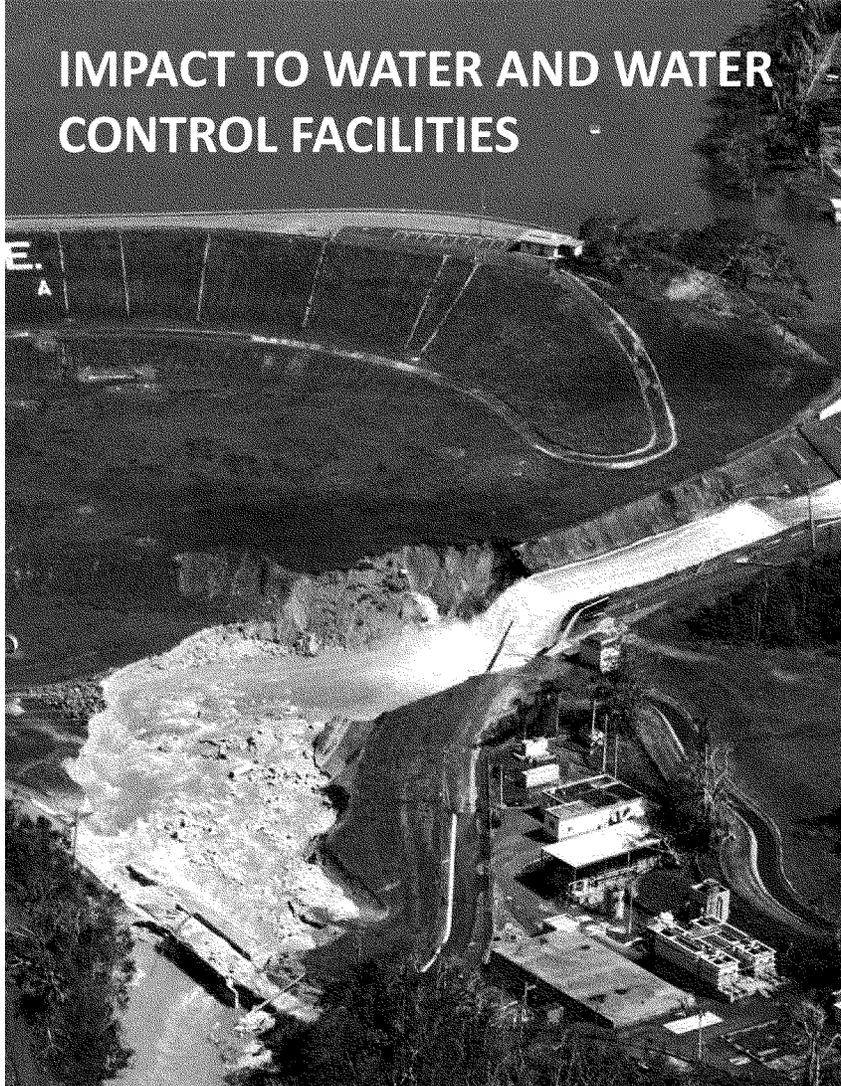
IMPACT

Technology Centers statewide (172) were severely impacted by the hurricane. The natural event damaged the structures and the computer equipment located inside the facilities.

LONG-TERM BENEFIT AND OPPORTUNITIES

The purpose of the program is to create or expand community technology centers to provide residents of the affected communities with access to information technology. The Centers will permit the reconstruction of the facilities making them resilient.

IMPACT TO WATER AND WATER CONTROL FACILITIES



WATER AND WATER CONTROL FACILITIES

Nearly 97% of the water supplied on the island is provided by the Puerto Rico Aqueduct and Sewer Authority (PRASA), which is responsible for 126 water treatment plants, 8 dams, and provides over 646 million gallons of potable water per day. Due to a combination of direct damages and the loss of power, over 70% of Puerto Rico's potable water treatment and distribution system was affected. This resulted in over 70% of the island's water being either unavailable or supplied in violation of federal safety and quality standards. In many areas, people were forced to obtain drinking water from unsanitary and untreated sources. This situation served as the precursor for one of the largest water distribution efforts in U.S. history, with more than 5.6 million gallons of potable water in gallon containers and 35.1 million liters of bottled water distributed to date. While progress has been made to restore water flow in many areas through temporary repairs and/or the provision of generators to provide power, approximately 17% of those served by PRASA still have no access to water through the system as of November 9, and 5 drinking water filtration plants still remain out of service. For non-PRASA sites (accounting for 3% of the water user base), 114 of the 237 potable water systems remain inoperable.

One of the most visible and widely known challenges faced by Puerto Rico involves the Guajataca Dam. The hurricanes produced massive rainfall that caused the dam to crack and overflow, resulting in significant erosion, scouring, and the failure of one of the dam's spillways. Efforts continue to stabilize the dam, but at present the facility remains compromised and the 70,000+ people who live downstream remain at high risk.

PRASA's already aging infrastructure suffered damages so extensive that Puerto Rico not only needs to implement a widespread repair program, but must also rethink the entire system's design to make it more efficient, reliable, and protected from hurricanes and other natural disasters in the future. This involves both an aggressive assessment and repair process, as well as investments in the system to:

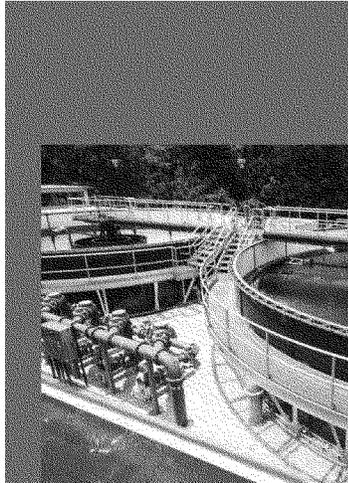
- Relocate infrastructure out of flood zones whenever possible;
- Redesign infrastructure that must be near or within waterways to make them more robust and resistant to high flow events;
- Improve structural safety of dams and reservoirs;
- Improve potable water service zones' transfer capabilities, a feature that has helped restore service rapidly in the San Juan / Metro area;
- Incorporate cutting-edge technologies and sensors into the system while making repairs to provide improved system monitoring capability and enhance operations;
- Remove key systems from the power grid using renewable energy systems to enhance and protect against future power losses; and
- Improve water treatment capabilities at plants to better handle high turbidity events caused by heavy rains.

In the course of restoring its damaged facilities, PRASA will also rethink system design based on demographic changes in order to develop a system that is less costly to operate as well as more efficient, reliable, and capable of meeting current and future requirements.

The government has identified specific restoration projects that total the amount specified below. Some representative projects that Puerto Rico is planning to pursue to realize this vision are shown below:

CATEGORY	ESTIMATED COST
Water and Water Control Facilities	\$1,280,822,003

WATER INFRASTRUCTURE REHABILITATION



Estimated Cost
\$90,000,000

Proposed Funding Source
PA, HM

Other Possible Funding Sources
CDBG-DR

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Provide planning/design and construction for the restoration and resilient rebuilding of damaged water infrastructure in compliance with current code requirements and regulations.

IMPACT

As a result of heavy rains and hurricane-force winds, water infrastructure was heavily damaged. Flood control and storm water management facilities, wastewater treatment systems, water conservation infrastructure and reservoirs were all seriously impacted, threatening public health and safety.

LONG-TERM BENEFIT AND OPPORTUNITIES

The project will build more resilient water infrastructure that will protect against future failures in water supplies and water usage and protect against flooding. This will provide the residents and property of Puerto Rico with access to potable water and protect against flooding.

GUAJATACA DAM RESTORATION

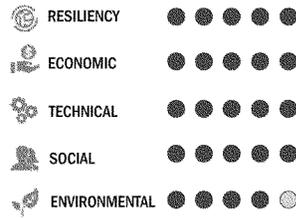


Estimated Cost
\$200,000,000

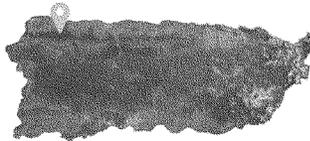
Proposed Funding Source
PA, HM

Other Possible Funding Sources
CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

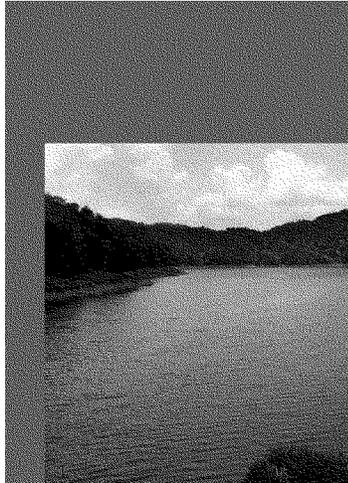
Reconstruction of spillways and bringing the facility up to modern codes and design standards.

IMPACT

As a result of the heavy rains the Guajataca dam in northern Puerto Rico suffered a major breach in its emergency spillway exposing it to a possible structural collapse and threatening more than 70,000 island residents downstream.

LONG-TERM BENEFIT AND OPPORTUNITIES

The non-hydropower earthen dam is located in Northwest Puerto Rico, will continue to provide flood-risk management and water supply to more than 350,000 residents.



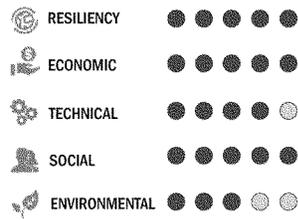
CASEY RESERVOIR AND WATER TREATMENT PLAN

Estimated Cost
\$552,518,544

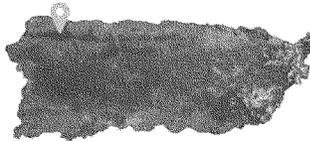
Proposed Funding Source
PA, HM

Other Possible Funding Sources
CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

New reservoir, new filter plant and transmission systems to Añasco, Aguadilla, San Germán and other areas currently served by Guajataca.

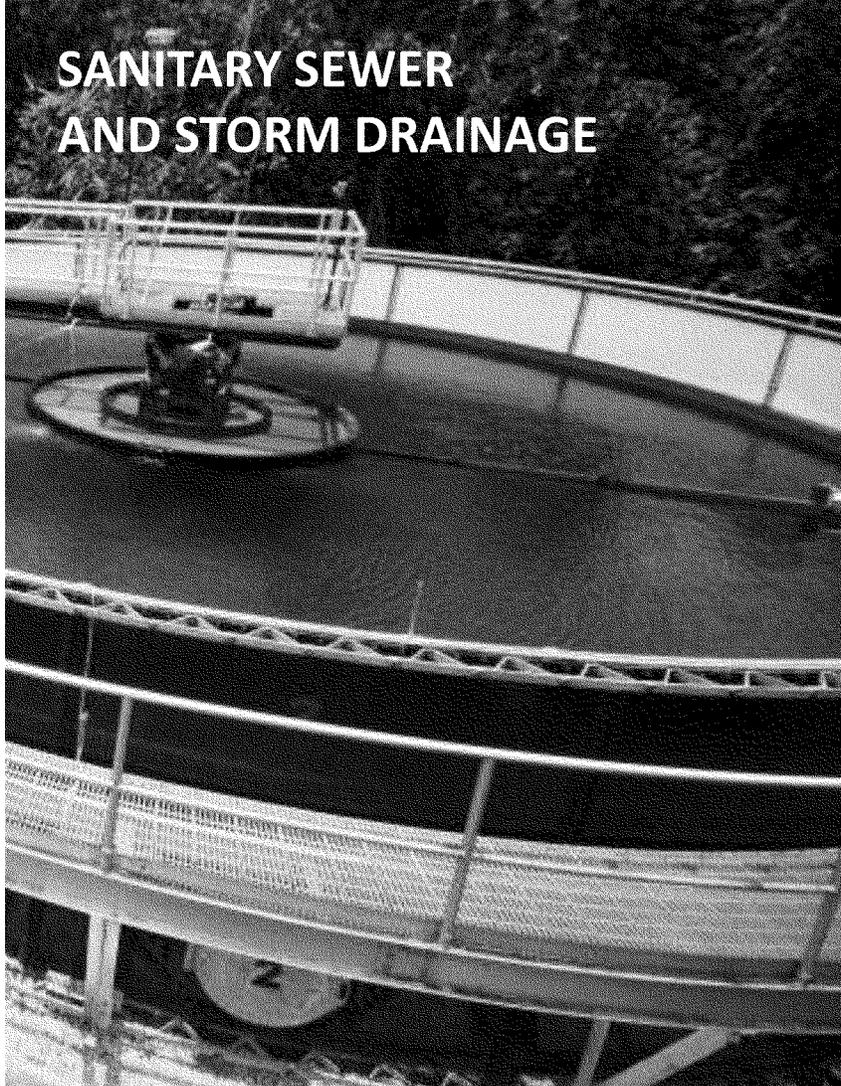
IMPACT

Damages to the Guajataca Dam jeopardized the water source that serves the municipalities in the western region of the island, highlighting the need for increased redundancy and infrastructure resiliency.

LONG-TERM BENEFIT AND OPPORTUNITIES

Increased reliability of water service for the Western region of the Island.

SANITARY SEWER AND STORM DRAINAGE



SANITARY SEWER AND STORM DRAINAGE

The Puerto Rico Aqueduct and Sewer Authority (PRASA) serves 1.3 million customers and the sanitary sewer and storm drainage system consists of 51 wastewater treatment plants, 1,723 pump stations, 2,186 tanks, 299 water supply wells, over 20,000 miles of pipelines, 13 levees, and 6 ocean outfalls. Much of this infrastructure experienced either power outages that crippled the operation of this critical infrastructure or direct damage that severely compromised system operations. The debilitated sanitary and storm drainage infrastructure triggered system failures that caused the uncontrolled and untreated release of millions of gallons of untreated sewage and contaminated water into the environment, a problem that continues to this day in some areas due to the lack of sufficient temporary generator power to restore full service. Much of the network within the system is clogged, in whole or in part, by storm-related debris. In addition, the weakened infrastructure, including levee systems, increases the likelihood of future flooding, even during relatively minor events that would not otherwise have caused flood conditions previously. While significant progress has been made to bring wastewater treatment facilities back online, there continue to be four PRASA wastewater treatment plants out of operation in Puerto Rico, all 13 of the levee systems require reconstruction and hundreds of drainage sites across the island remain damaged, inoperable, and/or clogged with debris.

During the recovery period, PRASA is planning to rebuild and improve the sanitary sewer and storm drainage systems to minimize flooding, reduce maintenance demands, and adapt to rapidly-evolving post-disaster demographic changes. This will involve rethinking the design and operation of the systems, utilizing modern means and methods, applying enhanced codes and standards during reconstruction, elevating and otherwise protecting critical system infrastructure from the impacts of natural hazards, and incorporating technology and sensors into the repaired or replaced infrastructure. PRASA is also hoping to incorporate renewable energy systems with associated power storage capability to provide back-up power, and in some cases primary power, to key water control infrastructure in order to lower costs and enhance system resiliency.

The government has identified specific restoration projects that total the amount specified below. Projects like those listed below will help ensure that the catastrophic hurricane damages from Irma and Maria are not experienced again:

CATEGORY	ESTIMATED COST
Sanitary Sewer and Storm Drainage	\$1,409,716,413

ELIMINATION OF DORADO WWTP



Estimated Cost
\$276,600,000

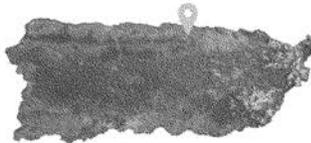
Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
HM, USDA

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

Relocation of existing Wastewater Treatment Plant located on a flood zone into a new location that is not flood prone.

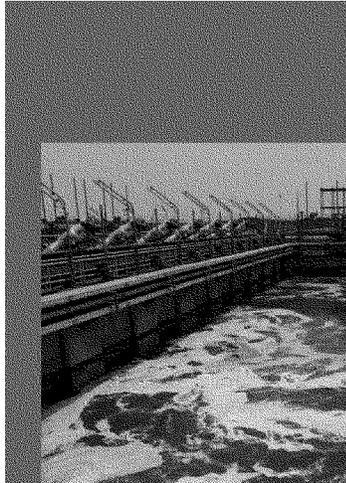
IMPACT

As a result of the floods generated by Hurricane María the Dorado WWTP was affected putting at risk the health and safety of the persons residing near the facility.

LONG-TERM BENEFIT AND OPPORTUNITIES

The new project will provide Increased reliability of wastewater treatment and will not expose citizens to contaminated water.

LEVEES DESIGN COMPLIANCE AND REPAIRS

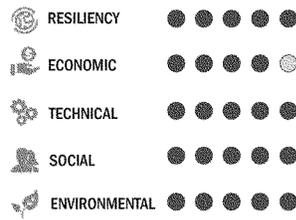


Estimated Cost
\$100,000,000

Proposed Funding Source
USACE

Other Possible Funding Sources
CDBG-DR, HM

EVALUATION CRITERIA



LOCATION



DESCRIPTION

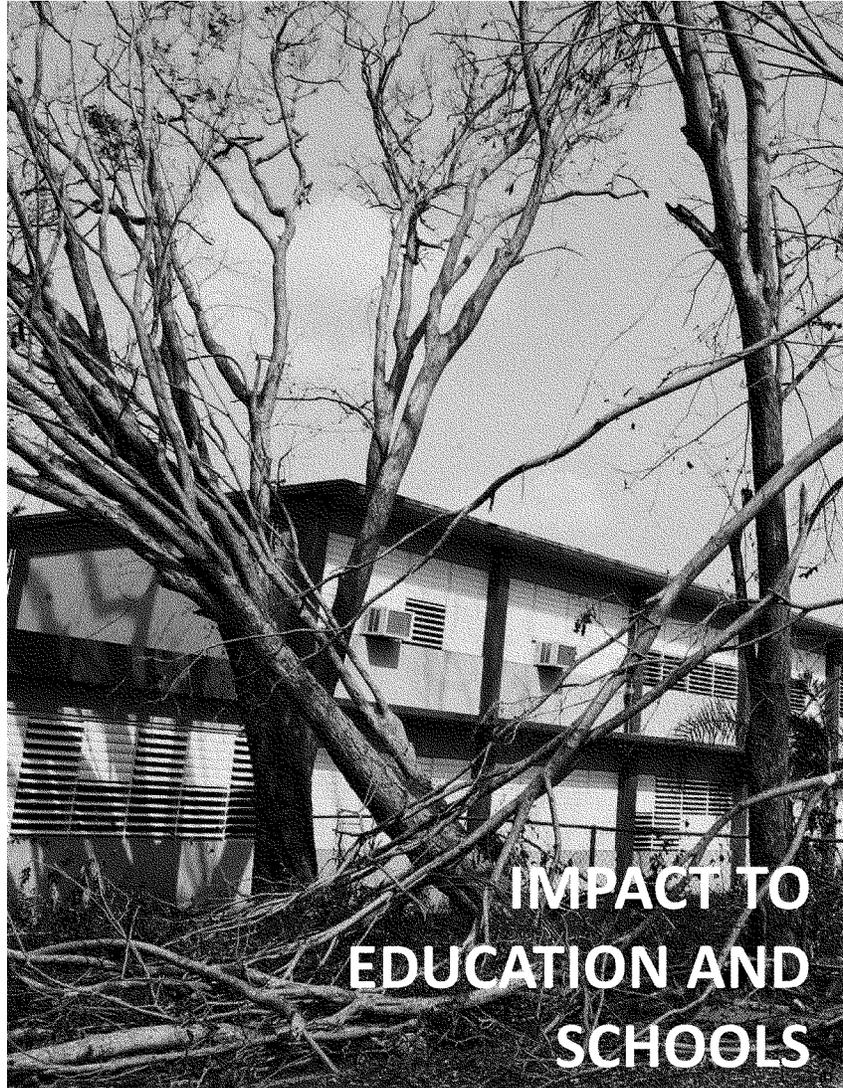
Assessment and reconstruction of levee infrastructure to comply with design codes and current regulations.

IMPACT

Levees were damaged by the hurricanes exacerbating riverine flooding in many communities.

LONG-TERM BENEFIT AND OPPORTUNITIES

Levees control flooding along rivers providing life, infrastructure, and property protection. This project will ensure protection and economic development opportunities to areas benefiting from this work.



EDUCATION AND SCHOOLS

At the time of the Hurricanes the Puerto Rican educational system consisted of approximately 1,113 public primary and secondary school campuses (5,000 buildings - 400,000 students); 750 private primary and secondary school campuses (2,000 buildings - 150,000 students); community colleges/technical schools serving approximately 65,000 students; and 24 Universities that serve over 250,000 students. During the hurricane, several thousand of these island's educational facilities were damaged, with the worst impacts at the primary and secondary school levels. As of November 6, more than six weeks after the storm, 598 public schools had yet to reopen, 200 still do not have water service restored, and at least 70 school campuses may never reopen due to the severity of damage. In addition, thousands of students and teachers left the island for the mainland after the storm hit, potentially impacting the demographics of the educational system once the education sector is restored.

In light of the disasters, Puerto Rico now has the opportunity to consolidate campuses, modernize facilities, and improve and expand the use of technology so as to adapt the educational system to the unique needs of Puerto Rico and its economy. The Government will consider the size and number of schools needed at the primary, secondary, and post-secondary levels when making decisions on reconstruction, with an eye toward achieving efficiencies, consolidating facilities based on current and projected demographic trends, and improving education delivery. As it rebuilds and repairs, Puerto Rico now has the opportunity to consolidate campuses, modernize facilities, and improve and expand the use of technology so as to adapt the educational system to the unique needs of Puerto Rico and its economy.

Achieving this vision will be complex and challenging, but it is clear that substantial funding above and beyond available FEMA resources will be necessary to accomplish this vision. The projects listed here provide insight into the types of initiatives that will be implemented in Puerto Rico to restore the island's educational system and capitalize on the opportunity to enhance and improve it as part of reconstruction efforts:

CATEGORY	ESTIMATED COST
Education and Schools	\$8,413,208,822

OPTIMIZATION AND REINVESTMENT IN SCHOOL SYSTEM INFRASTRUCTURE

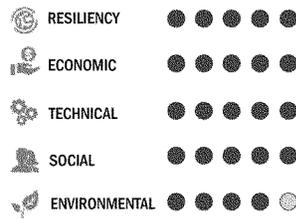


Estimated Cost
\$300,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
ED

EVALUATION CRITERIA



LOCATION



DESCRIPTION

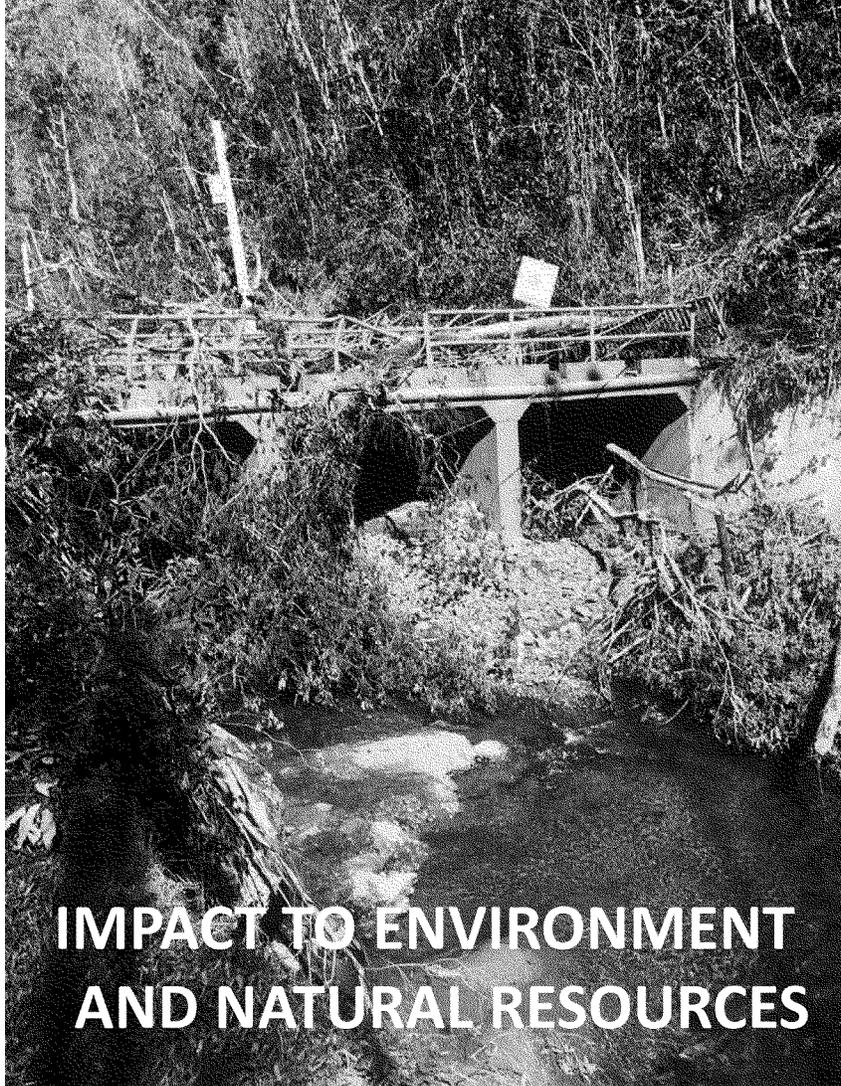
Renovate one public school per municipality. Right-sizing the school system together with simultaneous re-investment. Improve the quality of school infrastructure for thousands of students by aligning education with the conditions of the 21st century.

IMPACT

Severe impact and damages across school infrastructure. Presently, numerous public schools remain closed.

LONG-TERM BENEFIT AND OPPORTUNITIES

Significantly improve the resiliency of school infrastructure and enhance the academic performance.



**IMPACT TO ENVIRONMENT
AND NATURAL RESOURCES**

ENVIRONMENT AND NATURAL RESOURCES

Hurricanes Irma and Maria caused widespread impacts on the natural resources of Puerto Rico, ranging from the devastation of the rainforest canopy, to massive production of debris, the release of chemicals and untreated sewage into the environment, the devastation of coral reefs and sea grasses, and the severe erosion and destruction of the coastline and associated biomes. In forty-two of the island's coastal municipalities, damage to beaches, dunes and bluffs that normally provide a natural barrier to coastal flooding has been severe, significantly increasing the risk of future damages in those areas. Landscape and biological corridors conservation and connectivity, as well as habitat for endangered species has been impacted by the devastation of the rainforest and the existence of storm debris. These and other impacts are what is known, but the long-term impacts on Puerto Rico's environment and natural resources will take months or even years to fully evaluate, mitigate and repair.

As an urgent matter, Puerto Rico must address the challenges related to storm-generated debris, which threatens public health and safety and overwhelms the available infrastructure of the island for its disposal. It is estimated that the hurricanes created debris is equivalent to 4-5 years of landfill capacity at the island's 27 existing landfills, which is an amount that would significantly deplete available space for waste disposal on the island.

To tackle these problems, Puerto Rico will pursue a comprehensive strategy to evaluate and assess the short, mid- and long-term impacts of the storm, plus monitor impacts over time and track progress related to restoration efforts. Special focus will be placed on the restoration of habitat in the rainforest as well as the creation of coral farms to restore damaged reefs. Puerto Rico will also need to pursue a program involving replanting and reforestation, the removal of invasive species, and restoration of fisheries to both enhance the environment and strengthen the economy.

The government has identified specific restoration projects that total the amount specified below. To implement this strategy, Puerto Rico is hoping to execute initiatives like those shown below to help assess environmental impacts of the hurricanes and begin the process of restoring the island's natural habitat:

CATEGORY	ESTIMATED COST
Environment and Natural Resources	\$1,581,050,000

CAÑO MARTÍN PEÑA RESTORATION AND RESILIENCY PROJECT

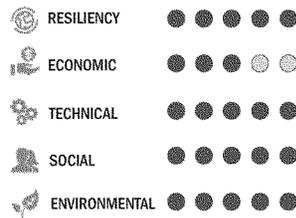


Estimated Cost
\$1,000,000,000

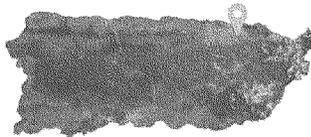
Proposed Funding Source
USACE

Other Possible Funding Sources
HM, CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Caño Martin Peña Ecosystem Restoration Project (dredging of 2.2 miles of the eastern channel) authorized under WRDA 2007, including LEERDs and other non federal components; wastewater and storm water sewers with green infrastructure components, potable water distribution system, and the Paseo del Caño; and associated relocation of approximately 1,000 families, construction of new resilient homes in available lots and improvements to homes and public facilities.

IMPACT

70% of the communities flooded with wastewater during several days, around 1,000 homes lost part or all the roof, or were destroyed, trees fell into the tidal channel further blocking the channel, which affects San Juan Bay Estuary Area.

LONG-TERM BENEFIT AND OPPORTUNITIES

The main benefit of the project is the improvement of the health conditions of 15,000+ persons that are frequently exposed to contaminated water and diseases. On the economic side partial estimates point to benefits of \$587 million to the Puerto Rican economy.

ENVIRONMENTAL AND NATURAL RESOURCES



COASTAL ZONE EROSION RECOVERY

Estimated Cost
\$50,000,000

Proposed Funding Source
USACE

Other Possible Funding Sources
NOAA, DOI

EVALUATION CRITERIA

	RESILIENCY	● ● ● ● ● ● ● ●
	ECONOMIC	● ● ● ● ● ● ● ●
	TECHNICAL	● ● ● ● ● ● ● ●
	SOCIAL	● ● ● ● ● ● ● ●
	ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

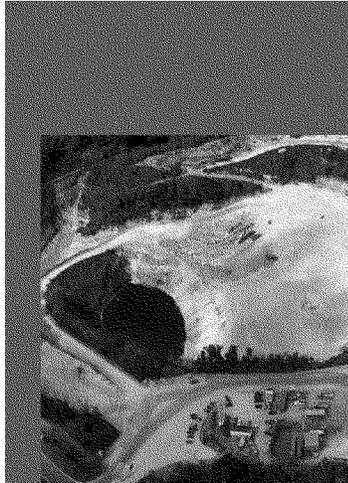
Assessment and recovery of coastal areas that are subject to erosion and coastal flooding. Includes immediate repair of existing coastal erosion protection structures.

IMPACT

Puerto Rico's coastlines were severely eroded by the Hurricanes causing catastrophic coastal flooding. Infrastructure in 42 coastal communities was damaged by the coastal flooding.

LONG-TERM BENEFIT AND OPPORTUNITIES

Prevention of future coastal erosion and flooding, protecting life, infrastructure and property near the coast. The coast provides a majority of the tourist economy for Puerto Rico.



LANDFILL CLOSURE AND MODERNIZATION

Estimated Cost
\$200,000,000

Proposed Funding Source
CDBG-DR

Other Possible Funding Sources
USDA-RD

EVALUATION CRITERIA

 RESILIENCY	● ● ● ● ● ● ● ●
 ECONOMIC	● ● ● ● ● ● ● ●
 TECHNICAL	● ● ● ● ● ● ● ●
 SOCIAL	● ● ● ● ● ● ● ●
 ENVIRONMENTAL	● ● ● ● ● ● ● ●

LOCATION



DESCRIPTION

The project includes the closing of existing noncompliant landfills to modernize and improve overall environmental conditions and protect aquifer water quality. This includes systematic evaluation of both operating and inactive landfills for impacts on existing drinking water sources and availability of and distribution of sewer collection systems for transmission and treatment of landfill leachate and ensure that today's and future solid waste is going to compliant landfills and that the old contaminating open dumps are effectively closed.

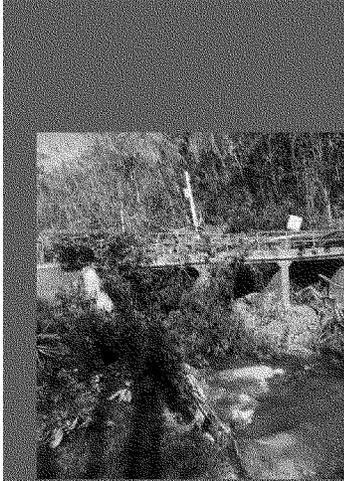
IMPACT

Massive volumes of vegetative debris along with other disaster debris was generated that clogged streets and impacted effective operation of sewer systems resulting in discharge of untreated sewage to our receiving waters, and clogged streams contributing to significant flooding that only generated more disaster debris that needs to either be effectively processed or disposed of.

LONG-TERM BENEFIT AND OPPORTUNITIES

Continued protection of our drinking water is directly tied to the need to close the island's inactive and noncompliant dumps.

FLOOD CONTROL DEBRIS AND OBSTRUCTION REMOVAL

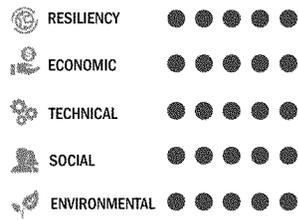


Estimated Cost
\$200,000,000

Proposed Funding Source
PA

Other Possible Funding Sources
CDBG-DR

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Removal of debris from rivers and water bodies in approximately 400 locations throughout the island which can damage infrastructure and threaten life safety.

IMPACT

The hurricanes caused debris accumulation in rivers and water bodies throughout the island impacting natural water flow and threatening the stability of bridges and communities.

LONG-TERM BENEFIT AND OPPORTUNITIES

Quick and efficient removal of the massive amounts of debris accumulated in rivers and water bodies will protect against damage and instability that the debris can cause to infrastructure. The cleaning out of debris from the water will also protect the health and safety of Puerto Ricans.

FOREST RESTORATION AND DAMAGES MITIGATION

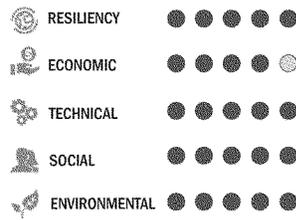


Estimated Cost
\$20,000,000

Proposed Funding Source
USFWS

Other Possible Funding Sources
DOI

EVALUATION CRITERIA



LOCATION



DESCRIPTION

This project provides re-forestation and mitigation efforts of natural protected areas including reconstruction of forests, tree nurseries, and plant materials.

IMPACT

Hurricane Maria devastated multiple forests, including America's only tropic rain forest in the US Forest Service system, wildlife, tree nurseries, and equipment. Damage includes deforestation and defoliation of trees and loss of wildlife. The rainforest, which is popular to visitors and provides 20% of the islands potable water, remains closed.

LONG-TERM BENEFIT AND OPPORTUNITIES

Without any intervention it could take decades for the forests and wildlife to return to pre-hurricane size and numbers. The forests play an important role to the environment and livelihood of Puerto Rico. This project will provide the recovery of important natural resources which will enhance and strengthen the environment quickly.

PUBLIC SAFETY AND FIRST RESPONSE COORDINATION

The impact of the hurricanes on Puerto Rico's public safety and response coordination capabilities was significant. The loss of communications and damage to response assets such as vehicles and facilities caused a significant degradation of command and control over assets being sent into the field and the inability of deployed personnel to coordinate in real-time. This situation was further complicated by the fact that many military and civilian communications systems could not communicate with each other even when limited service was restored. Many public safety facilities, including fire, police, emergency management, and National Guard facilities experienced damages that forced them to relocate or operate at reduced capacity or efficiency. The deployment of initial response resources, including water and food for impacted populations, were insufficient to meet the needs of the citizens. In addition, the initiation and pace of resources coming in from off-island left a substantial time-gap during which impacted populations were left wanting.

Puerto Rico lost use of five of the island's 34 facilities, serving 2,500 inmates, from building damage, power outages and the loss of air conditioning and ventilation that created dangerous environmental conditions in the buildings. Unlike other populations, prisoners could not be rapidly or easily moved, creating a public safety crisis and forcing their eventual evacuation to the mainland at a substantial cost.

These public safety challenges demand that Puerto Rico adopt a strategy of improving the resiliency of both facilities and communications systems that support first responders. The Government of Puerto Rico seeks to invest in and build an interoperable communications network to allow responders of all kinds and across all agencies to coordinate during emergencies. A program to not just rebuild but strengthen public safety and first responder facilities will be a high priority during the recovery period. Puerto Rico's 34 correctional facilities must be enhanced to incorporate resiliency to improve air flow so that when ventilation is lost, unsafe environmental conditions are mitigated. In addition, the stockpiling of additional response resources and commodities is necessary to alleviate the logistical challenges faced by Puerto Rico due to its geographical location which is distant from the mainland.

The government has identified specific restoration projects that total the amount specified below. The examples below offer an indication of the types of projects that Puerto Rico wishes to pursue during the recovery period to help address the island's public safety and first responder coordination needs:

CATEGORY	ESTIMATED COST
Public Safety and first Response Coordination	\$486,990,571

ADDITIONAL NEEDS



LONG-TERM RECOVERY MANAGEMENT AND COORDINATION

Building Back Puerto Rico requires a structure that can plan, manage and coordinate the resources to create a resilient Island. The federal resources identified in this document need to be managed with strong financial controls and oversight to ensure that funds are used for authorized purposes and in a manner consistent with applicable laws, regulations, and policies. The responsibility for this important task has been assigned by the Governor to the Central Recovery and Reconstruction Office of Puerto Rico (CRRO).

This recovery office has been provided all necessary authority and capability to: (a) identify, procure and administer all state, federal and/or private resources for recovery; (b) direct and coordinate efforts and activities of the Government of Puerto Rico related to the recovery; (c) fund and execute recovery and related infrastructure projects; and (d) advise the Governor and provide technical assistance to other entities across the Government related to recovery, as required. This office will provide the centralized oversight and financial controls that the Government of Puerto Rico and the U.S. taxpayer expect for the recovery effort. It will also ensure the Government can implement reconstruction efforts with efficiency and transparency, and capitalize on opportunities to build back in a manner that makes Puerto Rico better, stronger, and more resilient.

CATEGORY	ESTIMATED COST
Long-Term Recovery Management and Coordination	\$9,000,000

COST SHARE

The impact of the two hurricanes is creating a financial burden on Puerto Rico that is unsustainable without additional federal assistance. The Government is already having more than \$71 billion in debt, as well as a decrease in tax revenues and economic activity that will cripple the Government if it must also address unreimbursed costs such as cost-share from FEMA's programs. Historically, either FEMA or the Congress have authorized a 100% federal cost-share for large and catastrophic disasters such as Hurricane Andrew in Florida and Hurricane Katrina in Louisiana and Mississippi. The disaster in Puerto Rico is expected to be the largest and most costly disaster in U.S. history, and Puerto Rico has less financial capacity to address the cost-share requirements associated with these programs. The anticipated cost-share for FEMA Public Assistance, Hazard Mitigation, and Individual Assistance is expected to approach \$5.6 billion.

To address this need, Puerto Rico is requesting a cost-share adjustment for FEMA's programs under the Stafford Act to 100% federal. Puerto Rico seeks Community Development Block Grant-Disaster Recovery (CDBG-DR) funding to cover the cost-share match requirements of Stafford Acts programs. The following table reflects the current estimates of the non-Federal cost share requirements expected to be met by the Government of Puerto Rico:

Public Assistance	Federal Share	Non-Federal Share	Cost Share
Category A & B			
Under 180 days		0%	\$ -
Over 180 days	\$ 2,000,000,000	10%	\$ 200,000,000
Category C-G		10%	\$2,787,960,658
HAZARD MITIGATION			
	\$ 4,481,940,987	25%	\$1,120,485,247
INDIVIDUAL ASSISTANCE			
ONA	\$ 1,000,000,000	25%	\$250,000,000
		Total	\$4,358,445,905

CATEGORY	ESTIMATED COST
Cost Share	\$4,358,445,905

APPENDICES

Project Evaluation Criteria
Damage Assessment Data and Methodologies



**PROJECT
EVALUATION CRITERIA**



PROJECT EVALUATION CRITERIA

The evaluation criteria that will be used to assess and rank the critical infrastructure projects is composed of five main categories: i) Resiliency, ii) Economic, iii) Technical, iv) Social, and v) Environmental. Sub-categories within each of these allowed an ordinal system of points to be allocated to each of the main categories. The project evaluation criteria were then employed in panels of experts to analyze and discuss the critical infrastructure projects needed to Build Back Better Puerto Rico.

PROJECT EVALUATION CRITERIA

RESILIENCY

- Redundancy – Does the project increase the redundancy of the system?
- Bounce-back – How easy will it be for the system to recover after an event?
- Interdependence – Is it a standalone asset or can it work independently?
- Vulnerability – Does the project reduce the vulnerability to future disasters?

ECONOMIC

- Productivity improvement – Will the project promote job creation and long-term economic growth?
- Public-private interaction – Does the project allow the integration of the private sector?
- Non-linearity – Is the project dependent on other projects or can it be done by itself?
- Business interruption – Does the project minimize future business interruption?

TECHNICAL

- Constructability – Is the project technically feasible and quickly performed ('shovel ready')?
- Remoteness – How close is the project to existing infrastructure and resources?
- Geography – Does the project geography increase the difficulty of site related activities?

SOCIAL

- Legitimacy – Is society more broadly benefitted and empowered with this project?
- Dynamism – Does the project strengthen local communities?
- Quality of life – Does the project improve the quality of life of the society?

ENVIRONMENTAL

- Sustainability – How does the project improve the use of natural resources (eg. land, water, energy)?
- Alignment – Does the project align with regulations and future developments of the area?

**DAMAGE ASSESSMENT DATA
AND METHODOLOGIES**



DAMAGE ESTIMATION METHODOLOGY

General

Cost estimates for this were generated using two methods:

- Direct bottom up project estimates developed by the Government of Puerto Rico agencies or,
- Use of damage assessment data from the Army Corps of Engineers, FEMA and or other official sources.

When specific data were not available or data was not complete, then certain assumptions were necessary to create the estimate. These assumptions are detailed in this document.

Housing

The housing estimates were based on a combination of open source housing data, FEMA Individual Assistance data and US census data. The 1,244,202 households is based on total occupied housing units derived from the U.S. Census American Community Survey (ACS) 2015 5 Year Estimates for Puerto Rico. Current FEMA Registration data as November 9, 2017 was also considered in using the total occupied housing units, which is 86% of all occupied housing units. Currently, only 7.1% of housing inspections have been completed and predominately only inspections have been completed in the San Juan metropolitan area, which is not representative of the housing damages across the island. Based on the best available information, we have made the following assumptions in quantifying the housing damage:

Owners units by damage	Number of units	Per unit damage (\$)	Estimated Unmet Need
Destroyed	57,482	\$120,500	\$6,926,596,954
Major	254,564	\$35,000	\$8,909,730,522
Minor	205,293	\$15,000	\$3,079,399,950
Affected	205,293	\$5,000	\$1,026,466,650

Renters units by damage	Number of units	Per unit damage (\$)	Estimated Unmet Need
Destroyed	29,612	\$120,500	\$3,568,246,915
Major	131,139	\$35,000	\$4,589,861,178
Minor	105,757	\$15,000	\$1,586,357,550
Affected	105,757	\$5,000	\$528,785,850

DAMAGE ESTIMATION METHODOLOGY

The level of damages for destroyed and major damages were derived from damage estimates from both Hurricane Georges (Cat 3) and Hurricane Hugo (Cat 4), which resulted in approximately 7% destroyed and 31% major damage, respectively.

Year	Hurricane	Hurricane Category	Municipalities Declared for IA	Shelters Open	Shelter Population	PDA (Destroyed)	% of Total (Destroyed)	PDA (Major)	% of Total (Major)	PDA (Minor)	% of Total (Minor)	PDA (Affected)	% of Total (Affected)	Total PDA	RP Applications @ Nov 27
1985	Marlon (Cat 3)	3	12			130	0.9%	330	1.4%	460	32.6%		0.0%	920	23,462
1989	Hugo (Cat 4)	4	57	300	16,000	4,300	6.8%	29,500	31.9%	41,000	52.1%		0.0%	68,000	103,863
1998	Georges (Cat 3)	3	78	420	25,742	28,500	7.6%	128,500	34.3%	157	0.0%	217,000	58.0%	374,000	468,063
2017	María (Cat 4)	4	78	200	12,000	47,000	7.0%	365,000	51.0%					1,344,000	

The level of damages per category of damage (i.e. Destroyed, Major, Minor, Affected) were provided by the Puerto Rico Department of Housing. The estimate for cost of repair for destroyed units is derived from the ACS estimates of median housing value (on a county and block group level) while the other categories were based on qualified estimates from the Puerto Rico Department of Housing.

Levels of insurance coverage were based on data from the Government of Puerto Rico's Insurance Commissioner's website. The number was reduced by 31% to account for insurance coverage and then adjusted for a 10% estimate of those underinsured.

For the purpose of this analysis, and consistent with HUD's allocation methodology for other recent disasters (including Public Law 113-2), mitigation costs are assumed to equal 30% of total damage costs to owner-occupied and rental housing units that were deemed to be destroyed or experienced major damage.

METHODOLOGY FOR DETERMINING ESTIMATED UNMET NEED

School Repair/Rebuild Estimates

For the damaged schools assessed, the Army Corp damage percentage below were used. Data was available for student counts, the following was used to compute square footages and repair cost per square foot:

TYPE	SQ FOOT PER PUPIL	REPAIR COST PER SQ FOOT
PRIMARY	136	\$195.00
MIDDLE	194	\$225.00
HIGH	174	\$250.00
OTHER	174	\$225.00

The repair calculation was: Damage Percent * Pupil Count * Average Sq Foot per pupil * Cost per square foot.

The number of destroyed schools was identified at 74 from Army Corp Inspections. The overall proportion of schools in Puerto Rico was used to break these schools down by Primary, Middle, and High school. The following information was then used to estimate school size and reconstruction costs:

SCHOOL TYPE	SCHOOL COUNT	AVG STUDENTS	SQ FOOT PER STUDENT	RECONSTRUCTION COST PER SQ FOOT
HIGH	11	500	174	\$ 500
MIDDLE	13	369	194	\$ 450
PRIMARY	49	266	136	\$ 390

The reconstruction calculation was: School Count * Avg Students * Square Foot Per Student * Cost per square foot.

Fire Station Repair Estimates

The average damage for the zip code was used. Fire stations were estimated at 10,000 sq feet due to a lack of reliable data on actual size. Fire station repair per square foot costs were estimated at \$45.

The repair cost calculation was: Zip Code Damage Percent * 10,000 * Cost per square foot.

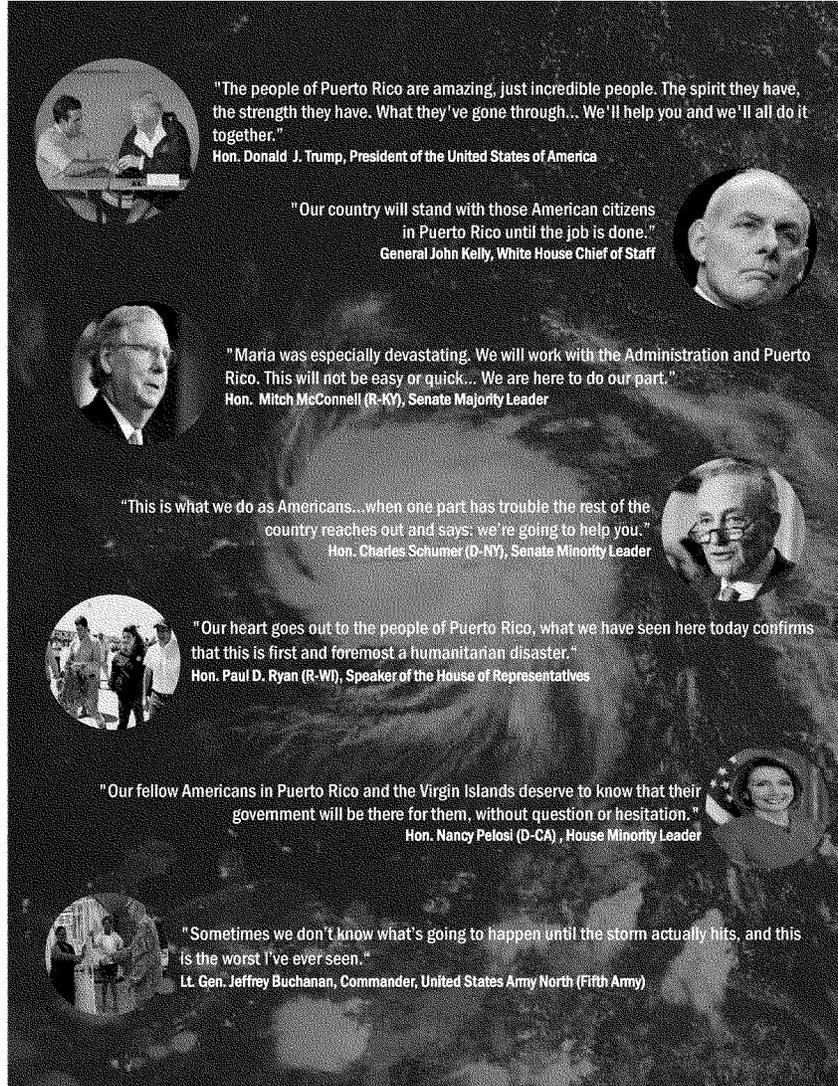
Hospital Repair Estimates

The average damage for the zip code was used. Hospital bed counts were available, and a cost of \$1,500,000 per bed was used as an estimate.

The repair cost calculation was: Zip Code Damage Percent * Bed Count * \$1,500,000.

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"The people of Puerto Rico are amazing, just incredible people. The spirit they have, the strength they have. What they've gone through... We'll help you and we'll all do it together."

Hon. Donald J. Trump, President of the United States of America

"Our country will stand with those American citizens in Puerto Rico until the job is done."

General John Kelly, White House Chief of Staff

"Maria was especially devastating. We will work with the Administration and Puerto Rico. This will not be easy or quick... We are here to do our part."

Hon. Mitch McConnell (R-KY), Senate Majority Leader

"This is what we do as Americans...when one part has trouble the rest of the country reaches out and says: we're going to help you."

Hon. Charles Schumer (D-NY), Senate Minority Leader

"Our heart goes out to the people of Puerto Rico, what we have seen here today confirms that this is first and foremost a humanitarian disaster."

Hon. Paul D. Ryan (R-WI), Speaker of the House of Representatives

"Our fellow Americans in Puerto Rico and the Virgin Islands deserve to know that their government will be there for them, without question or hesitation."

Hon. Nancy Pelosi (D-CA), House Minority Leader

"Sometimes we don't know what's going to happen until the storm actually hits, and this is the worst I've ever seen."

Lt. Gen. Jeffrey Buchanan, Commander, United States Army North (Fifth Army)

The CHAIRMAN. Thank you, Governor.
Governor Mapp, welcome to the Committee.

**STATEMENT OF HON. KENNETH E. MAPP, GOVERNOR,
UNITED STATES VIRGIN ISLANDS**

Mr. MAPP. Thank you. Good morning, Madam Chairwoman and Ranking Member Cantwell and members of the Committee. Thank you for the opportunity to appear before you today to discuss the catastrophic damage the United States Virgin Islands suffered from two Category 5 hurricanes, Irma and Maria, that devastated our islands just 12 days apart.

Let me take the opportunity to thank you, Madam Chair, and members of your Committee and the Congress for visiting the U.S. Virgin Islands. I want to thank the Vice President, Mike Pence, for coming and seeing firsthand the devastation in our territory and speaking with our citizens.

I'd like to acknowledge in the audience today, members of my legislature that are here, led by the Senate President, Myron Jackson, and members of our Cabinet, my Cabinet, as well.

But first and foremost, on behalf of the more than 100,000 resilient Americans living in the United States Virgin Islands, let me convey our heartfelt gratitude and appreciation for the concern so many fellow Americans have shown to us during this difficult time. From the great leadership and support of our President, to you, Madam Chair and the many members of the House and Senate who came to see the devastation firsthand to better understand the conditions we are living in, we thank you.

We also thank FEMA for the unwavering support of our ongoing critical needs in the Virgin Islands, and I want to thank my Federal Coordinating Officer, Mr. William "Bill" Vogel, for his support and his hard work in helping the people of the territory. I know of no government on Earth which responds to the needs of its citizens in a disaster than the United States of America. Is the response always perfect? No. But neither is the prediction of the outcome of a natural disaster. To our country, to our fellow citizens, to our national government—the people of the Virgin Islands say thank you.

Of course, I didn't travel here today to only express gratitude. I came here before you to personally ask for your help and your support in recovering. These storms brought 185-mile-an-hour winds that ripped leaves from the trees, pulling up century old trees by their roots and turning our green hillsides nearly black. Power lines were strewn across our roads. Utility poles snapped like matchsticks and over 400 boats sunk in our harbor. Nine schools, our two main hospitals and related health facilities, fire stations, police stations, were so badly damaged they had to be condemned. Our airport and many of our government offices are also unusable, which has dramatically impacted the delivery of vital government services.

Simple things we normally take for granted—running water, cell phone services, electricity, a hot meal—remain unavailable to many of our citizens. More than 15,000 homes were damaged or destroyed and virtually all of our power distribution infrastructure was wiped out. Power remains limited with power connections

across the Virgin Islands at a mere 27 percent. On the island of St. John, our residents only started seeing power for the first time last week. Can you imagine a community here on the mainland going out, going without power for over six weeks?

In addition to the physical destruction, our economy has ground to a near halt. Few businesses are opening and those that have reopened, have reopened with significantly reduced services. Many private sector workers have not returned to work. Damage to our economy of this magnitude has created unsustainable cash shortfalls that we will experience now and into the future. We have estimated that the economic losses to our key industries, including tourism, stand at more than \$1.7 billion over the next three years. Damage to commercial facilities stand at almost \$1 billion.

Our recovery from these islands will take time, and it will begin with a full understanding of the damages caused. We estimate uninsured hurricane-related damages to the public sector to exceed \$7.5 billion. I have requested that amount in federal disaster assistance to enable us to address our most essential needs in order to return to normalcy.

Virgin Islanders are resilient, but we must do more to make our islands resilient. Unless you want to see me back here after the next major hurricane devastation of America's paradise, we must build it back stronger and more sustainable than before. We must build it back stronger and more resilient to protect our citizens and to protect the investments of our national government.

This is what I am asking of you. Consider our power distribution network which Irma and Maria destroyed. While we are optimistic that power will be nearly fully restored by Christmas, this is the fifth time that the U.S. Government is paying to rebuild this power distribution system in the Virgin Islands.

We've already taken basic steps to improve the resiliency of the grid and to build it back using things like composite poles that can better withstand hurricane force winds, but we must go further. With your help, we plan to bury power lines on the primary and secondary road systems throughout the territory and invest in a microgrid system that will add renewable generation capacity, like solar and wind energy.

It's not just power lines we need to approach differently. Irma and Maria completely devastated our critical healthcare infrastructure, destroying our two main hospitals and affiliated healthcare facilities. Today critical care is unavailable in the Virgin Islands. A critically ill patient in the U.S. Virgin Islands cannot receive care there. Critical patients and persons requiring dialysis must be flown to the U.S. mainland for care. We were doing that after Irma in Puerto Rico, but now that our neighbor has been impacted by Maria, our patients are now flown to Atlanta, Texas and Florida. The recovery funds we're seeking will help rebuild these two main hospitals on St. Thomas and St. Croix and a healthcare facility on St. John.

Helping the U.S. Virgin Islands recover will also require a serious look at our healthcare system as it relates to federal law and policies. Healthcare funding in the Virgin Islands was under great stress even before the two hurricanes. Unequal federal Medicaid

funding, primarily due to arbitrary low federal matching rate, has imposed a severe hardship on the government finances.

The Virgin Islands is also fiscally disadvantaged because of the centers of Medicare and Medicaid services using decades-old benchmarks and methodologies. Our hospitals' fee schedules are based on a 1989 fee schedule. So reimbursing of these publicly-owned hospitals cause great distress to the finances of the government of the Virgin Islands.

The CHAIRMAN. Governor, I am going to ask you to start wrapping here.

Mr. MAPP. Sure.

The CHAIRMAN. Thank you.

Mr. MAPP. Regarding public safety, we have lost our fire stations, police stations, emergency operation centers for disasters on St. Croix. The universities have been heavily damaged.

While we appreciate the efforts of FEMA and the Blue Roof program, these mainly protect homes from further damage. However, this program is not covering folks that lived in homes without frames and without roofs. So with each rainfall, families are being harmed.

Our citizens, American citizens, have suffered terrible losses, dislocation and distress in the wake of these storms. Our recovery will be long and difficult. Virgin Islanders understand and accept our responsibility for being in front of our rebuilding communities, but we cannot do it alone. We cannot squander this opportunity to rebuild a better and stronger and more resilient Virgin Islands to simply rebuild it quickly. If we do, we will only compound the suffering that so many of our citizens have endured. With your support, that won't happen.

Thank you for listening and thank you for supporting your fellow American citizens in the U.S. Virgin Islands.

[The prepared statement of Mr. Mapp follows:]

GOVERNOR KENNETH E. MAPP
U.S. VIRGIN ISLANDS

**Written Testimony of Governor Kenneth E.
Mapp of the United States Virgin Islands
Before the Senate Committee on Energy and
Natural Resources**

Good morning Chairwoman Murkowski, Ranking Member Cantwell, and members of the Committee:

Thank you for the opportunity to appear before you today to discuss the catastrophic damage that the United States Virgin Islands suffered from Hurricanes Irma and Maria—two Category 5 storms that pummeled our Islands with devastating force just 12 days apart.

But first and foremost, on behalf of the more than 100,000 resilient Americans living in the U.S. Virgin Islands, let me convey our heartfelt gratitude and appreciation for the concern so many fellow Americans have shown us during this difficult time. From the great leadership and support of President Trump to you Madam Chair, and the many members of the House and Senate who came to see the devastation first-hand to better understand the conditions we are living in, we thank you. We also thank FEMA for its unwavering support of our on-going critical needs in the Virgin Islands. I specifically wish to thank FEMA's Administrator William "Brock" Long and our guy on the ground, Federal Coordinating Officer William "Bill" Vogel, affectionately known in the V.I. as "Big Bill."

I know of no government on Earth which responds to the needs of its citizens better after a disaster than the United States of America. Is the response always perfect? No. But neither is the prediction of the outcome of a natural disaster. To our country, to our fellow citizens, to our national government—the people of the U.S. Virgin Islands say: thank you.

Of course, I didn't travel here today to express *only* gratitude. I came before you to personally ask for your help in recovering.

The damage ...

These storms brought 185 mph winds that ripped leaves from the trees, pulling up century-old trees by their roots and turning our green hillsides nearly black. Power lines were strewn across our roads; utility poles snapped in half like matchsticks; and 400 boats were sunk in our harbors. Nine (9) schools, our two main hospitals and related healthcare facilities, fire stations and police stations were so badly damaged that they had to be condemned.

Our airports and many of our government offices are also unusable and that has drastically impacted the delivery of vital government services.

Simple things we normally take for granted—running water, cell phone service, electricity, a hot meal—remain unavailable to many of our citizens. More than 15,000 homes were damaged or destroyed, and virtually all of our power distribution infrastructure was wiped out. Power remains limited, with power connection across the Virgin Islands at a mere 27% as I speak.

On the island of St. John, our residents only started seeing power for the first-time last week—6 weeks after Irma hit. Can you imagine a community here on the mainland going without power for 6 weeks?

The economic damage ...

In addition to the physical destruction, our economy has ground to a near halt. Few businesses are operating, and those that have reopened have reopened with significantly reduced services. Many private sector workers have not returned to work. Damage to our economy of this magnitude has created unsustainable cash shortfalls that we will experience now and into the future. We have estimated that the economic losses to our key industries, including tourism, stand at more than \$1.7 billion over the next three years. Damages to commercial facilities stand at nearly \$900 million.

Our recovery from these hurricanes will take time, and it begins with a full understanding of the damage caused. We estimate uninsured hurricane-related damages to exceed \$7.5 billion.

I have requested that amount in federal disaster assistance to enable us to address our most essential needs in order to return to normalcy.

Building back better ...

Virgin Islanders are resilient but we must do more to make our Islands resilient. Unless you want to see me back here after another major hurricane devastates America's Paradise, we must build it back stronger and more sustainable than before. We must build back stronger and more resilient to protect our citizens and protect the investments of our national government. This is what I am requesting from you.

Consider our power distribution network which Irma and Maria destroyed: While we are optimistic that power will be nearly fully restored by Christmas, this will be the fifth time the federal government is paying to rebuild the power distribution system in the U.S. Virgin Islands.

We're already taking basic steps to improve the resilience of the grid as we build it back, using things like composite poles that can better withstand hurricane force winds, but we must go further. With your help, we plan to bury power lines on the primary and secondary road systems throughout the Virgin Islands and invest in a micro-grid systems that will add renewable generation capacity—things like solar and wind energy—to the system.

Building back healthcare ...

It's not just power lines we need to approach differently. Irma and Maria completely devastated our critical health care infrastructure, destroying our two main hospitals and affiliated healthcare facilities.

Today critical care is unavailable in the Virgin Islands. Let me say that again—critical care is unavailable in the Virgin Islands. Critical patients and persons requiring dialysis must be flown to the US mainland for care. That used to be as close as Puerto Rico, but now that our neighbor has also been impacted by Hurricane Maria, our patients must be flown to Atlanta, Texas and Florida. The recovery funds we're seeking will help rebuild these two main hospitals on St. Thomas and St. Croix and a health care facility on St. John.

Helping the U.S. Virgin Islands recover will also require a serious look at our health care system as this relates to federal law and policies. Healthcare funding in the Virgin Islands was under great stress even before the two hurricanes. Unequal federal Medicaid funding, primarily due to an arbitrarily low federal matching rate, has imposed a severe hardship on the Government's finances. The Virgin Islands is also fiscally disadvantaged because the Centers for Medicare and Medicaid Services uses decades-old benchmarks and methodologies

for reimbursing our publicly-owned hospitals under Medicare, as well as unrealistic benchmarks under Medicaid. These shortfalls in federal healthcare funding have adversely affected the quality of healthcare in the Islands and have required our Government to borrow money to cover a significant portion of the gaps.

Rebuilding a future for our children ...

Hurricanes Irma and Maria impacted the most vulnerable in the Territory: our children. Nine (9) public schools were destroyed and condemned: seven (7) schools in the St. Croix District: (1) Lew Muckel Elementary School, (2) Pearl B. Larsen Elementary School, (3) Eulalie Rivera Elementary School, (4) Arthur A. Richards Elementary School, (5) Elena Christian Elementary School, (6) John Woodson Jr. High School, and (7) Alexander Henderson Elementary School; and two (2) schools in the St. Thomas/St. John District: (1) Addelita Cancryn Junior High School and (2) E. Benjamin Oliver Elementary School. The only public school on St. John was severely damaged as well. Additionally, school gymnasiums and the Curriculum Center in St. Thomas were also destroyed.

All aspects of our public school system have been impacted to include the loss of school buses, total decimation of the agriculture program, aquaponics labs, the poultry farm, and all school gardens. In addition, our children are without musical instruments, athletic equipment, and home libraries that we were actively promoting through our literacy initiatives.

The schools have lost literally hundreds of computers, smart boards, and other technology-centered materials that requires rebuilding of the infrastructure of the IT system to facilitate connectivity and reliability.

We've managed to open enough schools to continue teaching our children, but most are learning in difficult conditions or have to endure long commutes. Given our smaller school population, we plan to consolidate and build six new resilient schools to include one in St. John, two in St. Thomas, and three in St. Croix. This will allow us an opportunity to include pre-school centers in our schools and an opportunity to expand our vocational training programs to drive workforce development to diversify our economy. Our founding fathers insured that all U.S. citizens must receive a free and appropriate public education, and the Virgin Islands Department of Education will be a major contributor to the restoration and rebirth of the Territory.

Regarding public safety—we lost two fire stations, a police station, and our Emergency Operation Center for disasters on St. Croix. The campuses of the University of the Virgin Islands were heavily damaged on both islands, and they require extensive repairs.

So many of our critical facilities must be built back stronger and more resilient than before, and I have convened an advisory board with representatives across multiple disciplines to drive our re-building efforts. Rebuilding stronger and smarter will also ensure the most cost-effective use of precious federal recovery funds because it will prepare us to better withstand the hurricanes that are certain to come in the future.

But first, shelter ...

While we are appreciative of the FEMA Blue Roof Program, this mainly protects homes from further damage. However, this program does not create a suitable housing situation in the midterm, particularly during the heavy rains we have continued to experience. While FEMA traditionally relies upon the Rental Assistance Program to displace persons, there are very few homes and apartments available to rent in the U.S. Virgin Islands. Even though FEMA has authorized the Transitional Shelter Assistance Program for the Virgin Islands to allow people to stay in hotels, there are too few participating hotels because so many were damaged or are housing recovery and response workers.

I have asked FEMA to immediately authorize the Sheltering and Temporary Essential Power (STEP)/Rapid Repairs Program at an average cost of \$50,000 across all homes Territory-wide, instead of the \$20,000 cap for each home in the current FEMA-approved STEP policy for the Virgin Islands. While \$20,000 may be adequate on the mainland, in the Virgin Islands this amount is not sufficient. In the Blue Roof Program, FEMA provides an average of \$25,000 just to put a tarp on a breached home. So how could it be conceivable that an entire home can be repaired and a habitable shelter created for \$5,000 less? We are ready to implement the program as soon as FEMA removes this cap and completes a few other simple program modifications that we have requested.

For longer term and permanent housing solutions, we will need nearly \$2 billion under FEMA's Permanent Housing Construction Authority, from HUD's Community Development Block Grant Disaster Recovery Program and from FEMA's Public Assistance Program for public housing, to enable all Virgin Islands families to return to safe, sanitary, and resilient permanent homes as soon as possible.

Our citizens—American citizens—have suffered terrible losses, dislocation, and distress in the wake of these storms. Our recovery will be long and difficult. Virgin Islanders understand and accept our responsibility for being in front of rebuilding our communities, but we cannot do it alone. We cannot squander this opportunity to rebuild a better, stronger, and more resilient Virgin Islands simply to rebuild quickly. If we do, we will only compound the suffering that so many of our citizens have endured. With your support, that won't happen.

Thank you for listening and for supporting your fellow Americans in the U.S. Virgin Islands.

* * *

Legislative recommendations:

(1) We must build our energy transmission and distribution systems to be stronger and more resilient than what existed before the hurricanes. To eliminate any doubt that federal Stafford Act funds can be used to not only restore these systems, but also to make them stronger and more resilient, we urge your support for amendments to the Stafford Act that will specifically authorize federal funding for such purposes.

(2) Because of the extreme and extensive damage to the Territory's infrastructure caused by the hurricanes, and the resulting stress to the Territory's finances, the Government of the Virgin Islands cannot continue to shoulder the current burden of the local matching requirement for Medicaid funding, which we estimate to be \$64 million in FY 2018 and an additional \$50 million in FY 2019. The Virgin Islands Government respectfully requests that the Medicaid provisions of the Social Security Act be amended to provide for a *temporary* disaster-relief increase in the Territory's FMAP to 100% (from 55%) through September 30, 2020. There is ample precedent for an increase in a jurisdiction's FMAP in response to disasters or for other reasons. The funds to cover this cost can be drawn directly from the sums which were set aside for the Virgin Islands under the ACA that remain unspent. For the period after September 30, 2020, the Government respectfully requests that our FMAP be calculated like that of every other State (consistent with the recommendations of the bipartisan Congressional Task Force on Puerto Rico) or, at least, a 70% FMAP (the same as for the District of Columbia).

(3) We are experiencing — as a result of the hurricanes—a significant increase in demand for Medicaid services, an increase in our Medicaid-eligible

population, as well as increased demands for reimbursement from states providing services to displaced Virgin Islands residents. All of these factors will substantially increase our Medicaid costs, which will accelerate the rate at which federal Medicaid funds are accessed. Consequently, as a result of the hurricanes, there may be little or no ACA Medicaid allotment remaining as of September 30, 2019 unless Congress acts. I therefore respectfully request that Congress address the “fiscal cliff” by eliminating the cap on Territorial Medicaid reimbursements, or at least providing annual allotments of at least \$80 million beyond September 30, 2019. If the “fiscal cliff” is not addressed by September 30, 2019, the Virgin Islands’ Medicaid program will be at risk. The Virgin Islands’ annual base Medicaid allotment is only \$17.9 million, which is only 19% of the annual Federal funding needed by the Territory to support our current Medicaid program. Unless the “fiscal cliff” is addressed, up to 30,000 U.S. citizens (30% of our population) could lose access to healthcare coverage under Medicaid.

(4) We are also asking that Congress eliminate the “cap” on the rate of federal rum excise taxes returned to the Virgin Islands (the “Cover-Over Rate”), as recommended in the December 20, 2016 Final Report of the bipartisan Congressional Task Force on Puerto Rico, and/or at least extend the temporary rum tax cover-over rate enacted by Congress in 1999 (the “Temporary Cover-Over Rate”) and regularly extended by Congress thereafter. Extension of the Temporary Cover-Over Rate, which expired on December 31, 2016, is a major source of funding for the Government of the Virgin Islands. It is critical that Congress act quickly to eliminate the cap, or extend the Temporary Cover-Over Rate, on a retroactive basis to ensure that the Territory has the resources necessary to help fund its recovery from the destruction of Hurricane Irma and Hurricane Maria. Delay in Congressional action would risk reduction or loss of these urgently needed funds.

(5) Any long-term recovery plan also requires as its core the need to spur and sustain economic growth. Federal tax policy plays a critical role in creating the investment climate to generate sustainable economic growth in the Virgin Islands and help the Territory create jobs and improve its long-term fiscal health. It is my fervent hope that in its tax reform proposals Congress will consider the unique status and circumstances of U.S. Territories. The Virgin Islands is considered a foreign jurisdiction and not part of the United States under the Internal Revenue Code, even though Virgin Islanders are U.S. citizens, and Virgin Islands businesses are U.S. businesses. Further, the Virgin Islands’ (and Guam’s) income tax system is based on a “mirror system” of taxation, in which the Internal Revenue Code is used as the Territory’s Internal Revenue Code (commonly known

as the “Mirror Code”). As a result, any change to the U.S. Internal Revenue Code would automatically impact the Mirror Code Territories, which raises both technical and revenue issues.

Fundamentally, the Territories, as part of the United States, should always be treated more favorably than foreign jurisdictions under federal tax law. Unfortunately, that is not always the case. Indeed, as a result of unduly harsh provisions in the JOBS Act of 2004, the Territories are in many ways treated worse than foreign jurisdictions. In particular, the (effectively connected) income sourcing rules imposed by the JOBS Act have unfairly restricted our Economic Development Commission (“EDC”) program and inhibited our ability to grow our economy, particularly in the increasingly important knowledge-based and financial services sectors.

We have been working with the U.S. Treasury to “re-balance” the overly restrictive JOBS Act rules by making modest corrective changes to the JOBS Act. I urge your support for inclusion of these changes in legislation this year. In addition, I urge that Congress consider the unique circumstances and economic development needs of the Territories in other elements of tax reform, including taxation of possessions earnings repatriated to the United States from the Territories.

The CHAIRMAN. Thank you, Governor, and know that your full statement, along with everyone on the panel, will be included as part of the record.

Let's go to Bruce Walker, welcome.

STATEMENT OF HON. BRUCE J. WALKER, ASSISTANT SECRETARY, OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEPARTMENT OF ENERGY

Mr. WALKER. Good morning.

I'd like to thank Chairman Murkowski, Ranking Member Cantwell and the members of this Committee for moving me favorably from this Committee during the confirmation process and expediting the confirmation so that I may go to Puerto Rico and the Virgin Islands to get a firsthand account of the damage and devastation that was done.

With the permission of the Committee I would like to enter my written testimony into the record so that I can convey my thoughts regarding the time spent on the island.

The CHAIRMAN. Your full written testimony will be included as part of the record.

Mr. WALKER. Thank you.

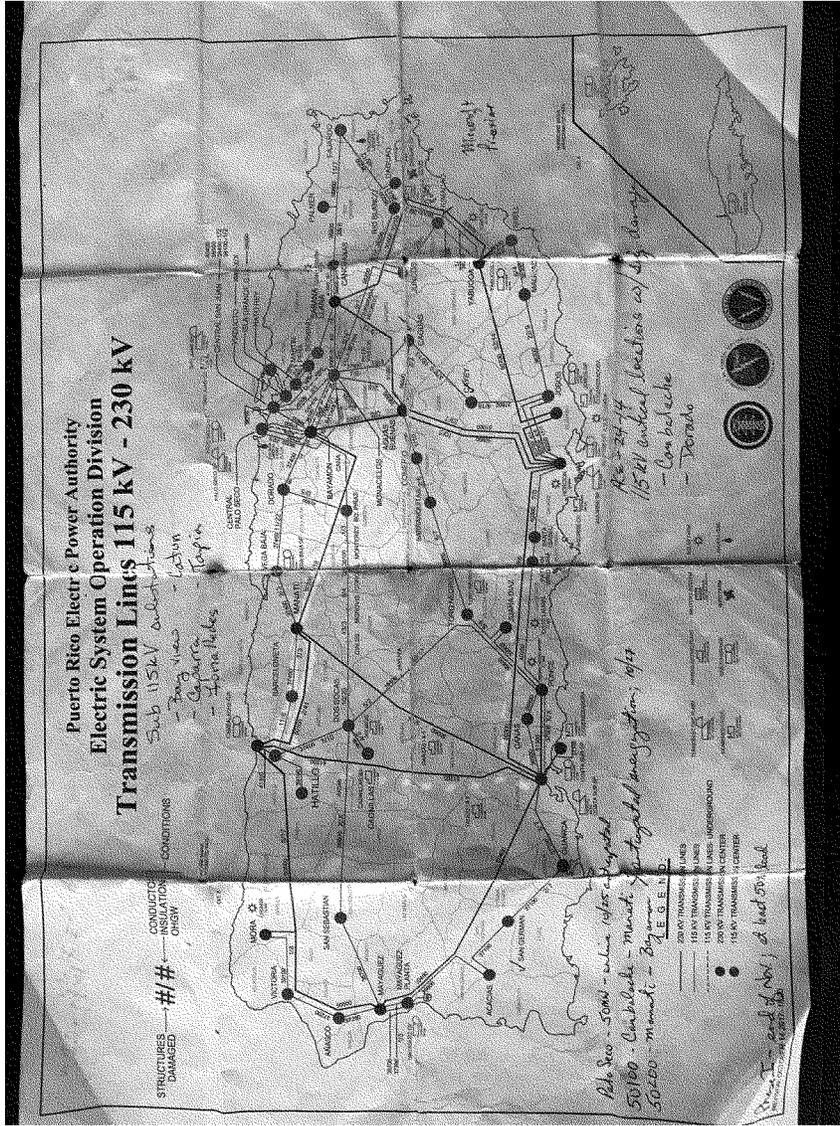
I'd like to discuss three topics: number one, the successes that I realized in my attending the Virgin Islands, as well as Puerto Rico; the challenges that were faced; and the opportunities we have going forward. And speaking to, specifically, a number of the things that both Governors mentioned, there are opportunities and we have an opportunity to take advantage of those.

Successes. The leadership provided by the two Governors sitting next to me was fantastic and the resilience and the heartfelt strength of the citizens of both Virgin Islands and Puerto Rico was amazing. The calm on the island was outstanding. The key humanitarian challenges are continuing to be met with the leadership provided by the Governors.

I'd like to point out there were two critical components with the restoration that, I think, are worth noting. Number one, PREPA, with the limited crews that I had—I will point to this map over here—made an early decision to tie the southern portion where the generation is to the northern portion where the load is. And in doing so they made a key decision to construct the 230 kV line from the south bringing it up to the San Juan area, the Bayamón Substation.

On the map you can see here, from down here wrapping up through where that dotted line is, from up here, all the way over to here.

[The information referred to follows:]



What was important about that was that one decision and the efforts made by PREPA, with limited staffing, enabled the power to be distributed to where the load was and in conjunction with the other big decision, which is the next slide.

Jennifer?

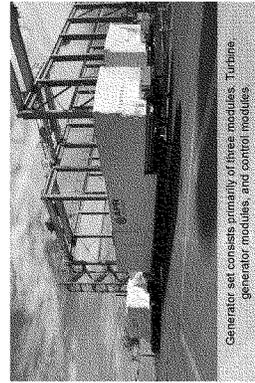
[The information referred to follows:]

PALO SECO, PUERTO RICO, 50 MW TEMPORARY GENERATOR TASK FORCE POWER RESTORATION RAPID RESPONSE CENTER OF EXPERTISE, US ARMY CORPS OF ENGINEERS

- Success:**
- Rapid Disaster and Infrastructure (RDI) Contracting tool and operating procedures. Omaha district RDI contracting tool allowed for a rapid award, mobilization, and execution of the project.
 - Task Order awarded 5 days after receipt of mission assignment.
 - Two GenSets with 50 MW capacity were barged, mobilized to the site, installed, and commissioned in 21 calendar days after award - world record pace by industry standard.
 - Partnership with PREPA incorporated their daily professional skill sets into the planning and execution, which resulted in the expedience of operations for compliance, safety, security, and schedule.
 - Lessons learned from Palo Seco are being proactively addressed in the planning and execution at Yabucoa.

Challenges:

- Compliance with the Jones Act: The requirement for foreign vessels to moor in more than one US Port was waived through 8 Oct 2017 and barges in route could still moor in US Ports until 18 Oct 2017. The Morgenstand 1, foreign vessel transporting APR GenSets from the Canary Islands, arrived 13 Oct 2017. Thus, APR was able to move commodities through the San Juan Port while in compliance. As much will likely not be accomplished in the future.
- Compliance with PREPA Standards: Bringing temporary power onto an existing grid required intense coordination with PREPA to ensure compliance with PREPA air emission permit requirements, relays to protect their grid and the use of CasSens meters that were not established to complete the work.
- Timeline: A highly aggressive timeline was established to complete the work.
- Logistical: Getting resources (equipment & people) to the job site in a timely manner. FEMA Logistics, PR Port Authority, CBP were all instrumental in assisting us in overcoming this hurdle.
- Adapting to Existing Infrastructure: We installed state-of-the-art equipment into a power plant that was built ~44 years ago. Repairing the out-of-service bulk storage fuel tank, constructing a fuel line, integrating the APR generator diagnostics to that of PREPA were all challenges that we had to overcome IOT allow PREPA to leverage these new assets.

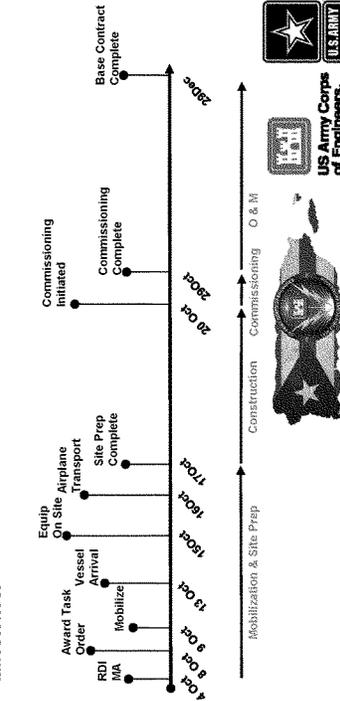


Generator set consists primarily of three modules: Turbine, generator, modules, and control modules.

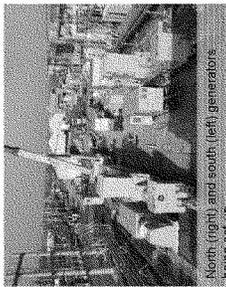


Site Prep at Palo Seco (14 Oct 17)

Milestones:



Diesel tank #1 using ultra-low sulfur (<15 ppm) diesel fuel #2 to supply generators. Tank required minor repairs prior to use.



North (right) and south (left) generators being set-up.



The Army Corps, working with PREPA, installed two 25-megawatt generators at the Palo Seco Generation Plant. And that, in conjunction with the rebuild of the 230 line, enabled power to be distributed to the northern portion to start picking up commercial and residential customers.

Those two efforts were monumental, given the facts and circumstances. The installation of this generator was with the letting of the contract and the install and I was at Palo Seco when this was being put in, and the work that had to be done was really incredible. We had fantastic support from PREPA in coordinating it, particularly with the relaying and the coordination with the Army Corps.

Lastly, the work of the Federal Coordinating Officers, both in the Virgin Islands, and the Governor mentioned, Bill Vogel and his Deputy, David Haas, and then in Puerto Rico with Mike Byrne and his Deputy, Ahsha Tribble. The coordination that was set forth by FEMA was outstanding in an effort to drive and work with the leadership provided by the two Governors to my right.

On the challenges—I think you can see through a number of these pictures, the mountainous terrain was a key component where there was stress in trying to rebuild the transmission system. Lack of generation in the north necessitated the work to be done on the transmission system.

[The information referred to follows:]





The logistics, as were mentioned, were highly successful in trying to mobilize all the things necessary—equipment, people and material—to get down there, and it's still a challenge just to be working through. The amount of fiber optics on the island were a challenge, particularly as they increased their wind shear and, therefore, the damage to the poles. And the water infiltration to 18 substations, three of which were inundated to the point where they were not able to be energized.

That leads me to my last component which is the opportunities. At a very high level we've already mobilized the Grid Modernization Lab Consortium to look at work that has been previously done by labs like PNNL and Oak Ridge. And we're looking, specifically, at things like modern relay protection at key substations, predictive modeling with improved sensing capabilities, hardening control devices.

Secondly, microgrid opportunities. We've already looked at and started the process to install 200 locations representing 11 megawatts of power on Puerto Rico. Those are key locations where we have provided generation for hospitals' water supplies, and we have 400 other locations behind that we're doing the investigation on right now to add additional microgrid opportunities. And then we'll also begin looking at them in the Virgin Islands as well.

Use of the American Society of Civil Engineering Standards for the 18 substations that were inundated, there's a flood mitigation program, it's called 24-14. We're looking at that for the reconstruction of those 18 substations.

In conjunction with that, we're utilizing NOAA to do a wind study to identify where we can put solar and utilize, take the mountains, and utilize them as shieldings for the design. Also, we're looking at the SLOSH modeling done by NOAA for the Virgin Islands as well as Puerto Rico, in order that when we have to replace substations we don't put them in an area that could ever or that would be inundated going forward.

Also, we have the opportunity with the high penetration of the fiber optics to develop the BlackNet and utilize it. And there was a discussion here with this Committee on the cybersecurity, a real opportunity because of the density.

Integration of distributed generation and/or other generation renewables, particularly in the northern area where the load is, that's a key component and would add a level of resiliency into the network because the transmission system wouldn't need to be built from the south to the north in the event that we have to raise this up and then inevitably we'll see more hurricanes.

And lastly, there are some basic structural components that we have the opportunity to do. I have some of our folks at the Bonneville Power and WAPA doing investigation on the tower constructions because the dead-end towers that are used on the transmission system which you see pictures of there, fundamentally, most of those were standing through the island. The other style towers, actually, were more damaged, and it's mainly because these towers are guyed or anchored differently than the other towers.

[The information referred to follows:]



So there's some structural improvements that are also available to us and also the modification of the fiber optic and other attachments on the poles is something that we'll have an opportunity to take a look at.

Thank you for the opportunity to convey my thoughts regarding this and I look forward to your questions.

[The prepared statement of Mr. Walker follows:]

Written Testimony of Assistant Secretary Bruce J. Walker
Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy
Before the
Senate Committee on Energy and Natural Resources
November 14, 2017

Chairman Murkowski, Ranking Member Cantwell, and distinguished Members of the Committee, I appreciate the opportunity today to discuss the hurricane response and recovery efforts in Puerto Rico and the U.S. Virgin Islands.

Upon being sworn into my current position as Assistant Secretary for the Office of Electricity Delivery and Energy Reliability (OE) last month, my first order of business was to travel to Puerto Rico and the U.S. Virgin Islands, where I spent two weeks assisting with the response and recovery efforts. It was imperative to see firsthand the destruction wrought by Hurricanes Irma and Maria and to understand how DOE could continue to best assist our fellow Americans.

The mission of OE is to develop innovative, cutting-edge solutions to ensure that our Nation's energy infrastructure remains reliable, affordable, and resilient. In order to fulfill this mission, the U.S. Department of Energy (DOE or Department) leverages the technical capabilities of the National Laboratories and partnerships with key private sector stakeholders to focus on early-stage research and transformative projects.

Our organization is also the lead for providing energy-related expertise to the Federal Emergency Management Agency (FEMA), interagency partners, and the Administration as part of DOE's emergency response activities. DOE serves as the lead agency for Emergency Support Function #12 - Energy (ESF-12) under the National Response Framework and as the Sector Specific Agency for Energy under Presidential Policy Directive 21. As the lead for ESF-12, DOE is responsible for providing information and analysis about energy disruptions and for helping to facilitate the restoration of damaged energy infrastructure.

Hurricanes Irma and Maria Response

In early September, Hurricane Irma, the second hurricane to make landfall at Category 4 intensity in the United States this year, swept through the Caribbean and into the southeast United States, causing billions of dollars in estimated damages, millions of customer power outages, and tragically, over 100 fatalities.

Just two weeks later, before Puerto Rico and the U.S. Virgin Islands had recovered from Irma, Hurricane Maria made landfall in Puerto Rico as a dangerous Category 4 hurricane, bringing powerful winds and major flooding that rendered inoperable much of the Commonwealth's

transmission and distribution infrastructure and left virtually all 1.6 million electricity customers on the island without power. According to ESF - 12 personnel on the ground, as of November 9, DOE estimates 43.2% of normal peak load has been restored in Puerto Rico and 27.0% of customers have been restored in the U.S. Virgin Islands. While the percent of peak load metric for Puerto Rico does not indicate customer-level restorations, it is currently the best proxy available to measure progress in this challenging environment.

In the wake of these catastrophic events, DOE has received \$11.7 million in mission assignments from FEMA to provide technical assistance for hurricane response and recovery (Irma: 6 mission assignments, \$2.3 million; Maria: 8 mission assignments, \$9.4 million). The Department has provided personnel to support the National Response Coordination Center in support of FEMA response operations, bilingual public information personnel to provide life safety and life sustaining communications, subject matter experts as part of FEMA's Incident Management Assistance Teams, as well as technical advisors in electrical distribution, transmission, generation, energy efficiency, renewable energy, and related topics to advise the United States Army Corps of Engineers (USACE) on the assessment, planning, and reconstruction of the electrical grid in Puerto Rico.

Twenty-nine DOE responders, including 25 personnel and 10 line-trucks from the Western Area Power Administration, are in the U.S. Virgin Islands to provide mutual assistance through multiple mission assignments from FEMA and DOE has worked to facilitate additional mutual assistance with industry.

In Puerto Rico, DOE has a responder deployed to coordinate with FEMA as well as seven subject matter experts from the Power Marketing Administrations to provide technical support to USACE with restoration planning, cost estimates, validation, and quality assurance.

Additionally, through DOE-funded projects, we are leveraging the expertise of our National Laboratories to develop potential long-term solutions to improve the resiliency of the Puerto Rican infrastructure. I want to assure the Committee that DOE will continue to support the work needed to restore power to the U.S. Virgin Islands and Puerto Rico. And I'd also like to thank all of the utility crews and responders for their dedication and hard work in restoring power.

Resilience

The hurricane season of 2017 serves to highlight the need for a continued and adaptive focus on energy system resilience. The recent severe weather events, changing resource mix, and dynamic nature of grid technologies—including changes on the demand side—are bringing grid resilience to a new, more prominent place in the national dialogue. Specifically, as we keep one eye on day-to-day reliability and resource adequacy, we must also do better to incorporate resilience into the discussion.

As part of a comprehensive effort to reduce the impact of severe weather events, utilities in three hurricane-prone regions invested hundreds of millions of dollars over the last several years to improve their systems, including advanced communicating technologies across their transmission, distribution, and customer systems to mitigate and recover from grid disturbances.

In Florida, while it's difficult to compare storms, during Hurricane Wilma in 2005, more than 11,000 Florida Power and Light (FPL) poles fell or snapped, and 241 substations experienced major damage while close to 100 transmission structures were damaged. However, grid hardening since Wilma limited the damage to less than 1,500 toppled poles, no major damage to substations, and no damage to transmission structures during Hurricane Irma.

In Houston, at the peak of outages 800,000 were without power from Hurricane Harvey, whereas when Hurricane Ike hit Houston in 2008, 2.1 million customers were knocked offline. Some of this dramatic reduction was due to CenterPoint Energy's enhanced physical and remote operational protections to prevent damage at the vast majority of their 250 substations. CenterPoint's investment also built out their capability to safely reroute power around damaged grid equipment to maintain connections for more customers.

The immense challenges that New Orleans faced in the aftermath of Katrina were intensified by electric grid failures. System-wide power outages made it difficult to resume essential recovery activities such as flood control operations, water supply and treatment, transportation, emergency response, and banking. Even Memorial Medical Center had its backup generator fail 48 hours after the storm.

In January 2016, researchers at Sandia and Los Alamos National Laboratories teamed up with the City of New Orleans and other partners through DOE's Grid Modernization Laboratory Consortium (GMLC) to identify grid modernization priorities to minimize the negative consequences to particularly vulnerable communities. The analysis identified the lifeline services that receive greatest benefit from improved power resilience, and subsequently, identified clusters of high-impact infrastructure in those areas that can be served by advanced microgrids.

As a result of this research, the City of New Orleans is now equipped with a prioritization and implementation plan, developed in conjunction with the local utility and community stakeholders, to protect the grid that serves areas of most critical need.

Conclusion

I am grateful for the hard work of DOE's emergency responders in this active and challenging hurricane season. We have made progress, but there is still more to do. Over the next several months, DOE's primary focus in Puerto Rico and the U.S. Virgin Islands will be working with our partners to support the mission of restoring the power grids and critical infrastructure.

Secretary Perry and our DOE team look forward to a thoughtful conversation focused on our response to this season's hurricanes, and on the reliability, affordability, and resilience of the electricity system from hurricanes, as well as other extreme weather events.

Thank you, and I look forward to your questions.

The CHAIRMAN. Thank you, Mr. Walker.
General Jackson.

STATEMENT OF MAJOR GENERAL ED JACKSON, DEPUTY COMMANDING GENERAL, CIVIL AND EMERGENCY OPERATIONS, U.S. ARMY CORPS OF ENGINEERS

General JACKSON. Chairman Murkowski, Ranking Member Cantwell and distinguished members of the Committee, on behalf of the Army Corps of Engineers (Corps), thanks for the opportunity to testify today.

The Corps conducts emergency response activities under two basic authorities: the Stafford Act and Public Law 84-99. Under the Stafford Act, we support FEMA under the National Response Framework as the lead federal agency for Emergency Support Function (ESF) #3, Public Works and Engineering. ESF #3 provides temporary emergency power, temporary roofing, debris management, infrastructure assessment, critical public facility restoration and temporary housing. Under Public Law 84-99, we prepare for disasters through planning, coordination, and training with local, state and federal partners assisting them with advanced measures that prevent or reduce storm event damages and repairing damage to authorized federal projects, including eligible non-federal flood infrastructure to pre-storm condition.

When disasters occur, Corps teams and other resources are mobilized from across the command to assist local offices with their response to the event. As part of this mission, the Corps has more than 50 specially trained teams, supported by emergency contracts, that perform the wide range of public works and engineering-related support missions I just described. The Corps uses pre-awarded contracts that can be quickly activated for ESF #3 missions such as temporary power, debris removal and temporary roofing.

This year the Corps has supported FEMA-led federal response and recovery operations in support of multiple events, including Hurricanes Irma and Maria in the Caribbean. We continue to be actively involved in ongoing federal response operations in support of Hurricane Harvey in Texas and Louisiana, Hurricane Irma in Florida and in the aftermath of devastating wildfires in California.

The Corps has received 59 FEMA mission assignments in support of the federal response to Hurricanes Irma and Maria in Puerto Rico and the U.S. Virgin Islands. Currently, the Corps has over 1,900 personnel employed in the region.

As of this morning, the Corps has completed over 1,300 assessments and over 765 temporary generator installations in the Caribbean. This includes 270 assessments and 156 generator installations in the U.S. Virgin Islands and 1,100 assessments and 612 generator installations in Puerto Rico. Under FEMA authority we are also assisting Puerto Rico with operation and maintenance of over 150 critical, non-federal generators across the island. We have over 550 soldiers, civilians and contractors dedicated to temporary power alone in Puerto Rico.

The Corps has completed 12,000 temporary roofing installations in the Caribbean, including 3,300 in the U.S. Virgin Islands and 8,700 in Puerto Rico. Roofing requirements in both the U.S. Virgin Islands and Puerto Rico have been extensive requiring additional

material and construction support which initially slowed progress. We have adjusted, are adding capacity and will continue to see improvements in both locations.

Corps debris subject matter experts are providing technical and direct federal assistance to both Puerto Rico and the U.S. Virgin Islands. We are working to remove an estimated one million cubic yards of debris in the U.S. Virgin Islands and over four million cubic yards of debris in Puerto Rico.

The Corps worked closely with the U.S. Coast Guard, the National Oceanic and Atmospheric Administration and local authorities to open harbors and navigation channels across all affected areas critical to restoring commerce and allowing the flow of commodities and essential equipment to reach affected communities.

In Puerto Rico, Corps dam and levy teams inspected 14 levies and 17 priority dams, working closely with the Puerto Rico Electric Power Authority, or PREPA, to stabilize a spillway failure at Guajataca Dam. Additionally, the Corps teams helped to clear existing outflow conduits and place emergency pumps to further reduce water levels in the dam, yet restore flow to a critical treatment plant that supports the needs of over 100,000 people.

On September 30th, the Corps was given a FEMA mission assignment under Stafford Act authority to assist PREPA in conducting emergency repairs to the grid itself. The Corps is partnering with PREPA in this effort and has established a general officer-led task force with three area offices on the island to oversee work and provide technical assistance. The Department of Energy has embedded experts in our team and continues to advise and assist in our efforts.

Unlike with our ESF #3 mission, the Corps does not have pre-awarded contracts for this type work but has relied on our contingency contracting tools to competitively build capacity to meet operational requirements.

Since receiving the mission assignment, the Corps has installed a 50-megawatt temporary power plant to stabilize the grid in San Juan, as Secretary Walker just talked about. We procured over \$170 million in critical materials that are currently flowing into the island today that includes, currently, 39,000 poles and 3,000 miles of conductor wire and we contracted for 200 additional line repair crews that are also flowing into the island to assist the ongoing efforts by PREPA.

And finally, we just recently awarded a contract for a 25-megawatt temporary power plant that will be installed in the next several weeks to assist the critical facility at Yabucoa.

The Corps remains fully committed and capable of executing its other civil work activities across the nation despite our heavy involvement in these ongoing response and recovery operations. We also remain ready and poised to assist in future events as they may occur.

This concludes my testimony, and I look forward to answering any questions you might have. Thank you.

[The prepared statement of General Jackson follows:]

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DEPARTMENT OF THE ARMY CORPS OF ENGINEERS

COMPLETE STATEMENT OF

MAJOR GENERAL ED JACKSON

**DEPUTY COMMANDING GENERAL, CIVIL AND EMERGENCY
OPERATIONS**

BEFORE

**COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE**

ON

**HURRICANE RECOVERY EFFORTS IN PUERTO RICO AND THE
U.S. VIRGIN ISLANDS**

NOVEMBER 14, 2017

Major General Ed Jackson
Deputy Commanding General, Civil and Emergency Operations
U.S. Army Corps of Engineers

Chairman Murkowski, Ranking Member Cantwell and distinguished members of the Committee:

I am honored to testify before you today to discuss the authorities and responsibilities of the U.S. Army Corps of Engineers (Corps) during disaster response and recovery operations. I am Major General Ed Jackson, Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers.

The Corps conducts its emergency response activities under two basic authorities: the Stafford Disaster and Emergency Assistance Act (Stafford Act); and Public Law 84-99, 33 U.S.C. 701n as amended (PL 84-99). Under the Stafford Act, we and other Federal agencies support the Federal Emergency Management Agency (FEMA) under the National Response Framework (NRF). In this capacity, the Corps is the lead Federal agency for Emergency Support Function 3 (Public Works and Engineering), but works under FEMA's direction. ESF-3 provides Temporary Emergency Power, Temporary Roofing, Debris Management, Emergency Infrastructure Assessment, Critical Public Facility Restoration, Temporary Housing, Demolition/Structural Stabilization, and support to FEMA Command and Control Nodes/ESF3. Under PL 84-99, we prepare for disasters through planning, coordination, and training with local, state, Federal partners; and by assisting state and local entities in implementing advance measures to prevent/reduce storm event damages. After the emergency event, PL 84-99 authorizes the Corps to repair damage to authorized Corps projects, and work with states/municipalities to rehabilitate and restore eligible non-Federal flood infrastructure to pre-storm conditions.

When disasters occur, Corps teams and other resources are mobilized from across the country to assist the local Corps districts and offices respond to the event. As part of this mission, the Corps has more than 50 specially-trained response teams, supported by emergency contracts, to perform the wide range of public works and engineering-related support missions I just described. Additionally, the Corps uses pre-awarded contracts that can be quickly activated for missions such as debris removal, temporary roofing, commodities distribution, and generator installation.

2017 Hurricane Season – With regard to hurricane activity, 2017 has been an unusually active season. The Corps has been involved in the FEMA-led Federal response and recovery operations in support of multiple events, including Hurricanes Harvey, Irma, and Maria.

Hurricane Harvey –On August 25, 2017, Category 4 Hurricane Harvey made landfall along the central Texas coast near Rockport, Texas, between Port Aransas and Port O'Connor and the President approved an Expedited Major Disaster Declaration for

Texas. Large amounts of rainfall fell across the greater Houston metropolitan area causing record flooding. FEMA has identified \$93.7 million in Mission Assignments for the Corps to assist in Hurricane Harvey response and recovery. Currently, the Corps has over 200 Corps employees deployed at key response nodes.

Temporary Emergency Power: As of September 11, 2017, the Corps completed 68 pre-installation inspections and 45 generator installations at identified critical public facilities fulfilling the temporary emergency power mission in Texas.

Temporary Housing: Corps teams, in conjunction with FEMA, continue to assist the State of Texas with the development and implementation of a temporary housing Project Management Plan. The plan includes establishing 20,000 travel trailers and 4,000 mobile housing units. The Corps continues to conduct reconnaissance and assessments, identifying sites to fulfil the scope of this plan, and establishing conceptual layouts for the assessed sites. The Direct Housing Assessment Team is providing technical monitors that continue to prepare Site Inspections Reports in 26 counties.

Debris Management: Debris Teams led by Corps subject matter experts continue to provide locals with technical assistance in defining requirements and monitoring debris removal and disposal operations in 15 counties.

Hurricanes Irma and Maria – Category 5 Hurricane Irma made landfall over the U.S. Virgin Islands on September 6, 2017, while also impacting Puerto Rico with Category 2 winds, 12 foot storm surge and up to 20 inches of rain. Hurricane Irma made landfall in southern Florida/Florida Keys on September 9, 2017. Soon thereafter, Category 5 Hurricane Maria made landfall over Puerto Rico on September 20, 2017, causing major damage to critical infrastructure and homes. FEMA has identified \$1.7 billion in Mission Assignments for the Corps to assist in Hurricanes Irma and Maria response and recovery (45 Mission Assignments totaling \$176.3 million for Hurricane Irma and 34 Mission Assignments totaling \$1.5 billion for Hurricane Maria). Currently, the Corps has over 1,500 personnel deployed in various locations supporting the recovery missions.

Temporary Emergency Power: As of November 7, 2017, the Corps and its contractors have completed 955 of 1,100 requested pre-installation inspections (for temporary generators) and 470 generator installations in Puerto Rico. The Corps and its contractors have completed 256 of 288 pre-installation inspections (for temporary generators) and 146 generator installations in the U.S. Virgin Islands.

Temporary Roofing: In order for the Corps and its contractors to install temporary covering (blue roof), the government and its contractors require validated rights of entry. As of November 7, 2017, the Corps has completed this mission in Florida with over 13,000 blue roof installed. In the U.S. Virgin Islands, the Corps and its contractors have completed 3,039 blue roof installations and collected 4,783 rights of entry. An additional contractor began blue roof installations on October 24, 2017. In Puerto Rico, the Corps

and its contractors have completed 6,948 blue roof installations and collected over 34,500 rights of entry.

Debris Management: As of November 7, 2017, the Corps has removed approximately 185,600 cubic yards of the estimated over 1 million cubic yards of debris in the U.S. Virgin Islands and 165,400 cubic yards of the estimated over 6 million cubic yards of debris in Puerto Rico. Corps debris subject matter experts provided technical assistance to counties across Florida and Georgia in response to Hurricane Irma and continue to provide oversight to five regions within the Florida Department of Emergency Management.

Dam and Levee Safety, Assessments, and Response: In Puerto Rico, Corps Dam and Levee teams inspected 17 priority dam locations and Guajataca Dam was the only site deemed in critical condition. Hurricane Maria caused a significant rise in the water level of the dam, and resulted in overflow of the spillway. The spillway structure was compromised and the surrounding area began to erode, posing immediate risk to 70,000 residents. Corps teams placed over 500 Jersey barriers and over 1,300 super sand bags to cease any further erosion and allow for long-term repair of the spillway. Additionally, the Corps teams cleared existing outflow conduits and are positioning to place piping and pumps to further reduce the water level in the dam. When the water level reaches 25 feet below the spillway, more substantial repairs will begin.

Power Mission: On September, 30 2017, the Corps was given a FEMA Mission Assignment, within the authority of the Stafford Act, to assist the Puerto Rico Electric Power Authority (PREPA) in further repairing the power system to its pre-storm condition. The Corps is conducting this mission.

The Corps remains fully committed and capable of executing its other Civil Works activities across the Nation despite our heavy involvement in these ongoing response and recovery operations. We also remain ready and poised to assist in future events as they may occur. This concludes my testimony and I look forward to answering any questions you might have. Thank you.

The CHAIRMAN. Thank you, Major General.

Thank you all for your testimony. We will now have an opportunity for five-minute rounds of questioning.

Governors, I want to direct this to you first. One of the things that impressed me, Governor Mapp, when we were in U.S. Virgin Islands, you relayed to us or shared, certainly, with me, that this is now your fifth hurricane. You have a little bit of experience dealing with disasters and you indicated that in anticipation of Hurricane Irma coming your way, you effectively had teed things up so that in the event that you were hit, which of course you were, you could immediately move forward to, basically, push and send the request for mutual aid and indicated that that allowed you then to move quickly to remove debris and really get to work in an area that had been incredibly devastated.

We are looking at this hearing to not only learn about what we have done right but where we have stumbled in this effort and also how to move forward from that. But that is one thing that as I look at the two islands that were impacted, both in considerable ways—in Puerto Rico, Governor Rosselló, mutual aid was not implemented immediately. In fact, I heard many times as we were traveling there that, in fact, the real recovery did not begin until a month later, effectively October 30th when the mutual aid switch was flipped and the effort really began. Governor Rosselló, can you share with the Committee why mutual aid was not advanced immediately?

Mr. ROSSELLÓ NEVARES. Of course. Thank you, again, for the opportunity.

Let me just take you, initially, through the timeframe that was the two twin storms. We first got hit with Irma. At that juncture, there were some requests for information for several contractors to come to Puerto Rico to attend to some of the challenges that we had after Irma. That, of course, was looking forward to just restarting without the energy grid, without looking at the moment where we would have another storm in Puerto Rico.

The CHAIRMAN. Just so I am clear, did you not believe after Irma that the damage was sufficient to have invoked mutual aid, that you could handle that on your own? Is that what I understand?

Mr. ROSSELLÓ NEVARES. Well, the results are there. The power authority, actually, picked up from 25 percent energy that we have the day after the storm to about 96.5 percent energy restoration right before Maria hit. So there was work in progress being made. Of course, the power authority had been working on alternative mechanisms to bring more, you know, more support to the island.

In comes Maria and I just have to define what were the first days immediately after Maria. First of all, we really had no knowledge of the vast damage that was done in Puerto Rico because we had no communications. I mean, I know it's hard to put yourself in that situation, but Puerto Rico is a relatively small island, but it is, to travel it, typically takes a couple of hours. At that point we had no communications, no radio communications which we expected to have. At that point, all of the roads were basically blocked. So our efforts immediately after the storm were to assess the situation, get contact, establish logistics moving forward and going through a licensed statement phase.

Right after the storm, as I mentioned in my initial statement, emergencies ensued. We literally had to go. I had to make the decision that even under martial law, I had to mobilize police officers and the National Guard from wherever they were so that we can rescue people that were at risk of drowning. This happened several times because as the storm passed more water came through it as well.

After that came also the devastation, or the potential announcement of the devastation, of the dam for which we had no communications with the mayors and with the people of that township. So I had to go in a car and in a route that takes typically an hour and a half—it took us about four hours to get there. I went there with our resident commissioner so that we can warn the local authorities, the mayors, of what was going on.

The CHAIRMAN. Governor, I am going to interrupt only because I am out of time, but it begs the question then, obviously, a great deal of immediate urgency to save human life.

Mr. ROSSELLÓ NEVARES. Right.

The CHAIRMAN. But in retrospect, would it have not been wiser to do as we saw in the U.S. Virgin Islands, just push send and request that mutual aid?

Mr. ROSSELLÓ NEVARES. Right. You know, we spoke about this. The PREPA head will be happy to answer all of those components into the decision-making that went to that, but I just want to add an element.

When we were making that decision about bringing some of the additional assets to Puerto Rico, we had the offer from the Corps of Engineers that would allow us to restore the energy grid fairly quickly and immediately, as was stated to us initially, and that we didn't have to have a cost-sharing to do so. But right now, as you know, Puerto Rico is in a fiscal predicament that we had little liquidity to push forward.

So having those two alternatives, Madam Chairwoman, we chose under the understanding that, you know, things were going to pick up quickly, that the energy grid was going to be restored and most of it within 45 days. We chose the alternative that both FEMA and the Corps of Engineers proposed to us, which was let's do it through the Corps of Engineers and then in collaboration with PREPA so that we can get going.

The CHAIRMAN. We all have a lot of questions here.

I am going to go to Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair, you are right about that, we definitely do.

I appreciate everybody's testimony. I want to make sure that we work on solving the problems. Is everything working seamlessly now as it relates to the Army Corps and to PREPA and everything that needs to happen or do we still need some streamlining?

Mr. ROSSELLÓ NEVARES. Well, let me say two things. First of all, I mean, it is public record that I wasn't satisfied with the original deployment of the Corps of Engineers. I established, again, we were under an impression that this was going to, you know, start immediately, that we were at a 45-day timeframe. Otherwise, of course, we would have looked for other alternatives.

Having said that and thanks to several meetings that we've had, now we have three daily meetings on what's going on with the energy grid that includes PREPA, the DOE, includes the Corps of Engineers, some of the stakeholders, so that we can push forward and meet the aggressive standards that we had for Puerto Rico.

So while, again, as I said in the onset, I was not satisfied and I voiced it, I am hopeful that this new mechanism can allow us to get to our objectives and, you know, what I ask the Senate is, of course, to keep us serving, to keep hearing us out and as it pertains to the past week, there has been an increase, a phenomenal increase in communication, more deployment of personnel to Puerto Rico. And as I stated on our initial statement, you know, our objective to get 50 percent by November 15th, looks like we're right on target.

Senator CANTWELL. Thank you, Governor.

Mr. Walker, what do you do about this issue with the bondholders having a lien against PREPA? Here we are trying to make this work from a perspective of restoring the grid and we have a bondholder lien. What are you going to do to make sure that taxpayer dollars aren't just going to Wall Street instead of building the grid?

Mr. WALKER. Thank you for the question, Senator.

During my time in Puerto Rico, that was a question that came up in working with FEMA and the FEMA lawyers. They've worked through mechanisms where they feel confident that the investments that are being made in the system under the emergency restoration will not be attachable as they're actually grants.

And so, the Federal Government through FEMA—it's a better question to be answered by a FEMA expert, but I had learned as much about the FEMA rules as I could when I was in Puerto Rico. So I asked that question, specifically, when I was down there. There was, obviously, concern with the investment being made under the emergency restoration, but they believe that that money will be protected.

Senator CANTWELL. Do you believe that we need further structure by you, DOE or others in integration with PREPA because yesterday I am pretty sure those bondholders were in court trying to wrangle this organization away from the government and into their pocketbooks. Now, the judge denied that but I guarantee you this won't be the end of this situation. What does the Administration believe? If you are saying today PREPA has the full oversight that it needs, or are you saying, no?

Mr. WALKER. Well, I think if Congress appropriates money for permanent work that, you know, FEMA will have to make decisions with regard, and Congress will have to make decisions with regard, to how that money is allocated and who's responsible for it, if the Congress approves or appropriates money for permanent restoration.

Senator CANTWELL. But do you believe that PREPA needs any other oversight by you or any other aspect of the Federal Government right now?

Mr. WALKER. No, the emergency restoration component, I think, PREPA is uniquely qualified—it's their system—to restore the system and get it up and running.

Senator CANTWELL. And you are a person who has spent much time in this sector prior to coming to the Administration?

Mr. WALKER. I've spent my entire life there. And I worked very closely with Ricardo Ramos, who is on the next panel, and PREPA personnel and their control staff restoring the systems.

And as I earlier noted, you know, there were some very significant challenges in making the decisions to restore the system. But PREPA rose to the challenge and made those decisions and started the work and, as the Governor noted, has gotten back to almost 50 percent of the system. So it's working.

Senator CANTWELL. So you are standing by PREPA in this and moving forward?

Mr. WALKER. I am.

Senator CANTWELL. Then you will work with us on this larger issue because, as you know, this is not the last disaster we are going to see.

Mr. WALKER. No.

Senator CANTWELL. I think we need to work very hard to make sure this situation where somebody came in to take advantage of the gap that existed between not having this full faith FEMA commitment and the fact that PREPA made a decision then.

Look, we had our constituents gouged during the ENRON crisis. Literally, people were saying you are going to pay 3,000 times the rate. So utilities, who had a must-serve requirement, signed up for those exorbitant rates. It took us years to get out of it. We were going to be the deep pocket in bankruptcy.

I just want to make sure that we are stopping this kind of behavior and that we work across this. We are going to see many more disasters and we should just put the word out, we are not going to be involved in this kind of price gouging by somebody coming in and trying to take advantage of a disaster.

Mr. WALKER. Yes, ma'am.

Senator CANTWELL. Thank you.

The CHAIRMAN. Thank you, Senator Cantwell.

Senator Cassidy.

Senator CASSIDY. I will return for the second panel with PREPA, but my questions all relate to it.

Mr. Walker, do you know how much it will cost to upgrade the Palo Seco?

Let me start over. Senator Franken and I and Senator Murkowski have had this conversation. What could you do to make your grid, Governor, in Puerto Rico more—and by the way, Governors, thank you very much for your hospitality—more resilient? The idea is that you could have a distributed energy system of renewables, but then some sort of fast-acting LNG to come on the back side when the sun does not shine.

I was struck that we went to a Tesla facility and they laid out a nice array, but it had rained every day since they put it out and their battery still had not fully charged so they were running the generator pretty constantly because the battery had not fully charged which showed the limitation of the distributed energy—important, useful, but a little limited and needing backup.

First, can I ask, and this may be a question for PREPA, I know that there is already some LNG on but to what degree can your

current fossil fuel facilities serve as fast-acting backup in case there is a need for electrons immediately on the grid? Governor or Mr. Walker, do you all have that answer?

Mr. ROSSELLÓ NEVARES. You want to?

Senator CASSIDY. I can wait for the next panel to speak.

Mr. ROSSELLÓ NEVARES. Yes.

Senator CASSIDY. Okay.

Do we know how much it would cost to upgrade the Palo Seco facility to make that operational going forward, as opposed to short-term?

Mr. ROSSELLÓ NEVARES. In the long-term or in the short-term?

Senator CASSIDY. In the long-term, I'm sorry, in the long-term.

Mr. ROSSELLÓ NEVARES. Yeah, in the long-term, again, I would pass that question to the PREPA director.

Senator CASSIDY. Sounds great.

Can I ask the progress right now of—Mr. Walker, you showed the nice pictures of those long-term transmission lines going across the mountains. What is the progress of getting those stood up and, where are we—90 percent, 80 percent?

Mr. WALKER. As far as I know, and Ricardo is here so he can correct me, both the 230 lines that cut through the middle of the island are on schedule to be complete by the end of November.

Senator CASSIDY. Got it.

And what percent of the island now has power back?

Mr. ROSSELLÓ NEVARES. Forty-nine percent, today.

Senator CASSIDY. Forty-nine percent. San Juan looked pretty good when we were there, relatively speaking, but other communities less so.

Mr. ROSSELLÓ NEVARES. Right, right. It's been continuously flowing. Of course we've had ups and downs. We've had significant rain events as well that have deterred. But right now, as we stated, we had an objective of getting to 50 percent by mid-November and we're poised to achieve that tomorrow.

Senator CASSIDY. And General, I think it was a conversation with you, I think it was with you. My sense was that the utility level renewables really did not do that well. We saw the busted windmills and the broken arrays, but the distributed energy did okay, the solar panels on tops of the rooftops sort of thing. As I went around, anecdotally, it seemed as if those were intact, both by helicopter and by visioning. Is that a correct impression?

General JACKSON. Senator, that's exactly what I observed in the same flyover. I mean, I think, depending on where the solar panels were located, how they were situated with regard to the wind flow, really determined how well they fared post storm.

Senator CASSIDY. Got ya.

Mr. Walker, you spoke about some of these switching stations being inundated. Was that by rain or by flood?

Mr. WALKER. Both, sir.

Senator CASSIDY. Now I am going to ask something really stupid but when the rain inundated, did it, I assume—I can imagine a flood because it comes in and it fills up from the bottom, but rain comes down from the top and it seems as if a shield would have kept that protected unless the shield blew over—

Mr. WALKER. It wasn't the rain, per se, on the station. It was the accumulation of the rain into these channels that then went into the substations.

Senator CASSIDY. Okay. Was that a design flaw or is that inherent just—in any storm like this you are going to have that inherent problem?

Mr. WALKER. I don't think it was a design flaw. I mean, you know, many of these stations have been there for many, many years.

Senator CASSIDY. So the upgrading and hardening you are speaking of would address this?

Mr. WALKER. Yes, sir.

Senator CASSIDY. Okay.

Mr. WALKER. Specifically.

Senator CASSIDY. Got ya.

Mayor Mapp, I am not ignoring U.S. Virgin Islands. It is just that your problems seemed a little bit more manageable than those of Puerto Rico.

Mr. MAPP. Yes, and I did want to answer your question about the upgrade of the power situation of the Virgin Islands. Totally, the rebuild and the resiliency would be about \$850 million. And I did want to point out that, in the renewables, we had two experiences. Renewables on the hillsides by one vendor, on one island worked perfectly. I mean, that entire field, maybe two percent damaged—

Senator CASSIDY. Which island was that?

Mr. MAPP. —two percent. On another island with a different vendor and the vendor for the district court, completely emaciated.

Senator CASSIDY. Now St. Croix was relatively unaffected, correct?

Mr. MAPP. No, St. Croix suffered tremendously in Hurricane Maria, and St. Thomas, St. John, suffered tremendously in the eyewall of Hurricane Irma.

Senator CASSIDY. Got ya.

Mr. MAPP. So I got it on both sides, but the point I'm trying to make is that part of the issue with these solar panels are clearly how they are installed and who installs them because we had great survivability in 175-mile-an-hour winds across one hillside. And on the same island, just a mile away with a different vendor, completely destroyed St. Thomas, completely destroyed.

Senator CASSIDY. That is intriguing, but I am over time. I yield back. Thank you.

The CHAIRMAN. Thank you, Senator Cassidy.

Senator Heinrich.

Senator HEINRICH. Thank you, Madam Chair. I want to start and recognize Congresswoman Stacey Plaskett from the Virgin Islands, who is joining us as well.

Governor Mapp, I am going to allow you to expand on the same line of questions. Have you been able to determine, at this point, what the characteristics of that survivability were so that we can make sure that in future installations that is incorporated?

Mr. MAPP. Not as yet but this particular entity that is the third-party provider, their panels also, for their private clients, I mean, in huge arrays, also seemed to survive very well. And that just in-

dicates to us that in just putting these people or hiring them, we've got to be careful in terms of how they're installing them and what systems they are using—

Senator HEINRICH. Yes.

Mr. MAPP. —because we had that different experience.

Senator HEINRICH. But it seems like there is probably something in the engineering that we need to—

Mr. MAPP. To look at.

Senator HEINRICH. We need to ascertain what that is and then make sure that any future installations, regardless of vendor, learn those lessons.

Governor Rosselló, I wanted to ask you, as you said the hurricane was an unprecedented catastrophe for Puerto Rico, but given the antiquated nature of the pre-hurricane PREPA grid, it is also an opportunity to create a much better, more modern, more resilient electrical grid for your constituents. What do you want to see in a new grid in terms of generation, transmission, distribution? What would you like that to look like for your constituents?

Mr. ROSSELLÓ NEVARES. Well, I would like it to be an opportunity for us to leapfrog from really 19th century technology to the vanguard of the 20th—21st century.

And what does that look like in Puerto Rico? Well, we have major, you know, several flaws in terms of the design. Aside from having antiquated, you know, power plants, most of our generation is done in the south. Yet, most of the people and most of the consumption is done in the north. So you lose about 12 to 15 percent in the transmission going northward.

It is time. It is an opportunity to rethink that where do we have that generation and make it better, you know, piggybacking on Senator Cassidy's comments, you know, I think it is an opportunity also to leapfrog in renewables. I've envisioned, you know, also leapfrogging to 25 percent renewables in Puerto Rico and recognizing that there are, you know, some mitigation strategies that we need to put in place.

That is why we have worked with the PREPA governing board to have a group of thought leaders that can actually help us in the design and looking forward and specifically looking where this could happen.

Last-mile events in Puerto Rico are very important. It's important to consider the terrain. Puerto Rico is not flat; it's got a mountainous region. And so, you know, we will be very aggressively pursuing that we get to 90, 95 percent of energy consumption and energy generation, but that last mile always takes more time because there are, sort of, remote areas of the island. This is an opportunity to make microgrids in Puerto Rico so that they can be sustained in different areas.

And lastly, adding to this whole component of renewables, I think it is an opportunity to look at this from a bottom-up and a top-down approach. With the collaboration of FEMA, we were able to, for the first time in the STEP program, allow that either a power plant generator be added to the house or a renewable battery pack solar combo be added to those homes in the STEP program.

Now we expect that there will be about 80,000 homes that will be introduced in the STEP program. Think about what that means if half of them decide to go with a renewable battery pack route.

It means that now you have the starting conditions to actually think about things like a virtual power plant in Puerto Rico where you can have smart distribution of the energy and where, you know, some days it might be cloudy in some areas in Puerto Rico; it will be sunny, certainly, in others as well. And that energy can be distributed alongside, you know, of course, a complement of utility-size and industrial-size generation which I envision, Senator, should start transitioning from petroleum-based generation which is costly and, of course, more harmful to a gas, liquid gas and the so forth, generation. So those are, in a nutshell, what we envision the, sort of, future grid of Puerto Rico looking like.

Senator HEINRICH. I am about out of time. I would just add to that, when you have retail electric rates in the mid-20s, that gives an awful lot of room to be able to build that new—

Mr. ROSSELLÓ NEVARES. Right.

Senator HEINRICH. —distributed, clean grid because when you have PPA agreements being signed in the U.S. for \$0.045 a kilowatt-hour, solar plus storage, that really creates some real opportunities here to do that, to do it in a way that serves your constituents without gouging them as well.

Mr. ROSSELLÓ NEVARES. Yeah, I think it is an opportunity based on that margin, based on that differential. I'm sure the Governor as well over here has the same problem that can become an opportunity.

The CHAIRMAN. Thank you, Senator Heinrich.

Senator Gardner.

Senator GARDNER. Thank you, Madam Chair. Thank you to the panelists for being here. Governors, thank you for your leadership, all of you. Mr. Walker, General, thank you very much for your leadership during very challenging times.

Governor Rosselló, good to see you again. Obviously, it was a very meaningful visit to Puerto Rico in the days following the hurricane and to have the opportunity to see what had happened to our fellow Americans is tragic and, of course, this Committee, this Congress is obligated and committed to continued solutions and partnerships.

I apologize for stepping out. I had a Foreign Relations Committee markup and vote, so I may have missed when you discussed this in your opening statements or question and answer sessions.

What should PREPA, Governor Rosselló, look like in five years from a governing structure standpoint? What should it look like in ten years?

Mr. ROSSELLÓ NEVARES. I think we need to transform PREPA. We are, I think everybody is in accordance. I think that pre-storm we had a strategy moving forward. It was a longer-term strategy based on natural obstacles that we would see in terms of switching, you know, some of these power plants and so forth. But now, you know, based on the catastrophe, if we look at this as a window of opportunity to renew and make it better, I think that it's a phenomenal opportunity for the people of Puerto Rico.

What will it look like? I certainly see collaboration with the private sector. What is that structure? It needs to be ironed out. It needs to be fleshed out and developed. I think we need to look at the best interests of the people of Puerto Rico to work for that solution. We have a gold standard P3 structure in Puerto Rico which, I think, can be very powerful, but we are not closed to other alternatives as well.

Senator GARDNER. Just quickly, in your mind is there anything that is off the table when it comes to PREPA and its organization?

Mr. ROSSELLÓ NEVARES. Well, as long—there is nothing, as long as the objective stays the same, which is producing reliable, efficient energy at competitive costs. I think that this should be a cleaner energy paradigm for the people of Puerto Rico. Those are the critical components, what the tactical strategies are, those might be shifting. I spoke a little bit about those at a higher level. But we're certainly committed to getting results for the people of Puerto Rico. We are very much an outcomes-driven administration.

Senator GARDNER. You mentioned a little bit of this in the conversation with Senator Heinrich—the Commonwealth's objective to have 50 percent renewable energy by 2040. Prior to the storm, a little over two percent was derived from renewables.

Is this 50 percent goal still realistic? Is it right? And how can we help get information from National Renewable Energy Laboratories and others to achieve that goal?

Mr. ROSSELLÓ NEVARES. Yup, I think that statement was laid out by another person on another panel.

What we are looking at is the current opportunity to increase to about 20 to 25 percent renewables right now in Puerto Rico.

What that longer-term path, you know, post five year looks like and what, you know, I think depends a lot on, you know, what is the resiliency of the system, how does it work with some of our other needs, industrially and so forth. But certainly, right now, in the short- to mid-term, we see an opportunity to leapfrog in what our renewable growth effort was and get to 20 to 25 percent.

Senator GARDNER. Yes, and thank you.

Governor, obviously, my comments about Puerto Rico stand for the U.S. Virgin Islands as well and what we are going to be doing to make sure that we complete the process.

Thank you for your leadership.

I am going to probably submit questions for the record for you because I need to get to Mr. Walker real quick before I run out of time.

Mr. Walker, when you had your confirmation hearing you talked about understanding disasters, your experiences were a key qualification for the appointment that you were receiving. It seems like we picked the right guy at the right time.

How are these skills being put to use in Puerto Rico from a modernization standpoint? We talked about resources, rapid response and national laboratory participation. How are we moving forward with that and toward actions of resilience in Puerto Rico?

Mr. WALKER. Yes, sir.

I spoke earlier about the opportunities that are being taken advantage of now, focusing on building the resiliency, lowering the cost of electricity and driving economic growth.

One, as the Governor just noted, the STEP program. We converted that over to be able to change out. Instead of putting generators in, we're putting, with the opportunity to put in solar with battery pack recognizing that there's some cost avoidance in maintaining the generator, but also providing some long-term strategies.

In addition to that, we've already identified 200 locations where we're providing generators for hospitals—

Senator GARDNER. Mr. Walker, if I could interrupt real quick, and I apologize.

Mr. WALKER. Yeah.

Senator GARDNER. Maybe we can follow up with this conversation.

Mr. WALKER. Absolutely.

Senator GARDNER. I am about out of time.

The last question I really wanted to get in though was, what do you need from this Committee, specifically, to move forward with your job?

Mr. WALKER. I don't need anything immediately, because all the things that are necessary are actually being done.

So we've mobilized the modernization lab consortium already. I've got people at the Bonneville Power and WAPA working on some very specific projects. We've invoked NOAA and the National Hurricane Service to do wind studies and the SLOSH model studying for some of the resiliency for the substations and the integration of solar farms back on the main lands of Puerto Rico and Virgin Islands. Talking about, Governor Mapp mentioned earlier—some survived, some didn't. So we're doing all that analysis already. I think, you know, as we move forward and if Congress decides to appropriate dollars for permanent work, a number of other things may come out of that based on the planning that the Governors are doing.

Senator GARDNER. Great. I apologize for cutting you off. We will have that conversation.

Mr. WALKER. Yup. Yes, sir.

Senator GARDNER. Thanks.

The CHAIRMAN. Thank you, Senator Gardner.

Senator Franken.

Senator FRANKEN. Thank you, Madam Chair, for holding this Committee hearing, and thank you for leading the delegation down to Puerto Rico and Virgin Islands, and Senator Cassidy came along with us. It is good to see both Governors.

Governor Rosselló, just before I start a series of questions, I had a different take away than Senator Cassidy on the Tesla array at the children's hospital. It seemed to me that actually they were, during the day, operating the hospital, using the solar array which they admitted wasn't big enough because of the space that was there, but that powered the hospital during the day and did fill up the battery and the battery lasted until about midnight until it was down to 20 percent. Was that your understanding?

Mr. ROSSELLÓ NEVARES. Yes, they were. The average load time that they were working, mind you, it was a couple of days of a lot of rain that they were still, obviously, getting some energy, but it was about 20 to 21 hours a day that it was working under the solar panel battery system and then they would have—

Senator FRANKEN. Yes, and then they had generators after that. So two weekends ago we went down to Puerto Rico. Last weekend I visited some Minnesotans from Puerto Rico and who, you know, want this done, the rebuilding done, in a resilient way, as I think everybody on the panel does, in a resilient way that makes humanitarian, environmental and fiscal sense, and the Federal Government must do everything it can to assist.

The importance of resilience here is that we know we are going to see these storms. We have heard this is a once in a 200- to a 1,000-year storm. With climate change that is not going to be the case anymore. We know that with rising sea level you are going to see stronger surges, storm surges. We need to build a resilient grid because these are going to be happening again. And as the climate continues to warm, they are just going to get more powerful. So we really have to build a stronger and more resilient grid.

I want to talk about that a little bit. We have been talking about it, a vision of this, how we do that.

One of the things I want to ask about is the Stafford Act because if we are rebuilding this under the Stafford Act, I was wondering, and anybody's thoughts on this, about the changes in the Stafford Act that are necessary to build back better and is the Administration aware of that? Mr. Walker, any thoughts on that?

Mr. ROSSELLÓ NEVARES. I can comment a little bit on that as well.

I think there's two critical components. Number one, you need to be flexible, right? If you have a state that has a modern system already and it comes down, then the Stafford Act makes sense because you just put something back up that was already modern. But if you are investing a lot of money in something that's going to come down again, it's just not the best use for that money.

And I would also add the component of causation, you know, there is this element of trying to evaluate how much damage was done prior to the storm, because of the storm, or because of maintenance issues.

Well, here's the reality with the storm—

Senator FRANKEN. Okay, I do not have much time and I want to hear from others. Sorry.

Mr. ROSSELLÓ NEVARES. Okay.

Senator FRANKEN. Sorry, Governor.

Mr. MAPP. I would like to comment on that.

Senator FRANKEN. Yes.

Mr. MAPP. One, we should really think about building stronger and better because it prevents future costs for reconstruction. And in communities like the Virgin Islands and Puerto Rico, the matching fund component could be very difficult in terms of its restriction and administrative waivers. We will have a difficult time meeting our match at \$800 or \$900 million to have the reconstruction done really as is, as opposed to even doing mitigation or resiliency. So I'll say those two issues. It should be built back to withstand, meaning resilient and mitigation, and it should really give some additional flexibility on the cost share.

Senator FRANKEN. Okay, before I run out of time, I just want to say, the one thing we did not talk—hasn't been raised. I mean, it has been raised a little bit in terms of we want the power to be

less costly, but my understanding is it was \$0.27 per kilowatt-hour in—

Mr. MAPP. \$0.27 to \$0.29 kilowatt-hour cost in the U.S. Virgin Islands.

Senator FRANKEN. That is outrageous.

Mr. MAPP. Yes.

Senator FRANKEN. And if we want to keep manufacturing there—we have, 10 percent of our pharmaceuticals come from Puerto Rico. We want those to stay there.

One of the things about building this more resilient and sustainable and renewable is that we can drive that cost down and the second largest cost for those pharmaceutical manufacturers is energy.

Mr. MAPP. Yes.

Senator FRANKEN. And so, if we want to keep those businesses there and we want to keep those professionals there who are working on that, we need to build a much, much better grid that is not run on diesel.

Yes, there is definitely a place for LNG for natural gas, but also for the solar—

Mr. MAPP. And wind.

Senator FRANKEN. —that we place and that we make resilient, and for wind.

Thank you.

The CHAIRMAN. Thank you, Senator Franken.

Senator Lee.

Senator LEE. Thank you, Madam Chair.

Thanks to each of you for being here today for this important discussion.

We begin today's hearing with a certain amount of knowledge. We know a lot about what is going on with PREPA. For example, expert opinion testimony has identified a laundry list of concerns with PREPA's management and operation. Let me just list a few: staff have been hired without regard to experience and expertise resulting in the failure of multiyear projects; we have seen widespread theft of power and billing failures; we have seen a lot of outdated infrastructure that has resulted in an abnormally, unacceptably high rate of forced and sometimes prolonged outages; we have generation units that are technologically outdated requiring the reliance on really expensive fuel; and we have procurement practices that have focused on a large number of small vendors with payments going out to over 14,000 individual entities. Corruption and mismanagement have been a problem, and they have plagued both PREPA and WAPA for decades. If we do not start exercising meaningful oversight over every dollar spent on every contract signed in the territories, particularly with regard to these entities, we could be looking at decades of ongoing problems and even more dire financial situation going forward and perhaps decades of DOJ corruption prosecutions.

A lot of people might be tempted to look at this and think that this story somehow starts and ends with Whitefish. Whitefish is, of course, important; it is significant. We have to look at it because it exemplifies what has become all too commonplace in Puerto Rico and in the Virgin Islands, a system in which public graft and eco-

conomic corruption have become all too common. But it doesn't take a biologist to see that a Whitefish does not swim alone. If we put out a trolling net, I bet we will find a school of similar contracts with boatloads of handouts with graft and with greed, all at the expense of hard-working families. And so, I want to look for some ways that we can address this.

Now, Governor Rosselló, I would like to start with you—

Mr. ROSSELLÓ NEVARES. Of course.

Senator LEE. —and make reference to the False Claims Act. The False Claims Act, as you know, was put in place during the Civil War era and it put in place, among other things, some provisions that we refer to as the qui tam provisions, allowing private citizens to bring suit on behalf of the United States in the name of the United States for billing fraud.

So let me ask you, Governor, would you object to an amendment of the federal False Claims Act, the qui tam provisions, and allow things like that to be brought by citizens in such a way that we define the United States to include Puerto Rico. In other words, to define the United States to include territories, including Puerto Rico, such that billing fraud cases could be addressed through the qui tam provisions of the federal False Claims Act?

Mr. ROSSELLÓ NEVARES. Well, it is my view that anything that gets us closer to behavior and treatment of the U.S. citizens of Puerto Rico to the U.S. citizens that live anywhere else in the United States, I propose, you know, I support.

So having not looked in detail at your proposal, what I will say in terms of, sort of, a broad statement is I am, you know, and the vast majority of citizens in Puerto Rico are willing to be full participants as U.S. citizens in all respects.

I do want to say, Senator—

Senator LEE. Including this one? You don't see anything about amending the federal False Claims Act—

Mr. ROSSELLÓ NEVARES. What I would ask is for equal treatment in general. Let's not pick in certain ways. Let's just get equal treatment for the people of Puerto Rico, respond to their claim.

I want to also answer some of the premise, Senator. You know, I've been in office ten months and I ran on a platform of transparency, working, recognizing that there have been decades of reckless behavior, but recognizing as well that there are good, serving people in Puerto Rico and that we had to establish reforms. Our administration has been breaking records in terms of how many reforms we've established, and one of those reforms that we're continuing on working on is a procurement reform.

So that's why when, you know, when the Whitefish situation came about, you know, I took action immediately. Even, first of all, I called for an investigation. I called for an investigation on that, that light should be shed on that matter. Secondly, I installed a procurement compliance officer as well that will actually be working on the concepts of that procurement reform for Puerto Rico as well.

So we are very much committed to transparency. That's why when we're proposing, you know, that Puerto Rico starts rebuilding and in the rebuilding process, we're going to do this transparently. We're going to do this with controls. We're going to be working—

we're working actually with the White House and with OMB for controls and transparency. So we're very much a willing participant in that effort.

Senator LEE. Thank you.

I see my time is expired. I do want to be clear. Fraud against Puerto Rico as a territory of the United States is fraud against the United States and it should be covered by the False Claims Act.

Thank you.

Mr. ROSSELLÓ NEVARES. As well as equal treatment to the U.S. citizens.

The CHAIRMAN. Senator—

Mr. MAPP. Madam Chair? With all due respect, I'd like to ask for just two minutes to respectfully respond—

The CHAIRMAN. Very briefly, Governor.

Mr. MAPP. —to Senator Lee.

I want to be very clear that the Virgin Islands and the Water and Power Authority have gone to great lengths to deal with issues of fraud. We've connected meters technology. We prosecute customers who steal electricity and water. We fire and prosecute employees involved in theft.

We're in our third year where we bid out, each year, services for off-island linemen if there's a disaster so that we don't have to go through that in a hurricane. This year we simply pulled the trigger. We do that for debris removal. We do that for road clearing.

We are making sure that the cost of power in the territory is what it costs to produce power and distribute it. We have no tolerance for graft, none for theft, none for our employees being involved to enrich themselves whether in the Water and Power Authority or in the central government. And you can be assured any of this money that you provide, we will ensure that contracts with vendors have penalty clauses. We require Grade A bonds to protect the interest of the people of the territory and the people of this country.

We need your help for the reconstruction, but we don't want any obstruction on the premise that we're planning to enrich ourselves or to use graft or underhand tables or activity in the procurement process, and you have my personal assurance that that won't happen while I'm sitting in the office of the Governor.

The CHAIRMAN. Thank you, Governor.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you. Thank you, Madam Chair. And thank you, thank you, to the panelists here. Governors, thank you, and thank you for your comments today.

I, too, have constituents in Nevada who have loved ones in Puerto Rico and are just as concerned, not only about Puerto Rico, but the Virgin Islands—

Mr. MAPP. Thank you.

Senator CORTEZ MASTO. —and doing everything we can to stand up the infrastructure and help the people there.

Let me start with something that my colleague, Senator Franken, brought up because this was a concern of mine as well. Because my understanding under the Stafford Act, it is Section 406-E that limits the use of federal disaster relief funds for repairing, restoring, reconstructing or replacing a public facility or pri-

vate, non-profit facility on the basis of the design of the facility as the facility existed immediately before the major disaster.

Now my understanding of that then is that all of the talk that I have heard today, which is important talk about new infrastructure, burying lines, looking at how we add renewable capacity, that is something that is not going to be addressed through the funding through the relief that comes from the Federal Government. Is that correct? And I guess I am asking Mr. Walker and General Jackson. Is that your understanding?

Mr. WALKER. That is my understanding. As I mentioned earlier, we're doing emergency restoration work now. A number of the things that have been mentioned here, if the Congress approves additional appropriations, those would be opportunities that we could further, you know, build into—

Senator CORTEZ MASTO. Are you asking today then? That is what you are asking Congress today, additional appropriations, outside of the Stafford Act, to be able to set up new infrastructure and do just what we have heard today because we know another hurricane is going to come through or some other disaster, I think it is just the way the climate is today. Is that the ask today from the Governors?

Mr. ROSSELLÓ NEVARES. To amend that—could you repeat the question, Senator?

Senator CORTEZ MASTO. Sure.

So, the Stafford Act limits the amount of money—

Mr. ROSSELLÓ NEVARES. Yup.

Senator CORTEZ MASTO. —that you are getting from the Federal Government for disaster relief to repair and reconstruct.

Mr. ROSSELLÓ NEVARES. Yup.

Senator CORTEZ MASTO. It is not for new construction or new types of renewable energy or burying lines. Are you coming today for additional funds, outside of the Stafford Act, outside of disaster relief? Is that what I am hearing today?

Mr. MAPP. Yes. Yes, because under Stafford if a system connected to the power generation isn't damaged it can't be touched. If it's cost-effective, it can be mitigated, but the whole power system is all connected. And so, if we want to change to more efficient renewables—wind, solar—if the generation system hasn't been damaged, then we can have an exclusion. So we will need changes in the language to permit that.

Mr. ROSSELLÓ NEVARES. Yes, we are. We recognize what the limitations of FEMA funding are within this, so we're asking, you know, for additional funding so that we can get that flexibility as well and actually rebuild better.

I mean, again, it is—you can discuss whether it's a good idea or not on the context of the merit of the energy and the structure, but it is really just a bad idea to rebuild a system that is frail, over again, spend good taxpayer money on that because you're going to have to do it once over again.

Senator CORTEZ MASTO. Governor, thank you.

And so, my time is limited. Let me just say, everything I have heard about the concerns with the energy grid and setting it up and the infrastructure and the needs there, I echo with my colleagues.

But let me jump to healthcare because this is an issue that I have heard the Governors talk about as well and can you address this? Are we doing everything we can to address the medical needs and healthcare needs, if we have hospitals that have been destroyed, if we have healthcare facilities that have been destroyed? What additionally do you need from us and are you happy with the federal response when it comes to providing that healthcare? And I guess, Governor Mapp, let's start with you.

Mr. MAPP. Yes, we need changes in the policies and the law. For example, the matching, the match made for Medicaid is an arbitrary 45 percent to the territory. The fee-basing schedules and the services covered under Medicare and Medicaid are just stuck in the statute because it's a territory.

Just as a simple example, I have Medicaid patients with cancer. If I have a treatment for that patient and that one treatment costs \$13,000, under the statute the CMS only allows a \$1,000 reimbursement for that patient. That means the central government is in at 12 grand.

And so, the basing of the fee schedules for the hospitals and application for renewal, complete, accepted by CMS over five years old, we're back on a 1989 fee schedule for the hospitals.

So folks just leave the territory and go to the mainland for services, but those who cannot afford it are severely impacted and then the Central Treasury of the Government of the Virgin Islands has to subsidize that care and airlift or transport patients to the U.S. mainland and pay for their services. So we want to work with the Committee to make adjustments. We want to get the Medicaid match rate adjusted. You gave us \$300 million eight years ago to spend over ten years, but \$226 million of it is unspent because we can't afford to put the dollars on the table to make the 45 percent Medicaid match. So we're saying waive it for three years. We could spend it out of that pool. Remove the fiscal cliff. I have more people requiring Medicaid because of the disaster, and we could cover it out of that allotted pool.

Mr. ROSSELLÓ NEVARES. I'll be brief because I share many of the concerns.

Affordable Care Act gave Puerto Rico a block grant for a particular amount of time because we're capped. We're capped at \$350 million. That, sort of, gave the illusion for a couple of years that we were spending about \$1.6, \$1.65 billion.

What we're asking right now, that money ends. So, aside from having the limitations and the catastrophe of the storm, we're now heading on a Medicaid cliff as well that's dropping us off from an effective \$1.6 billion to \$350 million.

What are we asking for? We're asking to consider for a five-year path, at least for a five-year path, to increase that cap number to \$1.6 billion for two years to have it 100 percent cost-sharing for Puerto Rico.

Senator CORTEZ MASTO. Thank you.

Mr. MAPP. And Senator, if I can add, in Hurricane Katrina the Congress provided these waivers on the match and the additional support on the Medicaid and Medicare side.

Senator CORTEZ MASTO. Great. Thank you. And thank you for letting me go over my time, Madam Chair.

The CHAIRMAN. Thank you, Senator Cortez Masto.

Senator CORTEZ MASTO. I appreciate it.

The CHAIRMAN. Senator Hirono.

Senator HIRONO. Thank you, Madam Chair.

Governor Rosselló, you recently canceled the \$300 million contract with Whitefish.

Mr. ROSSELLÓ NEVARES. Yes.

Senator HIRONO. And you called for an investigation. Is the investigation still going on?

Mr. ROSSELLÓ NEVARES. It is still ongoing. At least I called for two investigations. I called for one for the local comptroller in Puerto Rico, and I called for the IG at DHS to do the same. And I called essentially upon all of the entities that can investigate to do so. Listen, we are committed to transparency, and we're committed to finding out the truth in this effort.

Senator HIRONO. I take it if the investigation discovers any wrongdoing there will be prosecutions or appropriate actions to follow.

Mr. ROSSELLÓ NEVARES. Of course.

Senator HIRONO. Thank you.

Secretary Walker, you did indicate that you stand by PREPA's ability to restore the grid, but in light of the ongoing investigation of Whitefish, as the Governor just mentioned, perhaps the DOE should provide more oversight than what you had indicated.

I also want to note that I think it is a good thing that you are working with our national labs to come up with a more resilient grid and doing all the kind of modernization efforts that should occur for Puerto Rico, but a state like Hawaii which is also an island state. So the kind of collaboration that you are doing and the developments that are occurring as a result of what has happened to Puerto Rico would have, I hope, an applicability to the Virgin Islands, to Hawaii, and perhaps even Alaska, another non-contiguous state. Do you have those kinds of recognitions in mind as you proceed?

Mr. WALKER. Absolutely, Senator.

That's the baseline where we started it. So Hawaii has done quite a bit of work in resiliency and the integration of renewables. I actually have the written document with that and we've pulled on some of the work that DOE actually did in conjunction with Hawaii, HECO, when HECO was actually putting that system together.

I, myself, have been to Hawaii several times working as an SME on the underground secondary networks and also taking a look at some of the integration of renewables as it relates to their overall system. So between the work that has been done previously in the labs, the work that has been done by HECO, specifically. In fact, I had a meeting at the White House yesterday where the Hawaii projects were actually, you know, we were going through the reports and the documents with specific regard to how to integrate things that were done that were successful and those things that weren't—

Senator HIRONO. Yes.

Mr. WALKER. —with the Virgin Islands and Puerto Rico.

Senator HIRONO. I thank you for that because I know that Hawaii has some pretty significant vulnerability should a disaster of the magnitude of Maria hit Oahu, for example.

Mr. WALKER. Right.

Senator HIRONO. Whatever the applicability is with Puerto Rico, I think that that—

Mr. WALKER. Yup.

Senator HIRONO. I'm very interested in how we can be, how that can help Hawaii.

Governor Rosselló, we know that the Stafford Act has some limitations on the funding that you can get. Now I do have a concern though that were we to lift that limitation there might be the unintended consequence of our various power authorities not doing their jobs to maintain, modernize and do those maintenance of effort kinds of things. So I think that it is really important that we provide you with the opportunity to come before us and ask for additional funds, in addition to what is provided in the Stafford Act.

And I am wondering, based on your estimates, how much are you asking Congress to fund in terms of the kind of modernization, resilience, et cetera, that you would like to see in Puerto Rico?

Mr. ROSSELLÓ NEVARES. It's about \$17 billion in damage estimation.

Senator HIRONO. One year?

Mr. ROSSELLÓ NEVARES. No, for the bulk of the process.

Senator HIRONO. \$17 billion?

Mr. ROSSELLÓ NEVARES. Yes, that's right.

Senator HIRONO. Well I know that you hope that Congress will authorize that, and do you expect that authorization or that funding to occur in one year or is it over a period of time?

Mr. ROSSELLÓ NEVARES. It would be over a period of time, of course. Again, the effort is, this is our initial damage assessment. I want to state that we worked on this with third parties so that you could get third party validation of how robust and deep the damage was. We're also including and separating, as I know Governor Mapp did as well, what it takes to put it back together and what it takes for it to be resilient toward the future and ahead.

Senator HIRONO. Do you know if the Trump Administration is prepared to support your funding request of \$17 billion?

Mr. ROSSELLÓ NEVARES. Well, what we're asking over here is very simple. You know, Congress has to make a decision on how they want to act upon the different disasters that have occurred across our nation. What we're asking is equal treatment. Equal treatment.

Texas submitted their, you know, their damage assessment as well. I'm sure that the other jurisdictions that have had damages will do so as well.

I think that you are empowered to put the guidelines of how that is going to work. It is my job as Governor to make sure that you have the best information available so that you can make those decisions.

What I cannot accept, what I cannot accept, is unequal treatment to the U.S. citizens in Puerto Rico. I'm sure the Governor would expect the same as well.

So we are doing the damage assessment, recognizing that this has been a huge catastrophe. I mean, had this storm gone through any other state, no matter how, you know, how modern the system was, it would have been catastrophic. And this is what we want to say. We don't want this conversation to be diluted by just saying well, some of the parts were old and so forth. This is a, you know, this is a top ten storm in the history of measured storms in the Atlantic. It passed right through the whole of Puerto Rico leaving no place unturned. It was a slow storm, slower than the average storms. It was about eight to nine miles per hour so the devastation was significant.

It is my job to make sure you have all of the information and then my expectation is that we get treated equally to all the U.S. citizens in all of the other states.

Senator HIRONO. Thank you.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Hirono.

Senator Sanders.

Senator SANDERS. Thank you, Madam Chair, for holding the hearing, and let me thank all of our panelists for their hard work on these very difficult circumstances.

Madam Chair, today's hearing on disaster relief is enormously important, but this Committee has overall responsibility for the territories and the work we have to do goes, in fact, above and beyond the immediate disasters.

Let me start off and please, everybody forgive me, the short amounts of time, so I will be curt and asking you to be brief.

But let me ask, Mr. Walker and General Jackson, given the fact that almost two months after the hurricanes some 50 percent of the people in Puerto Rico are continuing not to have electricity and many people lack drinking water. In the Virgin Islands, as I understand it, it is 31 percent that now have electricity. In St. Croix, I think the number is something like 16 percent that have electricity.

We are the wealthiest, most powerful country in the history of the world. Do we really think that we are doing a great job when half the people in Puerto Rico and 80 percent of the people in the Virgin Islands still don't have electricity two months after the storm? Mr. Walker? And I understand the difficulty. This is tough terrain and all that. That is islands, but do we really think we are doing a great job?

Mr. WALKER. I think there is a, you know, a team of people between the Federal Government and PREPA and the Puerto Rican Government, as well as Virgin Islands, that are working and working through the challenges associated with this. I believe, under the leadership of the Governor and the leadership of the FEMA FCO there, they are mobilizing.

Senator SANDERS. No, I got all that. I don't mean to be harsh here, but we are, we are the most powerful nation on Earth. Should two months after these disasters half the people in Puerto Rico and some 70, 80 percent of the people in the Virgin Islands, still not have electricity? General Jackson?

General JACKSON. Senator, I think—we got the mission assignment on the 30th of September. This is not a mission that the Corps normally does.

So as I mentioned in my opening remarks, we don't have pre-awarded contracts, and we have to go through a federal acquisition process to allow us to get the right capability to the island and that's what we've done.

We've gotten, I think, we've moved—

Senator SANDERS. It's not a criticism. I understand you've got a bureaucracy you've got to deal with, you've got protocol you've got to deal with. It's tough stuff.

But all that I am saying, if somebody from Mars was looking down. This is the United States of America, two months later, people on these islands that are still living in misery. I think, as a nation, we could have done better, and we must do better.

Number two. Let me say to the Chair, I agree with much of her initial remarks, except she did not mention two words and that is climate change.

My guess is that who knows what tomorrow will bring, but there is every reason to believe that your islands may suffer even worse disasters in the future. I think we are in agreement that it is insane to rebuild the way it was. We all agree with that.

Let me ask Governor Mapp, you mentioned that some of the solar installations, in fact, worked quite well. If you had your druthers and you had the freedom to move the way you wanted to, what percentage of the Virgin Islands would be sustainable, you tell me, within 10 weeks?

Mr. MAPP. We sought a target of 30 percent by 2025 and before the hurricanes hit, we had one-third of that installed. So we want to put 21 more megs in wind and additional solar and then smaller power-generating units with microgrids on the three islands.

Senator SANDERS. Do you think that the future, would it be unrealistic to say that in 20 years you could be 100 percent sustainable?

Mr. MAPP. I will not say that's unrealistic. I'm hopeful I'll just live another 30, and I'm hopeful by then we're at 40 percent or 50 percent renewable.

Senator SANDERS. Okay.

Right now—and Governor, thank you so much for your hospitality. I know we had a very brief roadside meeting there for five minutes. And I wanted to thank Mayor Yulin Cruz for her hospitality when I was in San Juan as well.

Right now, and I don't understand this. You are the Isla del Sol, right?

Mr. ROSSELLÓ NEVARES. Yes.

Senator SANDERS. Translated that is the Island of the Sun, but right now in Puerto Rico, as I understand it, about two percent of your electricity—

Mr. ROSSELLÓ NEVARES. Yes.

Senator SANDERS. —is generated by solar.

Mr. ROSSELLÓ NEVARES. By renewables.

Senator SANDERS. By renewables in general.

How does that happen? And you talk about, I think, 20 percent being solar. That seems to be a pretty conservative goal.

Mr. ROSSELLÓ NEVARES. Yup. In the short-term, we talk about 20 to 25 percent in the immediate aftermath of rebuilding after the storm.

But certainly, Senator, I am very much committed to renewables in Puerto Rico. I just think that a lot of the effort, you know, we've been making with some of the stakeholders is challenging them to prove that their technologies can be scalable to a size of Puerto Rico. If it were up to me, I am, you know, 100 percent backing renewables in Puerto Rico as much as I can get.

Senator SANDERS. Okay.

Madam Chair, let me just conclude by saying this. Today, appropriately, we are dealing with the immediate crisis that we have, but please let us not forget—I am more familiar with Puerto Rico's problems than the Virgin Islands, although they may be similar. You have in Puerto Rico a poverty rate of 46 percent. Unemployment rate is twice the national average. Healthcare statistics, we had a brief discussion on that, is a disaster in Puerto Rico. High school graduation rates in Puerto Rico and the Virgin Islands are near the bottom of the United States.

But perhaps, and this is an issue we will have to discuss, and that is that Puerto Rico is struggling with an unsustainable \$75 billion debt and \$49 billion in pension obligations. More than one-third of that debt is held by Wall Street vulture funds that are getting interest rates of up to 34 percent on tax-exempt bonds they purchased for as little as \$0.29 on the \$1.00.

Is that correct, Governor?

Mr. ROSSELLÓ NEVARES. Yup.

Senator SANDERS. Okay.

This is an issue that this Committee must deal with.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Sanders.

Senator Manchin.

Senator MANCHIN. Thank you, Madam Chairman, and thank both, well, thank all of you all for being here. My heart goes out to all of you. I understand how tough this is and everything.

Mr. Rosselló, I would like to briefly touch on the now-canceled contract, and I want to go into it because, coming from the State of West Virginia, we do an awful lot of this type of work.

Whitefish Energy, the small company consisting of a handful of employees from Montana, we understand, was awarded a \$300-million post-storm contract.

I will go through a few things. This is the New York Times, and I think I would like to have that, with unanimous consent, be entered into the record, that article, Madam Chair?

The CHAIRMAN. It will be included.

[The information referred to follows:]

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The Lineman Got \$63 an Hour. The Utility Was Billed \$319 an Hour.

By FRANCES ROBLES NOV. 12, 2017

SAN JUAN — The small energy outfit from Montana that won a \$300 million contract to help rebuild Puerto Rico's tattered power grid had few employees of its own, so it did what the Puerto Rican authorities could have done: It turned to Florida for workers.

For their trouble, the six electrical workers from Kissimmee are earning \$42 an hour, plus overtime. The senior power linemen from Lakeland are earning \$63 an hour working in Puerto Rico, the Florida utility said. Their 40 co-workers from Jacksonville, also linemen, are making up to \$100 earning double time, public records show.

But the Montana company that hired the workers, Whitefish Energy Holdings, had a contract that allowed it to bill the Puerto Rican public power company, known as Prepa, \$319 an hour for linemen, a rate that industry experts said was far above the norm even for emergency work — and almost 17 times the average salary of their counterparts in Puerto Rico.

A spokesman for Whitefish, Chris Chiames, defended the costs, saying that “simply looking at the rate differential does not take into account Whitefish’s overhead costs,” which were built into the rate.

“We have to pay a premium to entice the labor to come to Puerto Rico to work,” Mr. Chiames said. Many workers are paid overtime for all the time they work. Overtime pay varies by type of worker, union membership, mainland utility company and many other factors.

The markup is among the reasons that federal officials are scrutinizing all other contracts involving Puerto Rico. The control board that oversees Puerto Rico's finances is seeking more authority over the billions headed the island's way, including the power to review big contracts and randomly inspect smaller ones.

Two weeks after Prepa abruptly withdrew the contract from Whitefish following strong criticism by federal and congressional officials of the company's expected ability to perform the work needed, more questions are being raised about the deal, including how much it will actually cost. Whitefish will keep repairing power lines until Nov. 30.

As the Trump administration prepares to spend billions of dollars on rebuilding Puerto Rico's infrastructure, the Whitefish deal — hatched in a dim, powerless room six days after a storm packing winds of nearly 150 miles an hour knocked down thousands of power poles and lines — has served as a cautionary note about the potential for soaring costs that are common after disasters.

Questions are already being raised about a second contract that Prepa signed, this one with an Oklahoma company, Cobra, which was the highest bidder, required a \$15 million down payment and — like the doomed Whitefish agreement — included a clause that said the deal could not be audited.

At issue is managing what can be conflicting dynamics — the need to get essential work done quickly and the potential for it to be done at exorbitant prices. With roads and bridges wiped out, schools across the island damaged and health care needs expected to soar, the repair contracts are just two of many that are expected to easily cost billions of dollars.

“We don't do so well with emergency funding in this country,” said Leslie Paige, with Citizens Against Government Waste, a watchdog group. “We often do not see the final bill for these kinds of mistakes until after the fact, and the money is already gone.”

Representative Rob Bishop, a Utah Republican who is chairman of the House Natural Resources Committee that is investigating the contract, said Whitefish served as a red flag. “Based on Whitefish, all of the contracts need to be looked at, especially from the beginning until there is a process we are comfortable with,” he said.

The situation in Puerto Rico is dire: According to the research firm Rhodium Group, this is the largest blackout in United States history. After Hurricane Maria

struck Puerto Rico on Sept. 20, power was knocked out at every home and business. On Sunday, 54 days later, the grid was working at 47.8 percent of capacity.

The Whitefish case has already influenced Puerto Rico's recovery: President Trump agreed to increase aid to the island — but only if the Puerto Rican government does a better job of estimating costs. "We have a lot of work to do when it comes to grant-monitoring at all levels of government," Brock Long, director of the Federal Emergency Management Agency, told Congress recently, vowing not to commit "one dollar" to the Whitefish deal.

The Whitefish contract has been particularly problematic.

The Army Corps of Engineers, which is overseeing power restoration in Puerto Rico, did not hire Whitefish because its prices were more than double what the agency considered reasonable, according to the Senate Committee on Homeland Security and Governmental Affairs.

"They are paying \$3 million for hotels and \$80 a day each for food," said Johnny Rodríguez Ortiz, president of the organization of retired electrical workers in Puerto Rico. "I just had lunch with my wife, and it cost me \$14."

Prepa agreed to pay Whitefish three times the going rate for aviation fuel, and about double what a helicopter specially equipped for transmission line construction should cost, according to industry insiders and people with knowledge of the Whitefish contract. The company is also billing about \$4,000 an hour to rent a helicopter; companies that specialize in transmission line construction said that price is more than double what they charge.

At least four congressional committees are investigating. The Office of Inspector General for the Department of Homeland Security has also begun a review of the Whitefish contract, as has the F.B.I., according to media reports.

Whitefish's chief executive, Andy Techmanski, has called the investigations a "witch hunt." The company said on Saturday that it had completed repair of more than 150 miles of transmission and distribution power lines.

To explain the differences in salaries paid to the workers and the rates Prepa was charged, Mr. Chiames, said in an email, "The rates in the contract were fairly negotiated

between Prepa and the company and were based on the mutual knowledge about the difficulty of the work and associated risks.”

He said the company was making a “single digit” profit on the Florida workers because costs in Puerto Rico were higher.

Still the costs came as a surprise to the public utilities in Florida that had sent workers.

“We know what we are invoicing is our straight costs,” said Chris M. Gent, vice president for communications at the Kissimmee Utility Authority.

Normally, when utilities help each other recover from disaster under mutual aid agreements, “nobody is marking anything up,” Mr. Gent said.

“Linemen cost \$60, \$70, maybe \$100 an hour,” said Luis A. Aviles, a former chairman at the Puerto Rico Electric Power Authority under the previous administration, and an energy law professor at the University of Puerto Rico. “Let’s say you put an overage on it, because it’s a special emergency circumstance. But \$300 an hour? No way.”

Jacksonville Electric Authority said it had billed Whitefish for additional overhead to cover things like administrative costs and insurance, bringing the bill to about half what Whitefish was charging Prepa. A spokeswoman for Jacksonville Electric said she was not concerned about the markup because Whitefish was also handling food and lodging. (However, Whitefish is also charging Prepa another \$412 a day per worker for food and lodging.)

Lakeland said it was charging Whitefish only for labor and was unaware of how much the Puerto Rican government was paying. Most of Whitefish’s subcontractors are from private companies, and officials with knowledge of the contract said that those workers were receiving more than the Florida linemen, but that there was still a significant gap between what the companies were billing Whitefish and what Whitefish was billing Prepa.

Jeffrey Bartel, a former senior executive at Florida Power & Light, the third-largest utility in the United States, said markups were routine in subcontracted work, as was charging double time for emergency work.

But “even at double time, the labor cost figures are empirically questionable,” Mr. Bartel said after reviewing the contract at the request of The New York Times. “Possibly most egregious is that this all takes place with a dire and desperate circumstance where people’s lives are at immediate danger without power, and, therefore, there is unequal bargaining position by Puerto Rico, which allows for the possibility of price gouging.”

In Puerto Rico, the reaction was more harsh and skeptical. Mr. Rodríguez, the former utility worker, says out loud what many critics say privately: that markups like those have been used in the past to pay kickbacks to corrupt officials.

Prepa has long dodged accusations that it created a slush fund by buying low-grade sludge and billing customers for high-grade oil.

Prepa would not answer specific questions or provide invoices because the matter is under investigation and the record no longer public. The company’s chief executive, Ricardo L. Ramos, said he had agreed to the contract because Whitefish did not demand money upfront, and decided to cancel it only because of the negative publicity.

“If people have the perception that there was an act of corruption where some benefited and became millionaires at the expense of the people of Puerto Rico, while they’re all going through a humanitarian crisis, look, that’s a huge offense,” he said at a news conference.

He acknowledged that Prepa could have contracted the Florida companies directly, but that it would then have had to feed and house the outside workers, which he said was more than the company could manage. He recently fired the company’s lawyer and procurement officer, and Prepa is now entering into its own mutual aid agreements with New York and Florida utilities.

Mr. Ramos and the Whitefish chief, Mr. Techmanski, deny any improprieties. Mr. Techmanski said he was the only one to rush to Puerto Rico under precarious conditions to get the lights back on. He told NBC News that he made contact with Prepa through LinkedIn in early September just before Hurricane Irma, an assertion Mr. Bartel said was so absurd that, if true, raised even more concerns about the due diligence that went into awarding the contract.

At a recent news conference, Mr. Ramos explained that Whitefish’s prices for subcontractors were high because initially it had to cover things like food and lodging.

His explanation was unclear, though, because the contract has separate line items for such expenses.

He said that some of the more contentious clauses, like the one that suggested FEMA had reviewed and approved the deal, were included by accident, in what he described as “an oops.”

Deborah Acosta contributed reporting from New York.

A version of this article appears in print on November 13, 2017, on Page A12 of the New York edition with the headline: Linemen Got \$63 an Hour. The Utility Was Billed \$319.

Senator MANCHIN. Okay.

Under the terms of the contract they charged \$319 an hour for linemen. That is a rate 17 times higher than the national average. I understand the emergency situation. Things are stressful. I understand all that and also the cost on the island. But, for example, Whitefish is billing \$4,000 an hour to rent a helicopter. That is twice the rate, you know, of an ongoing. They are charging \$80 per diem for daily meals which is more than double \$30 that even the major league baseball players get. And they charged \$332 for hotel rooms and workers.

The thing that I look at and see in this whole thing, I understand how this could have happened. It happened so quickly. But then I found out that the request for the mutual assistance which goes out immediately, usually when you are going to get hit and you know you have a high probability of getting hit you ask for this assistance, either from the American Public Power Association (APPA), or Edison Electric Institute (EEI). But Governor Rosselló, I think your Mr. Rodriguez waited six weeks before he made that request?

Mr. ROSSELLÓ NEVARES. So, there's—thank you for the opportunity.

Senator MANCHIN. Sure.

Mr. ROSSELLÓ NEVARES. First of all, let me stress that I immediately canceled the——

Senator MANCHIN. Sure, I understand.

Mr. ROSSELLÓ NEVARES. —or called for the cancellation of the Whitefish contract, even without the results of the investigation, recognizing that it was in the best interest of the people of Puerto Rico.

In terms of the mutual aid, you have to put this into context of where we were at that juncture. A lot of the mutual aid was going to other areas.

Senator MANCHIN. Sure.

Mr. ROSSELLÓ NEVARES. Virgin Islands, Florida, Harvey. And within the span that the RFI was established, it was to attend to the considerations of the storm after, in the aftermath after Irma, not after Maria.

Once that process went through, we had alternatives with the Corps. We understood that they were going to be aggressive so that we can engage with them. And once we saw that that wasn't going to be enough, there was a solicitation in terms of that.

Let me state again, that I am a willing participant in this effort that investigations need to go on. That whatever comes out of them, we will take forceful action.

Senator MANCHIN. I am not accusing. I am really not here accusing. I am just saying—a disaster plan.

In my little State of West Virginia, when I was Governor, we had disaster plans, what was going to be subjected to, obviously, subjected to flooding.

Mr. ROSSELLÓ NEVARES. Yup.

Senator MANCHIN. I had a very challenging state that topographically, you know, when you look at our geographical location on the hills and mountains, but we were ready and prepared. We had to be prepared.

It seems like you would have reached out, or your people would have reached out, to the American Public Power Association and Edison, being prepared because you know that is the first thing that is going to go down. That is all I am saying on that.

And I would wish, it just doesn't—this contract went out quicker than the request for help from the professionals that could have brought you a whole different rate structure. That is all I am saying, sir.

Mr. ROSSELLÓ NEVARES. Senator, the CEO of the power authority will be in this panel—

Senator MANCHIN. Sure.

Mr. ROSSELLÓ NEVARES. —and he will be available to—

Senator MANCHIN. Good, we will get to that.

Governor Mapp, you and I have spoken before and everything, and I have a fondness for all the islands in my heart.

With that being said, I think one of the members before, one of my colleagues said that you cannot continue to do the same thing over and over. And I saw in your testimony and your statement at first that you are going to be burying some lines, you are going to be doing things differently.

Right now, your price is about \$0.32 per kilowatt-hour. We know it is about three times higher than the national average. We know still petroleum is a great—you are relying a great deal on petroleum and I know you are trying to reduce that.

I have been there and we have tried to work through some things before, and it was always a challenge because the local people would reject different types of things that you felt needed to be done. With this disaster that we have had throughout all three of the islands of your Virgin Island chain, are people more willing to understand we have to make changes to prepare for the next time we get hit?

Mr. MAPP. Thank you for that question, Senator Manchin, and the answer is yes. And this is why we are pushing for, we were before the storm—

Senator MANCHIN. Yes.

Mr. MAPP. —but with more aggression, we're pushing for more renewables. We want to work with U.S. DOE in terms of how do we access liquid natural gas. We have made a decision and advised the community, we're going to not put all of the generation systems in the same location. We want to have microgrids. We—some of that property that we received in our settlement with Hess Oil, we want to use that for wind generation.

So the short answer is there's a lot of opportunity both from myself, my delegate, my legislature, to make the tough decisions to strengthen building codes, to change the way we produce and deliver power, to bring the price down and to tighten our procurement system.

Senator MANCHIN. Yes. My time is running out.

The expertise that we should be able, you know from the mainland, to give you with some of the things that we have changed in technologies and things of this sort, but I know that sometimes you run into opposition because of the structure of how you all run your grid systems or how you run your utilities. If we are able to break

through that this time here, to really, to get to where we can give you a more—

Mr. MAPP. Well Senator, when 80 percent of the people, on average, can't turn on their lights—

Senator MANCHIN. Right.

Mr. MAPP. —they're willing to do anything to get their lights back on. And so, that's why we want to use the opportunity to make those changes.

Senator MANCHIN. We definitely want to help.

Mr. MAPP. Thank you.

Senator MANCHIN. Thank you.

The CHAIRMAN. Thank you, Senator Manchin.

Senator King.

Senator KING. Thank you, Madam Chair.

I want to join Senator Heinrich in welcoming Delegate Plaskett, who I know is a strong advocate for her constituents in the islands.

I also want to welcome the two Governors. As a former governor myself, I always feel the discussion around here is elevated substantially when we have Governors on the panel.

Governor Mapp, I apologize, I was at another hearing. I didn't hear your initial statement. Are the Virgin Islands on track to get the aid that they need? Is it being a package with Puerto Rico? What is the status of the federal aid?

Mr. MAPP. The support from the federal system has really been good for the Virgin Islands in terms of how we respond to life issues. We are working through FEMA on the shelter-in-place program. We're having some difficulty there. The feds are putting more money in tarpaulins in terms of \$25,000 per unit but want to restrict the amount for permanent repair at \$20,000. So we're trying to work that out.

Our presence here and your help, Senator, is essential in terms of setting aside dollars and changes in the statute that permit more than simply "rebuild as is."

Senator KING. I will get to that in a minute.

But basically, it is on track, but there is going to be a damage assessment and a request for aid, just as we have done for Texas and Florida.

Mr. MAPP. Yes.

Senator KING. Thank you.

I have a couple of technical questions. I was fascinated by your testimony that some of the solar farms survived and others did not, which indicates that solar is survivable—

Mr. MAPP. Yes.

Senator KING. —if it is properly built.

I notice in the photo of the wind turbines, it appears that the damage is broken blades. Has there been an assessment of whether all the towers withstood the storm? The turbines are all there; are broken blades the extent of the damage?

Mr. MAPP. That would be a question I defer to Governor Rosselló. He has the wind towers.

Senator KING. And tell me about wind and were there wind farms that survived?

Mr. ROSSELLÓ NEVARES. Yup. I mean, there was devastation across some of the wind farms that we had. You would see the

blades come out. Some of the towers went out as well. And similar to what the Governor saw in the Virgin Islands, you know, we saw severe devastation such as here in Humacao, but we saw other areas that were practically——

Senator KING. But the question I am getting at is—properly designed renewables are still a feasible option for the islands?

Mr. ROSSELLÓ NEVARES. Yeah, of course.

Senator KING. Even given the hurricane risk?

Mr. ROSSELLÓ NEVARES. Of course.

Senator KING. How about rooftop solar? How did that do?

Mr. ROSSELLÓ NEVARES. Yeah, it did much better in Puerto Rico. Again, there's some mitigation strategies about putting, sort of, a——

Mr. MAPP. Similarly in the Virgin Islands as well.

Mr. ROSSELLÓ NEVARES. ——yeah, walls in the side of it and those turned out to be, to survive very well, and considering this was a Cat 5, a slow Cat 5.

Senator KING. And rooftop did well in the——

Mr. MAPP. Yes, and in fact, Senator, because of that, in terms of the reconstruction on the schools, we are going to work with the Water and Power Authority and we're going to use the roofs on the schools to create microgrids for the schools and put solar panels right on them.

Senator KING. Well, that gets to my next question—I think we are all agreed here that it does not make sense to rebuild a 1980s grid——

Mr. MAPP. As is.

Senator KING. ——when we have an opportunity, when we have renewables, the economics of renewables are so much better. Who makes that decision? Who is going to design the new grid?

Mr. MAPP. You do, Senator. You do, by changing language in Stafford.

Senator KING. I never knew I had that power.

[Laughter.]

Mr. MAPP. Yes, sir, you do.

Senator KING. I need to——

Mr. MAPP. You do, by making the changes in the Stafford Act that permits it or in the appropriation and to set aside for the monies for the Virgin Islands and Puerto Rico, if you authorize it.

Senator KING. That is the second time you have anticipated my question.

Clearly, we need to amend Stafford so that it is not simply rebuild what was there before.

Mr. ROSSELLÓ NEVARES. Right.

Mr. MAPP. Yes, sir.

Senator KING. And I think there are several bills being considered on that line and that is something we need to do, but I will get back to it.

Even if Stafford is amended, assume for a moment, who is going to make the decision? Is it the power authority of the islands and Puerto Rico?

Mr. MAPP. Once the authority is in place and the dollars are in place, then we will work with FEMA, we'll work with the Army Corps of Engineers, and in the case of HUD, we will work with

them through the process that every other state goes through in setting up what the new profile should be.

The U.S. DOE and the Virgin Islands have been great partners in the last five years. That's how we know how renewables can work, the test and all of that. So we'll work with the federal agencies to make the right decisions.

Senator KING. Final technical question for both islands, both sets of islands—the transmission lines went down, I take it?

Mr. ROSSELLÓ NEVARES. Yup.

Mr. MAPP. Yes.

Senator KING. So that is a vulnerability as well.

Mr. ROSSELLÓ NEVARES. Yes.

Senator KING. And that gets back to the idea of distributed microgrids.

Mr. ROSSELLÓ NEVARES. Right.

Senator KING. So you are not so dependent upon major——

Mr. MAPP. And underground.

Senator KING. ——major transmission and underground.

Mr. ROSSELLÓ NEVARES. Yeah, it certainly does, and in Puerto Rico, as we said, most of the generation is done in the south. Most of the consumption is in the north, so you get loss in efficiency as well. It is an opportunity to, sort of, flip that script.

Senator KING. And I hope—go ahead.

Mr. MAPP. And just to add that in the U.S. Virgin Islands this is the fifth time that the United States Government is paying to rebuild the power distribution system on an aerial basis. And this one is \$300+ million just on the reconstruction.

So that putting it underground in the main corridors, the second corridors, and having the microgrids and some aerial in the neighborhoods make the system a lot more resilient that could withstand these 185-mile-an-hour storms.

Senator KING. Well, I appreciate your testimony and look forward to working with you.

Mr. MAPP. Thank you.

Senator KING. I think this is an extraordinary opportunity for our country——

Mr. ROSSELLÓ NEVARES. Yup.

Senator KING. ——to see what a modern grid can and should look like.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator King.

Colleagues, we have a second panel that we need to get to. I do think that we have gained great information. I have a host of additional questions that I would like to ask each of you. I am prepared to stay for another hour, hour and a half and do a second round with this panel if colleagues want that. But otherwise, I would suggest that we move to panel number two so that we can get their comments. I am getting consensus there.

Gentlemen, thank you. Governors, we appreciate your leadership.

Mr. MAPP. Thank you.

The CHAIRMAN. Secretary Walker, General Jackson, thank you both.

We will ask our second panel to please be seated so we may begin. Please be seated. Thank you.

We begin the second panel, again with a distinguished group of individuals who are prepared to continue the conversation relating to the aftermath of Hurricanes Irma and Maria on Puerto Rico and the U.S. Virgin Islands.

The second panel will be led by Mr. Ricardo Ramos, who is the Executive Director for the Puerto Rico Electric Power Authority, PREPA. Welcome, thank you for being here this morning. Mr. Julio Rhymer is the Executive Director and CEO for the Virgin Islands Water and Power Authority, WAPA. Thank you for joining us, Mr. Rhymer. He will be followed by Mr. José Román Morales, who is the Acting Chairman for the Puerto Rico Energy Commission. We welcome you. Finally, we will have Ms. Natalie Jaresko, who is the Executive Director for the Financial Oversight and Management Board for Puerto Rico. Welcome to each of you.

I would ask that you limit your comments this morning to five minutes. Your full testimony will be included as part of the record, but I do know that colleagues have questions. As you have obviously seen from that first panel, there were some directed to the Governors that they deferred until we had the expertise from this panel. So hopefully you will be able to address those questions either in your opening statements or in your follow-on questions.

With that, Mr. Ramos, if you would like to lead off the panel. Welcome.

**STATEMENT OF RICARDO RAMOS, EXECUTIVE DIRECTOR,
PUERTO RICO ELECTRIC POWER AUTHORITY**

Mr. RAMOS. Chairman Murkowski, Ranking Member Cantwell and Senators, thank you very much for the opportunity to appear today.

Although I'm present here physically, my thoughts, my focus are on the people of Puerto Rico and on the workers on the ground re-establishing power to all of our customers.

When I became Executive Director of PREPA in March 2017, I knew that we faced significant challenges. What I never imagined is that I will be facing the unprecedented natural disasters and humanitarian crisis caused by two massive hurricanes in just two weeks.

The second storm, Hurricane Maria, damaged nearly every single PREPA substation, shut down all of our transmission lines across the entire island, devastated PREPA's operational control centers and left all of Puerto Rico without any electrical power.

Senators, I cannot overstate the extraordinary challenges that we have faced. Hundreds of transmission structures, substations, distribution poles, lines, transformers were destroyed or damaged. PREPA's communications and control centers were inoperable. We were forced to resort to shortwave radios and satellite phones to get, at least, some sort of communications with our other operational centers and power plants. Actually, they were then used by the Salvation Army to go through the shortwave radio once we were able to establish the communications centers.

The devastation to roads and airports made it difficult or impossible to assess the damage in some areas. It took us nearly a full week even to make contact with all of PREPA's facilities.

In total today, load has been restored to 49 percent and we successfully have focused on restoring power to critical customers, including hospitals, water and sewage treatment plants, agencies providing essential services and other that are central to Puerto Rico's recovery.

The first mission was water systems and hospitals. I'm happy to report that 85 percent of all hospitals in Puerto Rico are under PREPA grid power today.

We continue to have extraordinary and unprecedented challenges however. The areas currently without power are more isolated and more mountainous, not as easy to reach. Restoring power to these communities requires unique skills and it will take significantly more resources. In this extraordinary recovery effort, the island needs your support.

I would like to take a moment to address PREPA's contract with Whitefish Energy. Around the two hurricanes, before Maria, PREPA received many offers of assistance from different companies, including one from Whitefish.

Whitefish indicated that it had access to more than 100 accredited workers, over 100 pieces of equipment and a large stock of supplies. After the devastation of Hurricane Maria, I believed that PREPA was unable to meet the requirements for mutual assistance through the APPA, such as providing accommodations and other logistics.

Senators, for three weeks PREPA was suffering of lack of fuel for its trucks, lack of food for its employees, lack of drinking water, lack of ice which is important on a tropical island. How could I have counted on bringing even more people into that situation? So I needed people that were self-contained, military unit types that would bring their diesel, would bring their food, bring everything, on the table as first responders. After reviewing about half a dozen proposals from potential first responders, only two offered immediate services, meaning they were the first that would be able to arrive.

One proposal required a guaranteed payment of \$25 million because of PREPA's situation. PREPA is basically under Title III of PROMESA which is very similar to a Chapter 9. The other offered the ability to pay only for work that was completed along with mobilization and demobilization.

Taxpayer money was never at risk. There was never an expenditure of \$300 million. They get paid when the line that they're working on is finished and delivered to PREPA, tested and energized, then they send us an invoice for that portion and we pay.

So I authorized the Whitefish contract while we continued to seek additional assistance from others for the complete, multibillion-dollar restoration effort to come. I chose to contract with Whitefish because my priority was securing the immediate assistance, as first responders, that we desperately needed.

Finally, even during the recovery PREPA continues to focus on our plan for the future based on distributed energy at the—market pricing that recognizes the cost of delivery.

I am grateful for the thousands of employees and others who have worked tirelessly to restore power. We have made significant progress, but much more remains to be done.

Madam Chairman, thank you very much for the opportunity to be here today. I will be happy to answer any questions that you may have.

[The prepared statement of Mr. Ramos follows:]

**PREPA**

Statement of
Ricardo Ramos
Executive Director, Puerto Rico Electric Power Authority
before the
Committee on Energy and Natural Resources
United States Senate

November 14, 2017

Chairman Murkowski, Ranking Member Cantwell, and Senators, thank you for the opportunity to appear before you today to discuss the hurricane recovery efforts in Puerto Rico. When I became Executive Director of the Puerto Rico Electric Power Authority in March 2017, I knew that PREPA faced significant challenges including a declining revenue base, a shrinking workforce, a backlog of unmet or deferred maintenance, key major equipment beyond its useful life, and of course, the many challenges associated with Puerto Rico's and PREPA's financial condition. PREPA is one of the largest public power utilities in the United States, and the challenges facing the company are just as large.

I never imagined, however, that we would be facing the unprecedented natural disaster and humanitarian crisis caused by two massive hurricanes striking the island over the course of only two weeks. The second storm, Hurricane Maria, damaged nearly every single PREPA substation, shut down all of our transmission lines across the entire island, devastated PREPA's operational control centers, and left all of Puerto Rico without any electrical power.

Senators, I cannot understate the extraordinary challenges that we have faced. Hundreds of transmission structures were damaged, and thousands of distribution lines, poles, and transformers were destroyed or damaged. Because PREPA's communications and control centers were inoperable, we were forced to resort to shortwave radios and satellite phones to provide limited communications with other PREPA facilities. The devastation to Puerto Rico's infrastructure, including roads and airports, made it difficult or impossible to assess the damage in some areas. It took us nearly a full week even to make contact with all of PREPA's key facilities.

In the weeks since the devastation by Hurricane Maria, the employees of PREPA, along with thousands of additional workers who have since come to the island to provide assistance, have been working nonstop to restore power to Puerto Rico. In less than two months, we have repaired about 620 high voltage towers and about 650 transmission devices. After inspecting all of our substations, we have returned about 60% to operation, along with nearly 52% of the major feeders that distribute power from substations. In total, power has been restored to about 48% of the island. Our initial recovery efforts were successfully focused on restoring power to our most critical customers, including hospitals, water and sewage treatment plants, agencies providing essential services, and others that are central to Puerto Rico's recovery.

Senators, let me be clear, however. We still confront extraordinary and unprecedented challenges ahead. Restoring power to the remaining areas of the island will be vastly more difficult than our work so far. The areas currently without power are more isolated and more mountainous. Restoring power to these communities requires unique skills, experience, and equipment, and it will take significantly more resources, time, and effort. In this extraordinary recovery effort, the island needs your support.

I would like to take a moment to address a contract that PREPA executed with Whitefish Energy in the immediate aftermath of Hurricane Maria. Around the two hurricanes, PREPA received an outpouring of offers of assistance and support, including from Whitefish. Whitefish indicated that it had access to more than 100 accredited linemen, equipment operators, and apprentices; about 100 trucks, diggers, and other pieces of equipment; and a large stock of materials, poles, transformers, and conductors. Some of these resources, it said, had recently completed restorations after hurricane damage in Florida.

After the devastation of Hurricane Maria, I believed that PREPA was unable to meet the requirements for mutual assistance through the members of the American Public Power Association, such as providing accommodations for workers and other logistics.

After reviewing about a half-dozen proposals from potential first responders, we found that only two offered the immediate services that PREPA needed. One proposal required a guaranteed payment of \$25 million, the other – from Whitefish – offered PREPA the ability to pay only for work that was completed (and mobilization/demobilization). I therefore authorized our contracting staff to execute a contract with Whitefish while we continued to seek additional assistance from others for the complete, multi-billion dollar restoration effort still to come. In retrospect, there are some steps in our contracting process with Whitefish that we could have done better. I chose to contract with Whitefish because my priority was securing the immediate assistance that we needed to begin restoring power as quickly as possible to our most critical customers.

PREPA's Hurricane Preparations and Hurricane Irma

PREPA engages in an annual hurricane preparation process prior to each hurricane season. These preparations generally involve updating PREPA's roster of first-response suppliers, verifying and preparing backup systems and critical assets, and revising PREPA's emergency plan to reflect the most current information. PREPA often issues a public request for information to supplement information already assembled concerning hurricane response plans, and it did so in preparation for the 2017 storm season. For the 2017 storm season, PREPA reviewed its emergency plans and cataloged disaster recovery and repair materials, such as cables, structures, hardware, fuses, insulators, and safety equipment.

Hurricane Irma passed just north of Puerto Rico on September 6, 2017. Irma was one of the strongest storms ever recorded in the Atlantic. It devastated numerous Caribbean islands, and inflicted serious damage to Puerto Rico, including PREPA's facilities. Following Irma, more than one million people – 70% of PREPA's customers – were without power. PREPA restored power to a significant portion of these customers within a few days, and more than 96% of its customers by September 18. The restoration efforts following Hurricane Irma severely

depleted PREPA's recovery and repair supplies. PREPA sought to restore these supplies quickly following Hurricane Irma, and we also began preparing for the possibility of a second, severe hurricane headed for the island.

Hurricane Maria

As Hurricane Maria approached Puerto Rico, PREPA prepared for the possibility of unprecedented damage. For context, we noted that it took about six months to restore power to the entire island after Hurricane Hugo in 1989, at a time when PREPA had approximately 4,000 additional employees and the electric system was in less disrepair. Hurricane Maria hit Puerto Rico on September 19 and 20, 2017. The storm passed directly down the entire length of the island. As the storm ravaged the island, PREPA's emergency management team gathered in our incident command centers. Additional PREPA personnel were stationed in critical locations at PREPA facilities across the island, poised to respond as soon as the storm passed.

As the front of Hurricane Maria hit Puerto Rico on September 19, the electric grid began to fail. Around 8:00 p.m. that evening, transmission lines began to experience cascading failures. At approximately 2:00 a.m. on September 20, the last transmission line failed and PREPA's command centers and headquarters lost all communications and power. Some PREPA generators provided backup power for these operations, but others failed due to hurricane damage.

After the storm passed, PREPA began its damage assessment. Our efforts to assess the damage across the island were severely hampered. Our headquarters and emergency command centers had no reliable communications for several weeks after the storm. The damage to Puerto Rico's roads and bridges made it extremely difficult to conduct physical inspections of PREPA's facilities. We employed helicopters, drones, and land vehicles where possible to inspect the major transmission lines. Without reliable communications systems, PREPA used shortwave radios and satellite phones to establish limited communications with some facilities. It took nearly a week to make contact with all key PREPA facilities.

The damage assessment confirmed that PREPA's entire grid suffered severe damage. Hurricane Maria inflicted sustained winds around 155 miles per hour, with gusts exceeding 200 miles per hour, far more than much of PREPA's infrastructure was designed to withstand. We found that hundreds of major transmission structures were damaged, hundreds of conductors and insulator failed, and thousands of individual distribution lines, poles, and transformers were down or damaged. PREPA's datacenter, communications, and information technology systems were down, and most of PREPA's communications antennas and fiber optic cables were damaged.

The entire island of Puerto Rico was without power, leaving generators as the only source of power at critical facilities such as hospitals and airports. Hurricane Maria also left Puerto Rico with a devastating humanitarian crisis, with long lines for fuel, residents struggling to secure access to critical medications, and basic supplies like shelter, food, and water desperately difficult to obtain.

Since the passage of Hurricane Irma and Hurricane Maria, the employees of PREPA and the thousands of workers who have come to Puerto Rico to assist us have worked tirelessly to restore power and begin the recovery process. We have made significant progress, but much more remains to be done. We are working hard toward meeting the Governor's directive that 95% of the island must have its power restored by December 15, 2017.

Even during the recovery and restoration process, we are focused on developing a plan for the future of electric energy in Puerto Rico. PREPA's governing board has brought together top minds in the industry to provide best-in-class thinking on the future of our electric utility. Our team is evaluating all options in order to achieve grid reliability and resilience for the long term.

Madam Chairman and Senators, thank you for the opportunity to be here today. I would be happy to answer any questions that you may have. At the conclusion of this hearing, I look forward to getting back to Puerto Rico and back to the hard work of rebuilding our devastated island.

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The CHAIRMAN. Thank you, Mr. Ramos.
Mr. Rhymer, welcome.

**STATEMENT OF JULIO A. RHYMER, SR., EXECUTIVE DIRECTOR
AND CHIEF EXECUTIVE OFFICER, VIRGIN ISLANDS WATER
AND POWER AUTHORITY**

Mr. RHYMER. Good day, Chairman Murkowski and members of the United States Senate Committee on Energy and Natural Resources.

By way of introduction, my name is Julio A. Rhymer, Sr., Executive Director and CEO of the Virgin Islands Water and Power Authority (WAPA or Authority). On behalf of my governing board, I'd like to thank you for this invitation to appear before this august body and provide an overview of the Authority and the challenges we confront in the aftermath of two hurricanes that left devastation in its wake.

The Virgin Islands Water and Power Authority is in the midst of recovery, restoration and rebuilding from two major hurricanes which hammered the territory in September. In their wake is considerable damage; levels of damage that has not been worse in almost two decades.

Before I discuss the direct effect the hurricanes had on the Virgin Islands Water and Power Authority, give me the opportunity to discuss in broad terms how the Authority operates. Like so many other Caribbean counterparts, the Virgin Islands has no conventional energy resources to meet its power needs. While the U.S. mainland utilities can connect to grids across America to purchase power from other utilities, power companies such as WAPA do not enjoy that luxury of grid interconnection. The three major islands, St. Thomas, St. John and St. Croix are separated by water and face a greater challenge given the depth of the ocean floor. These factors make interconnection via submarine cables both financially and technically challenging.

For the bulk of its 53-year history, WAPA has maximized the benefit of market conditions and utilized oil-fueled generation to produce electricity. Given the separation by water, duplicate generation, transmission and distribution systems are required on St. Thomas and St. Croix. St. Thomas provides power via submarine cables to the nearby island of St. John, Water Island, and Hassel Island. St. Croix is located more than 40 miles to the south of St. Thomas and is not interconnected due primarily to the depth of the ocean floor which is approximately five miles deep.

Citing the instability of the world oil markets, WAPA embarked on a plan to diversify its 100 percent dependency on fuel oil while at the same time committed itself to reduce its reliance on fuel oil by 60 percent by 2025. The fuel oil diversification strategy began to take hold with the implementation of net metering, additional solar power to the electric grid and, most notably, was the introduction of liquified petroleum gasoline, LPG, as a primary source of fuel for generation of electricity. This was achieved through a partnership with a multinational company to build, operate LPG terminals, provide propane supply, oversee the conversion of WAPA's generating units from solely fuel oil generating units to tri-fuel capable units which are LPG, LNG and diesel.

At the same time the fuel diversification strategy was emerging, WAPA tapped a \$500,000 Department of Interior grant to pursue an integrated resource plan which mapped out the generation mix for the utility over the next two decades.

Taking a page from that plan, the Authority, in March, entered into a contract with Wartsila North America to provide new generation units for the Authority. We expect these units to be on island and basically operational in mid-2018.

To focus specifically on hurricane impact of WAPA, the most extensive damage was experienced by the transmission and distribution system and overall electrical grid. The two power plants at Estate Richmond and Krum Bay on St. Thomas fared fairly well, minimal damage. The transmission system suffered major damage after Hurricane Irma of 80 percent on St. Thomas, 90 percent on St. John, with the two outlying islands, Hassel Island and Water Island, each suffering 90 percent. Hurricane Maria rendered about 60 percent on St. Croix's system.

Today, WAPA is engaged in a major restoration effort on all islands. We are in the process of rebuilding transmission feeders and primary circuits, all before we can completely restore commercial and residential customers. Our commitment is to rebuild and to re-energize about 90 percent of our customers by December.

The arduous task of rebuilding the transmission/distribution system on all islands is further complicated by challenges of mobilizing materials and equipment necessary for the restoration effort. Because of our unique geographical locations, we have struggled to actually be able to move materials and equipment from the United States to the Virgin Islands over the past several weeks.

The hurricane also had a devastating effect on the financing of the actual utility. Every month the utility prior to the storms generated about \$26 million in revenues. Currently, we're actually about, are less than \$2 million a month in terms of revenues. Because of the storms' price tag that can actually top \$300 million, the financial hurdle for WAPA is hard to overcome.

Just equally concerning are the day-to-day operational costs, the cost of restorations, our cost associated with pre-storm obligations such as debt service, operation and maintenance of the power plant, insurance, contractual agreements and previously-enacted financing agreements.

In the aftermath of the catastrophic hurricanes our task is not only to rebuild our transmission systems and distribution systems, but the fact of more resiliency is taking precedence over everything else. We do not want to rebuild the system that is the same as before. We want to be more resilient, more hardened and, basically, do it by microgrid, undergrounding and basically composite poles.

Senator, I'm here, available to answer any questions and I thank you for the opportunity.

[The prepared statement of Mr. Rhymer, Sr. follows:]

Mr. Julio A. Rhymer, Sr.
Executive Director / Chief Executive Officer
Virgin Islands Water and Power Authority



STATEMENT BEFORE THE U.S. SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

November 14, 2017

Good afternoon Madam Chairman Murkowski, Ranking Member Cantwell, and members of the Committee on Energy and Natural Resources. By way of introduction, I am Julio A. Rhymer, Sr., Executive Director / CEO of the Virgin Islands Water and Power Authority ("WAPA" or "Authority"). I thank you for the invitation to appear before this august body and provide an overview of the Authority and the challenges which confront us in the aftermath of two major hurricanes which left devastating effects in their wake.

In short, the U.S. Virgin Islands experienced the brunt of two major hurricanes in a two-week period in September. On September 6, Hurricane Irma, with sustained winds of 185 miles per hour, passed within ten miles of the north coasts of St. Thomas & St. John, and Hurricane Maria, on September 19, hugged the southern coastline of St. Croix as it tracked across the Caribbean. These storms left considerable damage in their path, damage on scales not witnessed since Hurricane Marilyn in 1995 and Hurricane Hugo in 1989.

Before discussing the direct effect the hurricanes have had on WAPA, allow me to provide an overview of how the Authority operates. Like so many of our Caribbean counterparts, the Virgin Islands has no conventional energy resources to meet its power needs. While U.S. mainland utilities can connect to grids across America to purchase power from other utilities, power companies such as WAPA do not enjoy the luxury of grid interconnection. The three major islands—St. Thomas, St. John, and St. Croix—are separated by water and face a greater challenge given the depth of the ocean floor. These factors make interconnection via submarine cables both financially and technically challenging.

For the bulk of its 53-year history, WAPA has maximized the benefit of market conditions and utilized oil-fueled generating units to produce electricity. Given the separation by water, duplicate generation, transmission and distribution systems are required on St. Thomas and St. Croix. St. Thomas provides power via submarine cables to nearby St. John, Water Island, and Hassel Island. St. Croix is located more than 40 miles to the south of St. Thomas, and they are not interconnected due primarily due to the depth of the ocean floor.

In recent years, as oil markets became less stable resulting in fluctuating oil prices, WAPA began a process of diversifying its 100% dependency on fuel oil. In fact,

WAPA made a public commitment to reduce its reliance on fuel oil by 60% by the year 2025. The Authority has had some success with this diversification strategy. In recent years, we have implemented up to 15 megawatts of net metering, and through public private partnerships have added more than eight megawatts of solar power to the electric grid through solar facilities on St. Thomas and St. Croix.

Prior to Hurricane Irma, 20% of WAPA's generation capacity was derived from renewables. WAPA has also partnered with the VITOL Group, a multinational energy and commodity trading company, to construct and operate liquefied petroleum gas (LPG) terminals, supply LPG, and manage the conversion of our oil-fueled generating units. As of today, several of WAPA's generating units on both St. Thomas and on St. Croix are tri-fuel capable. They can be fueled by lower cost LPG, natural gas, or fuel oil.

Capitalizing on the final results of both a management audit and an integrated resource plan, and prior to the hurricanes, WAPA had mapped out a generation strategy to replace all oil-fired generators with smaller, more efficient, and reliable generating units. In March, we entered into a contract with Wartsila North America to provide new generation units for the Authority. We expect these units to be on island, and in operation, by mid-2018. They were originally expected in the first quarter of next year but the project was delayed by the September storms. WAPA is reviewing options to bring additional generators on line, which will be dual-fueled, on both St. Thomas and St. Croix. To bridge the transition, the Authority has entered into a contract with APR Energy of Texas to lease temporary generating units to maintain peak demand for our customers. I will now, for a few moments, discuss the direct and indirect impacts of the September hurricanes on the V.I. Water and Power Authority.

By far, the most extensive damage was experienced by the transmission and distribution system and the overall electrical grid. The two power plants, in Estate Richmond on St. Croix and at Krum Bay on St. Thomas, fared well. The transmission and distribution system suffered damage at the hands of Hurricane Irma on the order of 80% on St. Thomas and 90% on St. John, with the two outlying islands, Hassel Island and Water Island, each suffering about 90% damage to their electrical infrastructure. Hurricane Maria rendered about 60% damage to St. Croix's system. Today, WAPA is engaged in a major restoration effort on all islands. We are in the process of rebuilding transmission feeders and primary circuits, all before we can completely restore commercial and residential customers. Our commitment is to rebuild and to reenergize about 90% of all geographical locations by the end of December.

WAPA's efforts to recover, rebuild, and restore are augmented by approximately 700 off-island linemen. The linemen crews are provided by both contractors and mutual aid companies.

The arduous task of rebuilding transmission and distribution systems on all islands is further complicated by challenges of mobilizing materials and equipment necessary for the restoration effort. Because of our unique geographical location, surrounded by water, WAPA cannot truck materials and supplies to the islands. Air

travel cannot readily supply the large quantity of inventory and equipment needed. We continue to barge and ship all vehicles, equipment, supplies, and material inventory to the Territory via cargo shipping. These materials and supplies are also competing for space with private businesses and individuals that are shipping supplies to the islands.

The hurricane's effect on the Authority's finances is another direct impact that must be noted. With monthly revenues that have been dramatically reduced from \$26 million to just over \$2 million, the Authority is struggling to cover its day to day operational costs. The extraordinary costs of restoration, with a price tag that can easily top \$300 million, will be a financial hurdle that WAPA will need federal assistance to overcome. We are grateful to the U.S. Congress and to President Donald Trump for quickly enacting legislation that will provide assistance to the United States Virgin Islands. Just as equally concerning as the day-to-day operational costs and the cost of restoration are the costs associated with pre-storm obligations: debt service, operation and maintenance of the power plants, insurance, contractual arrangements, and previously enacted financing agreements. To address these expenses, the Authority has sought a Community Disaster Loan through the Government of the Virgin Islands.

The most glaring takeaway from the experience of Hurricanes Irma and Maria is the need to not only rebuild our transmission and distribution systems, but to factor in more resiliency; in other words, harden the system to minimize the effect of catastrophic windstorms such as major hurricanes. To that end, WAPA is beginning to replace traditional wooden poles with composite poles on various key transmission feeders on all islands. The composite poles have a proven track record of withstanding sustained wind speeds of up to 200 miles per hour. We have identified a need for approximately 4,300 composite poles for major primary electrical circuits for the St. Thomas-St. John district, and approximately 5,900 composite poles on St. Croix. The Authority is also aiming to relocate key aerial facilities underground. Utilizing past FEMA hazard mitigation grant funding, WAPA has already placed limited portions of its distribution system underground. Service to critical infrastructure such as hospitals, airports, and 75% of the business districts are underground. In the aftermath of last month's storms, they were among the first facilities to be restored. Our focus now is to underground facilities that service key seaports and shipping companies, to be in a position to restore inbound cargo traffic to the islands upon the opening of the shipping channels by the Coast Guard following a hurricane or tropical storm.

WAPA is also exploring the benefits of electric micro grids, a move toward hardening of the electrical grid which is also vulnerable in windstorms. We have the first micro grid on the drawing board for implementation on St. Croix. Each micro grid would be a localized group of energy sources that would work both in lockstep with WAPA's generating facilities but independently as a source of power. In the event of a major electrical service interruption, for example, the micro grid would function as a small generating facility to produce electricity on its own power.

WAPA is working to develop the initial micro grid in conjunction with the Virgin Islands Port Authority at St. Croix's Henry E. Rohlsen Airport. This particular micro grid would be energized with four megawatts of solar power and two megawatts of battery

storage. Depending on available funding, WAPA will seek to develop additional micro grids at strategic locations across the Territory.

Additionally, WAPA continues to pursue funding to liquidate a ten-year obligation it has with the previously mentioned VITOL Group. Eliminating that obligation would not only allow the Authority to manage the day to day operations of the LPG terminals, but also allow more financial flexibility given the austere resources of the Authority.

Madam Chairman, I once again thank you and your colleagues for this opportunity to appear before the U.S. Senate Committee on Energy and Natural Resources to provide a brief overview of the Virgin Islands Water and Power Authority and the challenges we now face in the aftermath of these catastrophic hurricanes.

The CHAIRMAN. Thank you, Mr. Rhymer.
Mr. Morales.

**STATEMENT OF JOSÉ ROMÁN MORALES, ACTING CHAIRMAN,
PUERTO RICO ENERGY COMMISSION**

Mr. ROMÁN MORALES. Chairman Murkowski, Ranking Member Cantwell and members of the Committee, my name is José Román Morales. I am the Acting Chairman of the Puerto Rico Energy Commission. Thank you for inviting me to appear and for your interest in the recovery and the restoring of the electric service in Puerto Rico.

My testimony makes four points: the Commission is the Commonwealth's institutional expert on the electric industry performance; the Commission establishes performance standards and competitive pressures while restoring investor confidence; the Commission's current emphasis is to restore and transform the island's electric industry cost-effectively; and the Commission's current needs.

For 70 years, PREPA operated as a vertically integrated, unregulated monopoly. Dissatisfied with PREPA's performance, the legislature in 2014, passed Act 57. At the center of Act 57 is the Commission, created and empowered to use performance standards and competitive pressures to transform Puerto Rico's electric industry. The breadth of the Commission's duties is illustrated by the opening provisions of the Act: "The Commission shall be able to guarantee the orderly and integrated development of our electrical system and the provision of electric power services at reasonable prices."

When establishing standards for utility monopolies, the goal is to induce performance compatible to what effective competition would produce reliable, innovative service at reasonable cost. When injecting competition, the goal is to extract and reward the most cost-effective entities.

The key criterion is economic efficiency. A utility cost is only, and only if, the Commission determines it's to be the least cost is when it becomes reasonable, when it is the least cost among all reasonable alternatives.

The Commission is an expert agency that makes decisions based on facts and logic. The foregoing principles are evident in the Commission's many orders: the transition charge proceeding, integrated resource plan, PREPA's performance proceeding and the rate case decision where the Commission issued the first order in which PREPA's \$3.5 billion in annual costs were reviewed and rates established by an independent body of experts, the order detailed the extent of system deterioration and the absence of discipline in PREPA's budgeting and spending. The Commission's current emphasis is to restore and transform cost-effectively.

The Commission opened a proceeding to identify short-, medium- and long-term actions that would produce an electric system that is modern, flexible, resilient and capable of supplying electric service reliably and at just and reasonable prices. PREPA's difficulties restoring service show the need to adopt and implement alternatives that allow greater resilience and faster restoration.

The Commission will assess alternative ways to promote these technologies, increase private participation in restoration efforts and reduce dependence on centralized generation, all with the goal of enabling us to respond to future emergencies more quickly and cost-effectively. Prior Commission inquiries have produced examples of defective contracting policies and poor project management within PREPA.

Correcting these defects is crucial to PREPA's ability to attract future financing while lowering its rates so that the Commonwealth's economic development effort can succeed.

In these and other proceedings, the Commission will be focusing on the main—on the following areas: PREPA's spending, cost recovery and rate-setting, internal operations, finances, customer relations and the mix, the correct mix, of the island's supply and demand resources. Also, to identify strengths and weaknesses of alternative market structures for various products and services, implement competition for competitive services and determine the appropriate roles for distributed generation and net metering resources.

The need for an independent entity, free of politics and focused on merits, with the single-minded goal of bringing cost-effectiveness and competitive rigor to the Commonwealth's most important infrastructural industry could never be greater.

Chairman Murkowski, Ranking Member Cantwell and members of the Committee, thank you for this opportunity to testify and I look forward to your questions.

[The prepared statement of Mr. Román Morales follows:]

**Testimony of José Román Morales, PE
Acting Chairman, Puerto Rico Energy Commission**

**Before the
U.S. Senate Committee on Energy and Natural Resources**

November 14, 2017

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee:

My name is José Román Morales. I am the Acting Chairman of the Puerto Rico Energy Commission. Thank you for inviting me to appear and for your interest in Puerto Rico's plans for restoring and transforming its electric service. My testimony makes four main points:

1. The Commission is the Commonwealth's institutional expert on electric industry performance.
2. Using its multidisciplinary expertise, the Commission establishes performance standards and competitive pressures, while restoring investor confidence.
3. The Commission's current emphasis is to restore and transform the Island's electric industry, cost-effectively.
4. The Commission's current needs include jurisdictional certainty and sufficient resources.

I. The Commission is the Commonwealth's institutional expert on electric industry performance

For 70 years, the Puerto Rico Electric Power Authority (PREPA) operated as a vertically integrated monopoly—an unregulated monopoly. Dissatisfied with PREPA's performance, the Legislature in 2014 passed Act 57.¹ At the center of Act 57 is the Commission, created and empowered to use performance standards and competitive pressures to transform Puerto Rico's electric industry. The breadth of the Commission's duties is illustrated by these opening provisions:

"[The Commission] shall be an independent government entity in charge of regulating, overseeing, and ensuring compliance with the public policy on energy of the Commonwealth of Puerto Rico."

¹ Puerto Rico Energy and Transformation RELIEF Act, Act 57-2014, 22 L.P.R.A. §1051 et seq.

"The Energy Commission created herein shall be the key component for the faithful and transparent execution of the Energy Reform."

"[T]he Commission --

"shall be able to guarantee the orderly and integrated development of our electrical system, thus ensuring the reliability, efficiency, and transparency thereof, and the provision of electric power services at reasonable prices.

"shall evaluate [PREPA's plans] regarding its obligation to efficiently generate electric power, various operational issues, and the integration of renewable energy, among other mandates.

"shall oversee all types of operations, processes, and mandates pertaining to the efficiency of the energy sector of the Island.

"shall oversee [that] PREPA's debt issues are in the public interest.

"shall approve the electricity rates proposed by PREPA.

"shall require that the prices included in any power purchase agreement, wheeling rate, and interconnection charge are fair and reasonable, consistent with the public interest, and compliant with the parameters established by this Commission....

"shall [...] guarantee that PREPA meets its obligations to bondholders."

In sum, the Commission is the Island's institutional expert, and main decision-maker, on the performance of electricity markets—whether that performance is by a monopoly like PREPA or by competitive providers of generation and other electric services.

II. Using its multidisciplinary expertise, the Commission establishes performance standards and competitive pressures, while restoring investor confidence

The Commission's employees and consultants span the professional disciplines of engineering, economics, finance, accounting, management, and law. Using these disciplines, we establish principles that are then embodied in our orders.

A. Principles

The purpose is performance. When establishing standards for utility monopolies, the goal is to induce performance comparable to what effective competition would produce: reliable, innovative service at reasonable cost. When injecting competition, the goal is to attract and reward the most cost-effective entities. The Commission's task is to envision the products and services that best serve customers, then design and oversee the market

structures and inducements most likely to produce that mix of products and services cost-effectively.

The key criterion is economic efficiency. A utility cost is reasonable if, and only if, the Commission determines it to be the least-cost alternative among all feasible alternatives. The Commission aims to allocate costs to cost-causers and benefits to benefit-creators. These standards induce performance that is economically efficient.

Good decision-making requires gathering the best facts. The Commission uses procedures that elicit fact-based presentations from diverse experts. We subject those presentations to detailed discovery and close questioning, all performed in public. We vary procedural formality as resources and time considerations demand.

The Commission's effectiveness depends on its independence. The Commission is an expert agency that makes decisions based on facts and logic—not political pressures or ideological beliefs.

At bottom: Facts and expertise, applied openly, bounded by statutory and constitutional principles and subject to judicial review, are the ingredients the Commission uses to induce cost-effective performance.

B. Key Commission Actions Pre-Hurricanes Irma and María

The foregoing principles are evident in the Commission's many orders. Four are key.

Transition Charge: In June 2016, the Commission approved, under Act 4-2016, 22 L.P.R.A. §1071 et seq., a mechanism designed to reduce the costs to customers of PREPA's repayments to certain bondholders.² In light of the agreement of those bondholders to reduce, and defer payment of, a portion of PREPA's debt obligations, the Commission approved a Commonwealth-backed "Transition Charge." Although the Transition Charge order has been superseded by events,³ its effect, once the magnitude of the Charge was calculated and approved, would have been to reduce investor uncertainty by moving dollars from ratepayers directly to the bondholders.

Integrated resource plan: In September 2016, the Commission approved an integrated resource plan (IRP) for PREPA.⁴ The IRP order approved, among other things: (a)

² Restructuring Order, Case No. CEPR-AP-2016-0001, June 21, 2016. Available at: <http://energia.pr.gov/wp-content/uploads/2016/06/21-junio-2016-Restructuring-Order-English-1.pdf>.

³ The Transition Charge was tied to the then-existing Restructuring Support Agreement (RSA). The FOMB initiation of the Title III proceeding under PROMESA resulted in the RSA not being extended.

⁴ Final Resolution and Order on the First Integrated Resource Plan of the Puerto Rico Electric Power Authority, Case No. CEPR-AP-2015-0001, September 29, 2016. Available at: <http://energia.pr.gov/wp-content/uploads/2016/09/23-sept-2016-Final-Resolution-and-Order-IRP-CEPR-AP-2015-0002.pdf>.

temporary, limited spending on continued development of the Aguirre Offshore Gas Port; (b) the permitting, maintenance, development, and retirement of various fossil fuel units; and (c) certain investments in transmission and distribution, as necessary for system stability and operability. The IRP order also required a detailed audit of renewable energy contracts, a competitive bidding process for certain new renewable energy projects, and certain investments in energy efficiency.

PREPA's performance: In November 2016, the Commission began a far-reaching inquiry into PREPA's overall performance, gathering information on PREPA's performance so as to develop metrics and consequences for all aspects of its operations.⁵

Rate decision: In January 2017, the Commission issued the first-ever order in which PREPA's \$3.5 billion in annual costs were reviewed, and rates established, by an independent body of experts.⁶ While granting PREPA nearly all the dollars it requested (for both capital and operating expenditures), the order detailed the extent of system deterioration; the history of counterproductive political involvement in financial, operational, and rate deficiencies; and the absence of discipline in PREPA's budgeting and spending.

In the rate order's crucial Part Four, the Commission addressed the problem of PREPA's imprudent costs. The Commission explained that because PREPA is a non-profit, government-owned entity, conventional disincentives used to prevent utilities from taking on imprudent costs—namely, requiring their absorption by shareholders rather than imposing them on ratepayers—are unavailable because a non-profit company has no private shareholders. In the non-profit context, the utility will have insufficient revenues to operate unless all costs are recovered from ratepayers. Given this constraint, the only way to protect ratepayers from imprudent costs is to prevent PREPA from incurring them to begin with. The Commission therefore required PREPA to submit an annual budget before spending its money. That way, the Commission could prevent imprudent expenditures before they are incurred. (PREPA had proposed an annual "true-up" process that amounted to "We spend it, we tell you about it, you make ratepayers pay for it"—the very absence of accountability that Act 57 was enacted to fix.)

Other orders: The Commission has approved the format for a simplified customer bill so that customers better understand the bases for their charges.⁷ These efforts and others are summarized in the Appendix to this testimony.

⁵ Notice of Investigation to Identify Opportunities to Improve Performance of the Puerto Rico Electric Power Authority, Case No. CEPR-IN-2016-0002, November 16, 2016. Available at: <http://energia.pr.gov/wp-content/uploads/2016/11/15-nov-2016-Notice-of-Investigation-AEE-CEPR-IN-2016-0002.pdf>.

⁶ Final Resolution and Order, Case No. CEPR-AP-2015-0001, January 10, 2017. Available at: <http://energia.pr.gov/wp-content/uploads/2017/01/Final-Resolution-and-Order.pdf>.

⁷ Final Resolution and Order, Case No. CEPR-AP-2016-0002. Available at: <http://energia.pr.gov/wp-content/uploads/2017/11/Final-Resolution-and-Order-CEPR-AP-2016-0002.pdf>.

All these activities—conducting integrated resource planning, establishing special charges to satisfy bondholder concerns, setting rates, auditing performance—are the central purposes of independent oversight of utilities, as carried out by commissions throughout the Mainland and, in fact, the world. The Puerto Rico Energy Commission is the institution authorized to carry out, and expertly capable of carrying out, these activities in Puerto Rico.

III. The Commission's current emphasis: Restore and transform, cost-effectively

In the last three weeks, the Commission has issued three orders that address restoration and transformation.

Investigation of collapse and solutions: Three weeks ago, the Commission opened a proceeding to assess the physical state of PREPA's system after Hurricane María.⁸ The proceeding will (a) identify the system's vulnerabilities that contributed to its collapse; and (b) identify short-, medium- and long-term actions, by PREPA and the Commission, that will produce an electric system that is modern, flexible, resilient, and capable of supplying electric service reliably and at just and reasonable prices.

Analysis of options for microgrids and distributed generation: PREPA's difficulties restoring service show the need to adopt and implement alternatives that allow greater resilience and faster restoration. Distributed generation technologies, such as microgrids, have the potential for restoring power to unserved areas and providing stability to recently reconnected areas. In this proceeding, the Commission will assess alternative ways to promote these technologies, increase private participation in restoration efforts, and reduce dependence on centralized generation—all with the goal of enabling us to respond to future emergencies more quickly and cost-effectively.⁹

Disciplining the PREPA's contracting process: Prior Commission inquiries have produced unambiguous, concrete examples of defective contracting policies and poor project management. Correcting these defects is crucial to PREPA's ability to attract future financing, while lowering its rates so that the Commonwealth's economic development efforts can succeed. But the Commission's corrective measures have been resisted by PREPA, and challenged in court by PREPA and the Financial Oversight and Management Board (FOMB). In this new order, the Commission has established rigorous oversight measures, which include detailed expense and labor reports for each contractor, so that the Commission can prevent waste before the fact.¹⁰

In these and other proceedings Commission will be focusing on the following areas:

⁸ Resolution, Case No. CEPR-IN-2017-0002, October 27, 2017. Available at: <http://energia.pr.gov/wp-content/uploads/2017/11/Investigación-Post-María-CEPR-eng-pdf>.

⁹ See Case No. CEPR-IN-2017-0002. Available at: <http://energia.pr.gov/expedientes/?docket=cepr-in-2017-0002>.

¹⁰ *Id.* Available at: <http://energia.pr.gov/expedientes/?docket=cepr-in-2017-0002>.

PREPA's spending, cost recovery and rate-setting: Budgets, revenue requirement, rate design, and procedures for updating and reconciling those items.

PREPA's internal operations: Performance metrics, reporting procedures and enforcement methods; independent monitors to oversee restoration contracting and work; standards for restoration plans and maintenance plans; power plant efficiency standards; criteria for hiring of contractors; disaster preparation and restoration plan (for future events); and plans for workforce recruitment, development, and compensation.

PREPA's finances: Financing plans, debt restructuring, debt issuances, and approvals of Transition Charge mechanisms.

PREPA's customer relations: Bill format, customer complaint procedures, and customer education programs to produce efficient consumption under both monopoly and competitive market structures.

The Island's supply and demand resources: Reliability parameters, integrated resource plans (including the mix of renewable and non-renewable sources and "ancillary services"); near-term action plans; specifications for requests for proposals and competitive bidding procedures for power supply, energy efficiency, and demand resources; designating appropriate types of customer meters; approval of contracts for supply and demand resources and infrastructure modernization; and siting approvals.

The Island's market structure transformation: Identify strengths and weaknesses of alternative market structures (monopoly vs. competition) for various products and services; implement competition for competitive services; consider any transfer of PREPA assets or business functions to other entities; and determine the appropriate roles for distributed generation, net-metered resources, community solar, microgrids, and other venues for sale of energy by third-parties to end-use customers; along with interconnection terms, compensation, payments for transportation, locational choices, and other parameters.

IV. The Commission's needs: Jurisdictional certainty and sufficient resources

Act 57, passed in 2014, makes the Commission the Commonwealth's policy leader on our electricity future. I have explained how we intend to lead: our legal duties, our principles, our past actions, our current actions, our plans. To continue this progress, to succeed, the Commission needs two things: jurisdictional certainty and sufficient resources.

A. Jurisdictional certainty

The Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) has several provisions recognizing the Commission's centrality to Puerto Rico's electricity future. Most importantly, section 503(b)(1)(D) provides that if the Commission determines, per a PROMESA-established deadline, that an "Energy Project will adversely affect an approved Integrated Resource Plan, then the Energy Commission shall provide the reasons

for such determination and the Energy Project shall be ineligible for Critical Project designation[...]" Ensuring such projects pass through a Commission screen is essential to establishing and maintaining competitive accountability and cost-effectiveness.

At the same time, a problem has arisen. PROMESA section 4 says: "The provisions of this Act shall prevail over any general or specific provisions of territory law, State law, or regulation that is inconsistent with this Act." We appreciate the purpose underlying this sentence: The FOMB, charged with "provid[ing] a method for a covered territory to achieve fiscal responsibility and access to the capital markets" (Section 101(a)), must be able to achieve its purpose without obstacles. The problem is in the practical application of this principle. The Commission is the Commonwealth's electricity expert. Its powers and obligations are expansive. It was here before the FOMB arrived and will be here after the FOMB departs. In addressing PREPA's performance and in transforming Puerto Rico's electricity markets, both entities have essential roles to play. We must find a way for each entity to use its powers and skills in a way that supports and reinforces the other. Unnecessary conflict, turf-protection and failure to coordinate will lead only to expensive litigation, policy delays and loss of public trust.

Earlier in this testimony, I described how the Commission will discipline PREPA's expenditures (so as to prevent careless service engagements, as recently experienced) by reviewing its budgets in advance of spending. PREPA has opposed this requirement. Surprisingly, its opposition was supported by the FOMB in a submission made to the federal court with jurisdiction over the Commonwealth's debt situation. You may also be aware that FOMB has asked the federal court to approve its appointment of a Chief Transformation Officer to run PREPA. We have asked the federal court to avoid inadvertently finding that such an appointment preempts the Commission's authority. We also asked the court to direct the lawyers for FOMB and the Commission to create protocols that preserve each entity's strengths, so that conflict and litigation can be avoided. While the FOMB's legal staff has expressed willingness to communicate with the Commission, little effort has been made on their part to achieve meaningful coordination which leads to productive results. We remain hopeful that future actions will yield concrete results.

The Commission recognizes the overlap between its budget review requirements—necessitated by the Commission's statutory obligation to protect ratepayers from imprudent costs and make rates that are just and reasonable—and the FOMB's need to review and approve budgets. There are ready ways to coordinate these two entities' efforts so that each strengthens the other while avoiding duplication of effort. The Commission's and FOMB's purposes aim for the same results: financial solvency, attraction of capital, operational discipline, prudent expenditures, and responsive customer service. The Commission therefore has notified FOMB's representatives of this need, prepared a detailed work plan for producing coordination solutions, and assumes that FOMB will reciprocate productively. I also assume that such coordination is the wish of this Committee.

B. Sufficient resources

The Commission's annual resources are currently limited to the statutory level of \$5.8 million, supplemented by approximately \$1.25 million that we collect through fees. This amount was never well-aligned with the Commission's responsibilities since its inception; it is now unrealistically small given the complex questions we now need to address, as my testimony has explained. Should Congress be willing to supplement the Commission's budget, the needs fall into four main areas: (a) establishment of regulatory procedures for the immediate recovery period; (b) monitoring (in part via independent auditors) of PREPA's restoration process; (c) audits of PREPA's existing system, resources, and assets; and (d) proceedings to transform Puerto Rico's electric sector.

Conclusion

In this testimony, I have sought to explain the Commission's obligations and plans for restoring our electric service and transforming our electric industry. The need for an independent entity, free of politics and focused on merits, with the single-minded goal of bringing cost-effectiveness and competitive rigor to the Commonwealth's most important infrastructural industry, could never be greater.

Chairman Murkowski, Ranking Member Cantwell and Members of the Committee, thank you for this opportunity to testify. I look forward to your questions.

Appendix

SUBJECT	DOCKET NUMBER	DESCRIPTION
Rates	CEPR-AP-2015-0001	The rate case is an examination and subsequent ruling on PREPA's first petition for permanent rates before an independent regulatory body. In its review, the Commission sought to obtain the most thorough picture of PREPA's finances and costs, so as to establish a rate structure consistent with both PREPA's current financial and operational situation, and to carry out the Commission's and PREPA's duties to further Puerto Rico's energy public policy.
Provisional Rate Order	CEPR-AP-2015-0001	As part of its rate review petition, PREPA included a petition for provisional or temporary rates to be applied to its customers for the duration of the rate case before the Commission and until the application of the final set of rates approved by the Commission.
Revenue Allocation & Rate Design	CEPR-IN-2017-0001	The rate case established PREPA's total revenue need but, because of the tight statutory deadline, did not address major questions about how to allocate PREPA's revenue needs among customer groups (revenue allocation); and for each customer, between the fixed charge and the variable charge (rate design). This separate investigation is intended to complete that work. It includes dealing with the adequacy and completeness of the information and data used by PREPA to determine revenue allocation and rate design. In this investigation, the Commission seeks to determine and gather the information necessary to determine the revenue allocations and rate designs that are consistent with economic efficiency, and just and reasonable rates.
New Transparent Bill	CEPR-AP-2016-0002	Parallel to the rate proceeding, the Commission carried out a proceeding to establish the content and format of PREPA's "New Transparent Bill" pursuant to §6B(C) of Act No. 83. PREPA's new transparent bill, which will enter into force along with PREPA's new rates, will itemize specific cost categories, such as "subsidies," contribution in lieu of taxes, the Transition Charge, and fuel costs; so that customers will have clearer picture of the key components of their monthly electric service bill.
Transition Charge	CEPR-AP-2016-0001	Through this proceeding, the Commission enabled the PREPA Revitalization Corporation ("PREPARC") to set in motion a series of financial transactions with participating PREPA bondholders by which PREPA's overall "legacy" debt is reduced, in exchange for the establishment of a "Transition Charge", which will be billed to customers along with their monthly electricity bills in order to cover the repayment of PREPA's legacy debt. Under Act 4-2016, the amount will be determined by a Commission-approved "Adjustment Mechanism". The Commission's final decision modified PREPARC's proposed charge by making it a

		volume-based charge rather than a fixed charge, as well as establishing key exceptions for certain net metering and fixed block customers, upholding the provisions of Act 114-2007 and Act 22-2016.
Integrated Resource Plan (IRP)	CEPR-AP-2015-0002	In an Integrated Resource Plan (IRP) proceeding, required periodically by Act 57, PREPA submits –for the Commission's evaluation and approval– a comprehensive, long-term plan for the use of all existing and future resources PREPA intends to deploy in order to meet the demand for electric service, over a 20-year planning period. The IRP includes an assessment of the planning environment, a detailed study of a range of future load forecasts, existing generation and demand resources, current investments in conservation technology, existing transmission and distribution facilities, and the relevant forecasts and scenario analyses in support of the selected plan.
PREPA's Performance	CEPR-IN-2016-0002	This proceeding is a far-reaching inquiry into PREPA's overall performance as an electric utility. Informed by its IRP and rate rulings, its overall regulatory body of work, as well as ample stakeholder input, the Commission is in the process of gathering the necessary information with regard to PREPA's current performance, in order to regulate a set of performance metrics for PREPA across several key indicators.
Aguirre Site Economic Analysis	CEPR-AP-2017-0001	Stemming from key questions raised by the Commission and stakeholders during the IRP proceeding, the Commission seeks to ascertain whether PREPA's reliance on the Aguirre Offshore Gas Port (AOGP) project as part of its proposed IRP is economically beneficial to PREPA's ratepayers.
Sunnova Investigation	CEPR-IN-2016-0001	This investigation responds to a petition by the Independent Consumer Protection Office, which brought to the Commission's attention several concerns raised by a number of customers of Sunnova Energy Corporation, regarding their dissatisfaction with Sunnova's services pursuant to its long-term power purchase contracts for rooftop solar. Within this investigation, the Commission has issued a series of information requirements to Sunnova in order to better understand its business model and determine its place within the broader regulatory framework for electric service providers other than PREPA.
PV Properties v. PREPA	CEPR-QR-2017-0001	In this proceeding, the Commission addresses a complaint by PV Properties, Inc., who alleges that PREPA is in violation of the provisions of Act 82-2010 with regard to the latter's refusal to purchase the Renewable Energy Certificates (RECs) that the former has offered for sale. This complaint raises, among others, questions concerning the nature and scope of Act 82-2010 in shaping and creating a market for RECs in Puerto Rico, the role of the Commission in enforcing said Act's provisions on this matter, and the interaction between the RECs market and PREPA's Renewable Portfolio Standard (RPS) obligations.

Hurricane María Investigation	CEPR-IN-2017-0002	The Commission initiated this investigation in order to assess the overall state of Puerto Rico's electric system after Hurricane María's strike on September 20, 2017. With the information gathered in this proceeding, the Commission will determine the appropriate short-term regulatory actions necessary to facilitate the restoration of Puerto Rico's electric power system and, more importantly, the longer-term actions that will enable its reconstruction into a more robust, efficient, and resilient system.
Net Metering Regulation Standards	CEPR-MI-2014-0001	Pursuant to its mandate under Act 114-2007, the Commission established the standards by which PREPA must abide in regulating the interconnection of net metered customers into its grid. In the face of questions concerning PREPA's compliance with its statutory obligations, the Commission's orders in this docket have enforced and ensured PREPA's compliance with Puerto Rico's public policy promoting net metering and distributed generation.
Customer Bill Disputes	Multiple	The Commission presides over disputes that customers have with charges on electric service bills, as well as the consumer protections the law affords consumers. The Commission's process includes an initial informal procedure before the electric service company (pursuant to the Commission's regulations), and a latter formal review procedure before the Commission.

The CHAIRMAN. Thank you, Mr. Morales.
Ms. Jaresko, welcome.

**STATEMENT OF NATALIE JARESKO, EXECUTIVE DIRECTOR,
FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR
PUERTO RICO**

Ms. JARESKO. Thank you, Chair Murkowski, Ranking Member Cantwell and members of the Committee. I am Natalie Jaresko, the Executive Director of the Financial Oversight and Management Board for Puerto Rico. It is an honor to appear before the Committee.

Unlike the other members of the panel, I am not an energy expert, but I will try to frame for the Committee the Board's approach to the Island's power system.

Let me first, though, if I may, step back. The Oversight Board is a creature of Congress, created in last year's PROMESA legislation to deal with the fiscal and debt crises faced by the Commonwealth and many of its instrumentalities, including its power system, PREPA. The problems we were designed to address were decades in the making.

Under PROMESA, our primary tools to restore fiscal discipline and access to the private capital markets are Certified Fiscal Plans. And before the hurricanes, we had put in place fiscal plans and associated budgets for the Commonwealth and several of its instrumentalities, including PREPA, that were balanced without additional federal aid. Because the Commonwealth and some instrumentalities, including PREPA, had an enormous and unpayable debt burden, they entered the bankruptcy-like process established by Title III of PROMESA.

That is more or less where matters stood before the hurricanes and in the Board's view, after the hurricanes, the Board's role of providing confidence, oversight and transparency is even more important to the welfare of the people of Puerto Rico and the protection of taxpayers.

We are an oversight board. Our mission is to be able to assure all stakeholders—from residents of the Island to Congressional members, from creditors to American taxpayers—that the Commonwealth and its instrumentalities are fiscally responsible and self-sufficient. To do so, we are utilizing all the tools Congress gave us to the fullest extent possible. We have the power to certify fiscal plans that meet PROMESA's goals, and deny those that don't, we have the power to require that spending be in accordance with the Certified Fiscal Plans and annual budgets, and we have the power to review contracts to require that they be consistent with Certified Fiscal Plans.

But the truth is, the recovery of the island now depends not only on fiscal discipline but much more importantly on federal hurricane relief.

We must revise our fiscal plans to reflect the new realities of declining revenues, postponed savings and the need for emergency- and recovery-related expenditures. There is no way around it—the immediate human needs and the longer-term success that the Board was established to facilitate depends on the continued gen-

erosity of American taxpayers in the form of emergency and supplemental appropriations.

Similarly, the success of our mission depends on the people of Puerto Rico and its businesses, especially its manufacturing base, having the confidence that timely and sizable federal aid is coming and will be sufficient for the rebuilding and the recovery. In particular, the number of people and businesses that leave the island over the coming months will be deeply affected by the perception of whether the necessary help is forthcoming.

Hence, the Board joins with the Governor and the people of Puerto Rico in requesting that the upcoming supplemental appropriations give the people and businesses of the Commonwealth confidence in the Federal Government's commitment to the island's recovery. However, we know that it is not realistic to believe that Congress will appropriate the level of funds needed if it is not confident of adequate oversight of those funds, and we will do everything we can to provide that oversight.

Turning back to the power sector—this is the single, most important block of recovery, short- and long-term. Electricity is the key. Without it, we will not have functioning classrooms or businesses. Without it, we will not have truly safe and livable neighborhoods and homes. Without it, we will not even have a working water system, because it too depends on the restoration of power.

Similarly, we will not succeed in achieving a long-term, sustainable economy, which is the mission of PROMESA, unless we can create a reliable, affordable, sustainable power system. PREPA's history and the system's decrepit condition, poor service and high rates before the hurricane evidenced that fundamental change is needed.

The Board, working with the Governor and PREPA, intends to require transformation of PREPA in its revised fiscal plan. That plan is scheduled for certification by the Board in the final days—first days, excuse me—of February, and that revised fiscal plan needs to chart a path to provide stable, reliable and cost-effective power via a grid that incorporates best practices, private capital and acts as a catalyst for sustainable economic growth. And then all of this must be reflected and confirmed in a plan of adjustment proposed by the Board that also brings an end to the debt restructuring and ensures the future path for PREPA and that it serves Puerto Rico well.

I commit that the process of revising the fiscal plan will be open and transparent, and it will welcome the insight from a broad array of experts. We have already scheduled several stakeholder listening sessions and we, of course, welcome input from the members of the Committee, those testifying here today, and all others with good ideas.

Again Madam Chairman, Ranking Member and members of the Committee, thank you for the opportunity to testify today and I look forward to the Committee's questions.

[The prepared statement of Ms. Jaresko follows:]

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Testimony of Natalie Jaresko
Executive Director
Financial Oversight and Management Board for Puerto Rico

before the

Senate Committee on Energy and Natural Resources

November 14, 2017

Chair Murkowski, Ranking Member Cantwell and members of the Committee, I am Natalie Jaresko, Executive Director of the Financial Oversight and Management Board for Puerto Rico. It is an honor to appear before the Committee.

Unlike the other members of the panel, I am not an energy expert, but I will try to frame for the Committee the Board's approach to the Island's power system. Let me first, though, if I may, step back.

The Oversight Board is a creature of Congress, created in last year's PROMESA legislation to deal with the fiscal and debt crises faced by the Commonwealth and many of its instrumentalities, including its power system, PREPA. The problems we were designed to address were decades in the making.

Under PROMESA, our primary tools to restore fiscal discipline and access to the private capital markets are certified Fiscal Plans. Before the hurricanes, we

had put in place fiscal plans and associated budgets for the Commonwealth and several of its instrumentalities, including PREPA, that were *balanced without federal aid*. Because the Commonwealth and some instrumentalities, including PREPA, had an enormous and unpayable debt burden, they entered the bankruptcy-like process established by Title III of PROMESA.

That is more or less where matters stood before the hurricanes. In the Board's view, after the hurricanes, the Board's role of providing confidence, oversight, and transparency is even more important to the welfare of the people of Puerto Rico and the protection of taxpayers.

We are an *oversight* board. Our mission is to be able to tell all stakeholders – from residents of the Island to Congressional representatives, from creditors to American taxpayers – that the Commonwealth and its instrumentalities are fiscally responsible and self-sufficient. To do so, we are utilizing all the tools Congress gave us to the fullest extent possible. We have the power to certify fiscal plans that meet PROMESA's goals, and deny those that don't. We have the power to require that spending be in accordance with the certified Fiscal Plans and annual budgets. We have the power to review contracts to require that they be consistent with certified Fiscal Plans.

But the truth is, the recovery of the island now depends not only on fiscal discipline but more importantly on federal hurricane relief. We must revise our

fiscal plans to reflect the new realities of declining revenues, postponed savings and the need for emergency- and recovery-related expenditures. There is no way around it—the immediate human needs and the longer-term success that the Board was established to facilitate depends on the continued generosity of American taxpayers in the form of emergency and supplemental appropriations.

Similarly, the success of our mission depends on the people of Puerto Rico and its businesses, especially its manufacturing base, having the confidence that timely and sizeable federal aid is coming and will be sufficient for the rebuilding and recovery. In particular, the number of people and businesses that leave the island over the coming months will be deeply affected by the perception of whether the necessary help is forthcoming.

Hence, the Board joins with the Governor and the people of Puerto Rico in requesting that the upcoming supplemental appropriations give the people and businesses of the Commonwealth confidence in the federal government's commitment to the island's recovery. However, we know that it is not realistic to believe that Congress will appropriate the level of funds needed if it is not confident of adequate oversight of those funds, and we will do everything we can to provide that oversight.

Turning back to the power sector—this is the single most important building block of recovery, long and short term. Electricity is the key. Without it, we will

not have functioning classrooms or businesses. Without it, we will not have truly safe and livable neighborhoods and homes. Without it, we will not even have a working water system—because it too depends on the restoration of power.

Similarly, we will not succeed in achieving a long-term, sustainable economy for the island unless we create a reliable, affordable, sustainable power system. PREPA's history and the system's decrepit condition, poor service and high rates before the hurricane evidence that fundamental change is needed.

The Board, working with the Governor and PREPA, intends to require transformation of PREPA in its revised Fiscal Plan. That plan is scheduled for certification by the Board in the first days of February. That revised Fiscal Plan needs to chart a path to provide stable, reliable and cost-effective power via a grid that incorporates best practices, private capital, and acts as a catalyst for sustainable economic growth. And all of this must then be reflected and confirmed in a plan of adjustment proposed by the Board that also brings to an end the debt restructuring and ensures the future path of PREPA serves Puerto Rico well.

I commit that the process of revising the PREPA Fiscal Plan will be open and transparent and that it welcomes the insight from a broad array of experts. We have already scheduled several stakeholder listening sessions, and we of course welcome input from the Committee, those testifying here today, and all others with good ideas.

Again, Madame Chairman, Ranking Member, and members of the Committee, thank-you for the opportunity to testify today, and I look forward to the Committee's questions.

The CHAIRMAN. Thank you, Ms. Jaresko.

Thank you all for your testimony here this morning.

Mr. Ramos, let me begin with you. I think you have heard, as you have listened to the questions directed to Governor Rosselló, some frustration, maybe a fair bit of frustration, questions about why mutual aid was not triggered earlier.

Obviously, questions about the Whitefish contract and what has happened with that, clearly an issue of concern for all of us, as Senator Cantwell mentioned. It is one thing to be responsive in the immediate aftermath of a hurricane, it is another thing to be engaged in something that we would all call gouging of the taxpayer when you look at the terms that were agreed to.

You have indicated, and the Governor said this as well, that right now it is about 49 percent power throughout Puerto Rico. We recognize that, particularly in the more interior parts of the island, it is going to be a long time before we see power to the island.

There was an article just a couple days ago that on Thursday there was a major outage in the area apparently that Whitefish had been working on and that you literally went from, and this is quoting this article, “went from 40 percent of power down to 18 percent.” My question to you is, have we gone backward in certain areas? Have we seen parts of the efforts that were rebuilt failing?

The 49 percent that you are saying today is something that, I understand, is fluid. The Governor has said that he wants to be 95 percent by the end of the year. Is that realistic and, really, what does that mean? Because what I was told was that that may be 95 percent to certain areas but long-term for the island of Puerto Rico. When do you realistically envision power to the full island? So several questions there for you.

Mr. RAMOS. Yes. So let’s go to the first one.

We suffered an outage last week not related to anything failing on any already repaired infrastructure. After the failure, we flew over in helicopters to find out the reason.

We believe, because they denied it, there was an overhead crane working, not for PREPA, something else and it touched one of the conductors. Certainly, the system auto-protects, but that line is the only line that is tying the south where most of the generation resides to the north. Therefore—and most of the load is in the north. So therefore, we went down to about 18 percent.

To give you an example, about 65 percent of the load is in the metropolitan area which is about five to six towns joined together.

The CHAIRMAN. So is this back online now?

Mr. RAMOS. It is, oh, it was back online, the line was reenergized within one hour because it didn’t have any failures, nothing to fix.

And then the system restoration takes time—the restarting the already repaired circuits—because we still don’t have all of the communication with our substations. Therefore, every time the power goes out men have to go to each substation and open each circuit. When the power and the transmission system is restored, men have to go, physically, to each substation and throw the switches to return power back to the people. But right now, we’re at 49 percent.

The CHAIRMAN. How about meeting the deadlines?

Mr. RAMOS. I’m sorry?

The CHAIRMAN. How about meeting the end-of-year deadline that the Governor has set for 95 percent?

Mr. RAMOS. The deadline is for tomorrow, 50 percent—

The CHAIRMAN. Right.

Mr. RAMOS. —and we are at 49 percent today so we feel very confident that we'll be meeting that deadline.

The CHAIRMAN. And then for the year-end at 95 percent?

Mr. RAMOS. Year-end is 95 percent. It is a hard deadline to meet. We're working, very conscious about it. We are focused on our work. We believe we can reach it.

The CHAIRMAN. Is it fair though to acknowledge that there will be parts of the island that will be without power for a significant period of time?

Mr. RAMOS. Certainly. And let me put this in context.

Hurricane Hugo in 1989, when PREPA had 4,000 additional employees than it does today and where the system was certainly in better condition than previous to Maria, took six months, six months.

The CHAIRMAN. We do not want that to be a standard.

Mr. RAMOS. We don't want that to be a standard.

The CHAIRMAN. I think we all agree—

Mr. RAMOS. I agree, but every time an expert from the U.S. has come to Puerto Rico to help us, and we're very grateful, we take him in our helicopter trip and their jaw drops because of the rugged terrain, the amount of damage. So we need to keep that in perspective.

We are bringing in now, through APPA and the EEI, a lot more resources. We've been in discussions since basically last week, trying to get hold of rooms which are not available.

I think we've reached an agreement where people that are already there will, of course, they already have hotels. We provide them to them. And the rest may be in camps, like military-type camps.

So—

The CHAIRMAN. I think, though, Mr. Ramos—

Mr. RAMOS. Yup.

The CHAIRMAN. —that some of the frustration was, as I mentioned with the previous panel, that there truly was a full month of recovery effort that was lost.

When you have individuals within DOE and the Army Corps suggesting that really the recovery began when that mutual aid, when APPA was brought in, when EEI was brought in, you can certainly understand the frustration, not only of the people of Puerto Rico, but those of us that, well, all Americans who want to be there to be helpful and supportive.

Let me go to Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair.

So, Mr. Ramos, you were in charge of the contract with Whitefish?

Mr. RAMOS. I certainly authorized its signature. The in charge was the procurement people of PREPA with our legal advisors, many of them, of course—you have to remember the dire conditions that Puerto Rico was in and some of the people arrived to the office weeks after. So we need to do a head count. But certainly, our

emergency procurement personnel assigned to the Emergency Management Office were in charge of that contract.

Senator CANTWELL. Okay, so emergency procurement people.

Mr. RAMOS. Yeah.

Senator CANTWELL. So on September 26th the President authorized 100 percent federal cost-sharing for emergency work in Puerto Rico. PREPA had been granted \$200 million for expedited funding to cover purchase of fuel. It was covered 100 percent by the Federal Government.

So when we hear about these huge markups and these huge prices, you know, juxtaposed to mutual aid, mutual aid is about recovery at cost. It is about people coming in to help you. That is why it is called mutual aid. They come in to help you at cost. That is why you sign an agreement. I am sure there are places all over my state, probably in Alaska as well, where people have already signed them because we have storms all the time.

So mutual aid is, "Hey, neighbor, neighboring county, neighboring state, if we have a disaster will you come in and help us at cost? Oh, I'll come in and help you at cost." Okay? Mutual aid is not, "I'm going to come in and charge you exorbitant rates and gouge." Okay? Just to be clear.

So once the Federal Government committed to 100 percent of the cost up front, why did you double down on the Whitefish contract instead of activating mutual aid instead? Why did you just keep going with Whitefish?

Mr. RAMOS. Well, Madam, the mutual aid agreement—first of all, PREPA is a proud member for many, many years of the APPA. I think, certainly, we need to revise mutual aid agreements in terms of PREPA. PREPA doesn't have a neighbor, as you just explained. The only neighbor is St. Thomas, which we have worked together in the past under certain storms, and they were devastated as well.

The mutual aid agreement requires that the utility, the host utility, takes care of all of the logistics. There were no logistics in Puerto Rico. There were, at the first couple of weeks, no fuel, no phone, no internet, no nothing. The people that actually got there from Whitefish, they brought all their satellite and equipment, et cetera. We had a process. I mean, we had six offers from six companies.

So I realize—and one other thing, you need to recognize and this is hard to change—hurricanes pass first through the Caribbean and then come here. And that situation, of course, creates some immobilization of the mutual aid resources. Right?

If they're available, they probably are from the West Coast because as you correctly said, they're expecting to find out where the landfall is, what the damage is, in order to help their neighbors, physical neighbors, not virtual neighbors like we are.

So we needed first responders. We did a process with six different companies. Six companies provided us with rates. The rates were extremely similar, very similar.

Senator CANTWELL. Okay, so are you saying that Puerto Rico, as an island, didn't understand mutual aid or are you saying that the concept of mutual aid as doing work at cost because it is an emergency, didn't exist? Is that what you are saying?

Mr. RAMOS. No, I'm not saying none of the above.

What I'm saying is that Puerto Rico is not part of the continental USA so that the concept of neighbor, you know, companies coming to the aid gets changed, you know?

The market basically sets the rates. PREPA is under bankruptcy. There's logistics for mobilization, costs of mobilizations. And when we saw that six companies, some of them very reputable, actually some of them now under contract with the Corps of Engineers, had similar rates for PREPA, we decided to move with the first responder effect. Eventually, after that first responder, we specifically required experience on transmission lines crossing mountainous regions. Eventually we were going to call everyone to help. As a first responder—

Senator CANTWELL. Well, I guarantee—

Mr. RAMOS. —we needed to have somebody—

Senator CANTWELL. —everybody was calling you, I guarantee you. You may not have been able to receive them, but I guarantee you everybody was offering to send people. Practically every member of Congress I talked to said, "my utility wants to go."

Mr. RAMOS. Yeah.

Senator CANTWELL. And I guarantee you they were not charging Whitefish rates to go.

So somewhere, when the Administration said they would pay 100 percent of the cost, that is when we should have stepped in and said, why are we paying exorbitant rates?

And just because you are an island—I guarantee you we have disasters in Alaska. I doubt that people just gouge the heck out of people just because it is hard to get to Alaska. It is very hard to get there, all the resources, to every part of Alaska. Right?

Mr. RAMOS. So—

Senator CANTWELL. So I doubt that my utilities sit around and go, "Ugh, it's Alaska, let's gouge." Just because it's Puerto Rico—so my point is, the reason why we are going through this painful exercise today is we don't want this to happen again. I personally, looking at these reports, think we are going to have a lot more disastrous storms. So we don't want to see price gouging just because somebody had the really unfortunate experience of being in a path of this kind of devastation.

I just want to ask you, do you know of anything, of any information, any individuals that might have received a kickback from Whitefish, as part of this contract?

Mr. RAMOS. I don't know of any individuals that may have received a kickback from Whitefish.

The price gouging issue will then be, we'll be talking about six different companies in both, in that sort of a situation.

You know, our focus, again was restoring power, having first responders. We have six proposals, very similar pricing. So if there was price gouging, it involves six companies and I believe that's another legal term for that situation. No, we don't know of anybody having been offered a kickback—

Senator CANTWELL. Whitefish.

Mr. RAMOS. In PREPA, we, the negotiations and the contracts were direct from PREPA, from the evidence I've gathered from the Procurement Office.

We have no—there's a legal figure in Puerto Rico which a representative, actually protected by law, that can represent a company. That was non-existent for none of those six companies.

So, no, it was a direct contract with our procurement people—
Senator CANTWELL. Okay.

Mr. RAMOS. —contact with the procurement people and Whitefish.

Senator CANTWELL. I want to ask you—Whitefish Energy said they had contacted Interior Secretary Zinke after signing the contract with you. Do you know of any contact there?

Mr. RAMOS. With PREPA, none.

Senator CANTWELL. Okay.

Ms. Jaresko, do you know anything about this? Do you have any emails or communications or anything related to this?

Ms. JARESKO. None. We learned about the contract in the press, as you did.

Senator CANTWELL. Okay, alright.

Well, we may have some more questions for you, Mr. Ramos. But, I think, it isn't a question of whether other people wanted to charge exorbitant rates. It is that we want to set a principle here that is, I think this is how this all came about, is a bunch of utilities who know that this is the standard way we respond to disasters, is not to go in and charge exorbitant, gouging rates, but to have mutual aid agreements.

Mutual aid is akin to the following: if you have a disaster, I will come there to help and do it at cost. And cost, sometimes, can be a little more than it would be if it was just in Oregon versus all the way to Puerto Rico but it doesn't mean that it is going to be these rates.

And I am going to come back to you with questions about why, because previously what Puerto Rico has told us is, "Well, we weren't clear. We weren't clear. So we had to get somebody on the job and we didn't know who was going to pay so we were forced into this." But you are telling me it wasn't that you were forced into it, that you thought this was a standard way of doing business.

Mr. RAMOS. Senator, the standard way of doing business in an emergency, right, may get somewhat really—I'm very familiar with mutual aid. As I said, when I was young and worked in PREPA, we went to the Virgin Islands to provide help.

What I'm saying is that on the conversations with the different CEOs of mutual aid that we had prior to Irma, it became evident that I would not get a fix date for resources arriving to Puerto Rico. That was evident. Therefore, after we saw that the hurricane was imminently hitting Puerto Rico and crossing it from one side to the other, I needed first responders.

Senator CANTWELL. Yes, well, I—

Mr. RAMOS. I requested six companies.

Senator CANTWELL. Yes.

Mr. RAMOS. The prices were very similar. We engaged one of them knowing that we will need more resources. I got calls from other utilities. They were not bringing diesel. They were not bringing lodging. You can ask the FEMA people. There are no hotel rooms in Puerto Rico. You have to come military style, you know, with a tent, with your diesel, with your generator—

Senator CANTWELL. Yes.

Mr. RAMOS. —if you want to have all of those.

Senator CANTWELL. Yes, well, I guarantee you, I am sure if you raised that flag up the—my time is expired. If you would raise that up the flagpole and said to the U.S. Federal Government, should we be paying these rates, I doubt you are going to find somebody that says, yes, let's pay those rates.

Thank you.

Mr. RAMOS. Thank you.

The CHAIRMAN. Let's go to Senator Franken.

Senator FRANKEN. Maybe this is a misunderstanding, and I think surrounding all of this there sometimes are misunderstandings. But I learned from someone at DOE that the reason that mutual aid or mutual assistance did not kick in right away or that there were not offers right away, and now I am hearing there were six that were just high-priced, but that mutual aid is usually based on the state being able to repay, to pay you, and that since Puerto Rico was in bankruptcy that there were not offers to do this. Is that just wrong?

Mr. RAMOS. Senator, the six offers were from private companies. They were proposals. None of them are related to APPA or mutual aid.

Senator FRANKEN. Yes.

Mr. RAMOS. They're private companies.

Senator FRANKEN. Okay.

So I think that's, that might be part of this, that it wasn't the normal, you know—if Minnesota gets hit, Wisconsin and Iowa and South Dakota, North Dakota are ready to go in there under normal mutual aid and to do it under the normal circumstance. But that the fact that you are in bankruptcy made these other, all the normal utilities that come in, worry that they were not going to get paid. And so, that's perhaps why the offers you got were not the normal ones coming in.

This past weekend I met with Minnesotans from Puerto Rico. One issue they raised was ensuring that stakeholders across the spectrum in Puerto Rico are engaged in the rebuilding planning process. So I just want to make that heard.

Another major concern they raised is about what critical infrastructure is being prioritized to receive power, especially when it comes to medical treatment. And I know when we say load restored to 49 percent that doesn't mean 49 percent of the population. That means 49 percent of the 100 percent of the grid power is being generated and it goes to strategic places.

So citizens need medical help right now, the hospitals, most of the hospitals are up, but what I was hearing from my folks in Minnesota was that in some cases community clinics or a doctor's office might make more sense since the hospitals are so stressed. And if you could get a generator to a doctor's office, he could see people in his area and the same with community health centers or clinics. Mr. Ramos, are these smaller facilities being prioritized for emergency power now or during the rebuilding, grid rebuilding process?

Mr. RAMOS. Certainly, the U.S. Corps of Engineers, part of their mission has been to put emergency power generations on those facilities, critical facilities, that PREPA cannot reach on an expedited

basis. So we've been collaborating with the U.S. Corps of Engineers on that strategy, and we believe it's worked fine. PREPA has 85 percent of all of the hospitals in Puerto Rico, hospitals, energized under its grid at this moment. There are smaller, as you said, medical facilities that are still running on generators. We have another, I don't have the percentage here, but we have also energized some of those medical, smaller medical facilities.

The priorities were set from the beginning to get hospitals first because of the extreme forces that this hurricane impacted Puerto Rico with. So it was medical facilities and, of course, first the large, then the medium, then the small in each region. We have accomplished that with the exception of the southeastern region which we, I mean, we accomplished that fairly quick, but the southeast region took us longer. Last week we were able to energize the Guayama Hospital in the southeast.

Senator FRANKEN. Okay.

Mr. RAMOS. But it's more south than east. And we have a strategy in which, of course, again, the Corps of Engineers is helping.

Senator FRANKEN. I'm sorry, but I only have so much time.

Mr. RAMOS. Yup.

Senator FRANKEN. I just want you to hear from my—

Mr. RAMOS. Constituents.

Senator FRANKEN. —Puerto Rican constituents in Minnesota that doctors, private doctor's offices, might be a good way to deliver healthcare to people so they don't all, they don't have to go to hospitals. That is all I was saying. And I am out of time.

I just wanted to ask you about—I can ask these questions for the record, of course, but about how you see PREPA going forward in the rebuilding of the infrastructure, and Ms. Jaresko, what you see as your oversight responsibility regarding PREPA so that we can make sure that this is all done as efficiently as possible. That is what we all want. So—

The CHAIRMAN. That is such an easy question, yes.

Senator FRANKEN. Huh?

The CHAIRMAN. That is an easy question there for all of them.

Senator FRANKEN. Yes, it is very simple.

The CHAIRMAN. Yes, yes.

Senator FRANKEN. It is like that. Boom.

[Laughter.]

It is up and done beautifully.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Franken.

I think those, and so many others that people will have, we will submit for the record, but it is important that we try to discern what these appropriate roles are going forward.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you.

Ms. Jaresko, previously, and by the way, thank you all. Thank you all for being and sitting this morning and testifying.

In the previous panel there was a question that was asked, I think it was of Mr. Walker, and the question was whether or not the disaster relief money could go to bondholders to satisfy that lien and he responded, he was confident through, I think, some of the attorneys in FEMA, that the disaster relief money coming from

the United States could not be utilized by the bondholders to satisfy the lien. Do you feel the same way? Are you confident in that statement as well?

Ms. JARESKO. Yes, I am, ma'am, as well.

We acted on behalf of the debtor and on behalf of the Commonwealth and filed and achieved a comfort order in the court, in the Title III Court, to assure everyone, in particular the Federal Government agencies, that their grant funding could not be used in that way.

Senator CORTEZ MASTO. Thank you.

And then to respond to Senator Franken's last question, because I noticed you were ready to respond. I am curious as well what your answer is.

Ms. JARESKO. Well, the tools that we've been given by PROMESA, in particular, have to do with fiscal plans and budgeting. So we are in the process of asking for a revised fiscal plan from PREPA which will be due December 22nd. We will then review and discuss with a goal to certify that by February 2nd.

That fiscal plan is basically a five-year business plan and then it will be followed by a single, annual operating budget to ensure that we actually are fulfilling that business plan.

Beyond the fiscal plans, beyond the budgeting, we also have a contract policy where we have now begun to review all contracts over \$10 million, as well as using that contract review policy to look back at other contracts, on an ad hoc basis, under \$10 million.

And then, finally, we have an authority through Title III as the representative of the debtor to bring all of this together.

Many of you have asked questions about how the creditors work, how maybe being in bankruptcy affected the decisions that were made. All of this needs to come together in a plan of adjustment to take us out of bankruptcy in the end, and the plan of adjustment has to be filed in the court. It's a business plan, even beyond whatever business plan, fiscal plan or annual operating budget we have that gives everyone confidence that the situation is stabilized, the debt has been restructured, PREPA is no longer in bankruptcy and that we have achieved those goals that we talked about which is cost-efficient, reliable energy for the island, for the residents and the businesses.

Senator CORTEZ MASTO. Thank you. Thank you, all. We appreciate you being here.

No further questions, Madam Chair.

The CHAIRMAN. Thank you, Senator.

I think it is important to note that you have a head of PREPA, Mr. Ramos, who has been on the job since March of this year, you indicated. I understand that there has been a significant turnover with the PREPA Board. The most tenured member has been in place now for just 11 months. We have the Energy Commission as a new regulatory body that has been stood up. You have the Oversight Board that just came on with PROMESA. And oh, by the way, let's just throw two hurricanes into the mix as they are trying to deal with all of this, making a very hard situation, I think, even much more complicated and just really hard.

Mr. Rhymer, I want to ask just one question of you, sir. We do not want to leave the Virgin Islands out of these discussions. I will

tell you, and I know that Senator Franken saw the same thing when we were there on our trip, there has been so much attention focused on Puerto Rico that I kind of assumed that the Virgin Islands were doing just fine and perhaps the damage had not been as substantial. Then we get there and see the facts on the ground and it was just a true reminder that just because we have moved to another disaster on another island does not mean that the Virgin Islands are all well.

The Governor has indicated that during his tenure, five hurricanes have gone through, an opportunity, if you will, to have to deal with a rebuild of the grid five different times. Surely you learn from each successive disaster and that effort to “harden the grid” is there with each rebuild. To what extent has the U.S. Virgin Islands been able to harden the grid from successive disasters to allow for greater resilience?

Mr. RHYMER. Over several years we’ve been able to basically tap hazard mitigation funds and that’s why we have underground systems that actually generate, basically, power to about 75 to 80 percent of our businesses with our commercial districts on St. Thomas and St. Croix.

And that’s what we’ve been doing since each storm that we try to learn from each lesson learned how do we go underground, how to become more resilient. And that’s what we’re doing now in terms of microgrids, going toward, basically, composite poles, et cetera, to make sure that in the next storm there’s less damage, not as much damage or little to no damage such as we have enclosed all of our, basically, our substations in concrete buildings.

So there was no damage on our, basically, substations, territory-wide. So that made it where there’s no damage. In the past, we would have had damage on the, actually, substations. Now we have zero percent damage on those. So with each storm and each successive storm, we learn and we get more resilient.

The CHAIRMAN. I am told that Senator Lee is on his way back, so I am going to ask another question until he arrives.

Secretary Walker mentioned and we saw a picture of some of the transmission lines that were just loaded with, almost a jungle, of fiber optics. He and I had an opportunity for conversation as we were coming back from our visit to both Puerto Rico and USVI. He indicated that this was something that Department of Energy was going to be looking at in terms of, does that increase vulnerability to additional damage?

Mr. Ramos, have you looked at this aspect, those lines that were carrying, kind of a jumble, if you will, of fiber optics? Are you seeing some evidence that, perhaps, this may be something that we need to address and change going forward?

Mr. RAMOS. Certainly. Many of the fallen poles fell because of the additional weight of infrastructure that really was not supposed to be there. So the grid itself is old. Our new design standards account for an amount of additional infrastructure for communications and other, but many of the poles were, you know, they had communications because some local law of Puerto Rico permitted the common right-of-way usage. So we had to allow, you know, telecom companies to put the telecommunications cables up, but the pole itself was not necessarily designed to those standards.

The new standards in PREPA, prior to Maria or the hearing, they've been in place for some years now, do include so that people can put, companies can put, additional infrastructure.

Puerto Rico, as you know, even though we've lost so many people, you know, going out of the island, it's still, the metro areas are highly populated, you know. It's very difficult, and I understand the situation, for other infrastructure to get a space other than the PREPA pole. But you know, it's something that needs to be revisited. Everything relies on PREPA. All of the other infrastructure relies on PREPA, but you know, they need also to invest in their systems. Let's say telecommunications, for example, in order to provide excellent service.

The CHAIRMAN. Yes, well, it was a new issue that had been raised with me and one that, I think, is important to look at and one that I understand was not at issue in the U.S. Virgin Islands which makes it, again, an interesting comparison there.

Mr. Morales, a question to you about the Energy Commission. I noted that it is a relatively new regulatory body. In terms of your ability to gain operational capacity, what is it that is needed within the Energy Commission to support what it is that you need to do?

Mr. ROMÁN MORALES. Thank you, Madam Chair.

Definitely the Commission operates with a statutory budget that is very limited to what the requirements are that they mandate, the local law mandates the Commission to do, especially now with the restoration that is required.

It's not only—one thing that we need to keep in mind is that PREPA is a government-owned, non-profit utility. So typical—tools that regulators have to stop imprudent costs to be borne by the ratepayers are not present in the situation that PREPA has because PREPA has no shareholders. So any costs in being prudent or imprudent are borne by the ratepayers.

So the Energy Commission is very—we have to be involved in what's in all the restoration, not only if the federal forms are used correctly, but any recovery that is not covered by the federal forms will be covered by the people of Puerto Rico, by their ratepayers. So our role is to make sure that all actions are prudent.

With that situation is why the Energy Commission ruled on the rate case order that, since we could not disallow costs after the fact, we needed to stop them from being incurred at all. And that's the reason why we requested PREPA to submit the budget so that we could approve the budgets before they actually started spending the money.

There is a challenge of coordinating with the PREPA Board. So we ask PREPA, this is something that can be coordinating between one of the PREPA's board's requirement of approving budget as well as the fiscal oversight board requirement of approving the budget. But we are responsible that the costs are prudent and that the rates are just and reasonable for the people of Puerto Rico.

So it's a matter of now working all together, being able to put a plan in place. The Commission has been the regulatory expert in the performance—we'll take a first look at it, PREPA will approve it and then the fiscal oversight can approve it and then we can move forward.

The CHAIRMAN. Let me ask you, Ms. Jaresko, and I mentioned this just a few minutes ago, about the fact that you have a lot of new folks, a new regulatory body. From the oversight board perspective have you seen enough to determine that an emergency manager is necessary now or should the new leadership be given a chance to implement whatever reforms you feel are appropriate?

Ms. JARESKO. So as you know, Madam Chairman, the Board took an action and filed in Title III Court to name a Chief Transformation Officer. The court ruled yesterday against us in that action, although we have not yet seen the written judgment so I can't comment on it in detail.

The reason we thought that was necessary, the reason we think that is necessary to deal with PREPA is to bring together these various components, not in any way to interfere with the emergency work that's being done, the recovery work that is absolutely primary, number one and most important today, but to bring together the medium- and long-term aspects of federal funding, federal funding that has to be brought together with, potentially, private sector funding to ensure that the sector is finally competitive and providing the kind of low-cost, reliable electricity we all want to see and bring it together with, as I said earlier, the end of a debt restructuring and the end of the Title III process. Bringing all of those short-, medium- and long-term perspectives together was what we thought and we believe that the Chief Transformation Officer could do.

However, the judge's decision is a setback for us but we are not throwing up our hands. We still, as I said earlier, have the authority to deal with the fiscal plans and we are in that process and we will continue to work toward providing the oversight necessary to assure everyone and give everyone confidence that all the funds that are being used will assist us in achieving the goals that we all share.

The CHAIRMAN. You describe this as a setback. Do you think that this will limit the ability to attract that private investment that you believe is necessary?

Ms. JARESKO. I think it is a setback from the perspective of providing the oversight that the Congress has been asking of us and for meeting the lofty expectations of the members.

I believe that we will still work with the tools that we have. We will see what happens when we see that written judgment, as to what is in the written judgment from the court yesterday, but we will continue to work toward, together with PREPA, the government and the regulator, who I think is really quite critical.

And I can't underline enough, in my previous experience in the energy sector in Ukraine, having an independent regulator that provides private sector with confidence about rate policy and consistency of rate policy, I think, is even—is an extremely critical part of attracting private sector capital.

The CHAIRMAN. Thank you.

Senator Lee.

Senator LEE. Thank you very much, Madam Chair.

I would like to start with you, Mr. Ramos.

Do you think politics have played a part in PREPA's failures?

Mr. RAMOS. Historically?

Senator LEE. Yes, historically or currently?

Mr. RAMOS. I can attest that historically, certainly, there's been—it's very hard to manage PREPA being a big corporation which is part of government. It gets—it is, even in its current bankruptcy, PREPA is like the jewel of the crown of Puerto Rico regardless of the bad service and the, you know, bad condition which it is in.

And certainly there's, you know, too much intervention, you know, by government officials in the sense of—may I be—don't, please, don't feel bad, but it gets a lot of attention if you do bills for PREPA, if you do, you know, the people get attention so, you know, politicians, in order to get attention, they, you know, do subsidy, subsidies for and actually, subsidies have killed PREPA in its finances as well. Too many subsidies in order to get, I guess, you know, votes, et cetera. So certainly there's been—

Senator LEE. The thinking is, "I'll look good if I do that," and it encourages people to do that. What about in employment? How many political appointees are currently employed by PREPA?

Mr. RAMOS. PREPA, traditionally, has been a company where politicians or, you know, parts of government can get their family members to get work—

Senator LEE. Do you ever think—

Mr. RAMOS. —percentage wise, certainly over 50 percent, but—

Senator LEE. Okay. Many hundreds. Many hundreds.

Mr. RAMOS. Sorry?

Senator LEE. Many hundreds of political appointees currently work there.

Mr. RAMOS. They're not political appointees by the Governor. What I'm saying is that historically the PREPA, that PREPA has served as the place for employment of families of, you know, political figures since the '70s, or early '70s.

Senator LEE. Okay, so this is separate and apart from any political appointees—

Mr. RAMOS. Exactly. Currently the political appointees are myself in the sense that the Governor recommends me and, but the Board of Directors confirms my assignment and then in turn, I choose, you know, qualified individuals, which many years ago used to be also a political issue, this time with the independent members of the Board that we have. We, you know, I choose the people according to their capacities and then the Board ratifies them.

Senator LEE. Okay.

My understanding is that, historically, currently there might be around 200 political appointees there. Historically, that number has been much larger at about 650. That is a lot of people. There are a lot of ways we could turn that.

But I want to move on. I would like to speak to Mr. Rhymer for a moment. In our first panel this morning, Mr. Rhymer, Governor Mapp stated that WAPA has gone to great lengths to ferret out corruption. We are happy to hear that and look forward to hearing what changes have been made, and we will certainly follow up with Governor Mapp to learn more about them.

But for now, I would like to focus on power theft and on some of WAPA's accounting practices. Back in May of last year, May 2016, if I am not mistaken you blamed some emergency rate increases on the territory's hospitals saying that they "just don't pay." At that time, the estimate was that the government of the U.S. Virgin Islands owed WAPA nearly \$32 million.

Can you tell me, sir, how much money WAPA is currently owed by U.S. Virgin Islands' government agencies, independent authorities and non-profits?

Mr. RHYMER. Currently about \$36 million.

Senator LEE. Thirty-six million. And what are you doing to collect that money?

Mr. RHYMER. We work with the Governor of the Virgin Islands to actually try to collect those funds. The difficulties that you have is the two hospitals that, as you quoted earlier, simply just can't afford to pay because of the Medicare/Medicaid structure that here it is, they don't—you're going to have a lot of uncompensated care that forbids them to be able to have the cash flow to be able to pay the utility.

So what happens is they know that I'm not going to turn them off because it's a critical function of the actual Virgin Islands. So they just do not pay the utility.

Senator LEE. Okay.

So this is something that they are doing in order to deal with the funding shortfall that they have. They just don't pay and then they continue to have power.

Have you changed your auditing and your billing procedures?

Mr. RHYMER. Yes.

Senator LEE. What can you tell me about changes you have made to your billing procedures and speak to what issues of fraud or corruption you have uncovered like, you know, duplicate billing or defaulted accounts?

Mr. RHYMER. Well, we've never had duplicate billing. What normally happens in the Virgin Islands before we used to bill customers in terms of estimates. We now have an AMI structure in place where it's automated so we actually get more accurate billing.

I've never encountered any fraud in terms of billing as a whole. We've had theft on the customer side, but not from the utility side.

Senator LEE. Okay.

I have other questions that I will submit in writing.

Thank you very much, Madam Chair, and thanks for letting me come back to do this.

The CHAIRMAN. Absolutely.

Thank you, Senator Lee.

Thank you for your testimony here this morning. Obviously, we have much to do working with you and the leadership and the people in Puerto Rico and the U.S. Virgin Islands.

Well, this is the Energy Committee and we have focused a great deal of today's hearing on the energy piece and how we can build out a more resilient, efficient and better grid.

We are also the Committee that has the oversight of our territories and our insular properties, so we heard discussion about Medicare, Medicaid, healthcare. I raised the issue of schools. And while it might not be specific jurisdiction for this Committee to

take up, for instance, those issues relating to reimbursement for Medicaid or Medicare, I think it is important to recognize that we do have that oversight role within this Committee.

And when you recognize the impact, the economic impact, the personal impact that these two significant territories, commonwealths, have sustained with these recent disasters, it makes the role of this Committee just that much more heightened.

I think you have seen from the interest and the participation from Committee members, not only in today's hearing, but the many of us that have made the trip down to take a look for ourselves. I might note that Senator Carper, while not on this Committee, had joined us and had hoped that he would be able to participate or at least listen to some parts of today's hearing as well. So there is a great deal of interest.

We need to be working with the Administration. We need to be working with so many of you that have given insight here today and know that as we move forward with proposals, we will be looking to you for your input and guidance on these specific areas.

With that, I thank you all and this Committee stands adjourned.
[Whereupon, at 12:49 p.m. the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

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[The referenced information was not received at time of print.]

Question from Chairman Lisa Murkowski

Question: Alaska has quite a bit of experience working with microgrids due to the isolated nature of most of our communities. What role do you see microgrids having in the islands post-hurricane and how can Alaska's experience be best put to use?

Questions from Ranking Member Maria Cantwell

Question 1: How would you characterize the Federal Government's overall response to Hurricane Maria in Puerto Rico? What areas do you feel are most lacking?

Question 2: What would be the consequences be if Puerto Rico is not given the proper resources and support from the Federal Government?

Question 3: How has the Whitefish controversy impacted the honest efforts of your government to work with the federal government on recovery efforts?

Question 4: Senator King asked a question about how wind farms in Puerto Rico fared. You cited the case of some wind turbines and towers that were severely damaged.

- a) Was all wind generation similarly affected on the island, or did some wind farms fare better than others?
- b) If the latter is the case, do you know yet if differences in siting or technology played a role in the resilience of existing wind farms to the hurricanes?
- c) Could you provide any statistics, to the extent they are available, about how resilient wind and solar generation resources (both utility-scale and distributed) on the island were?

Questions from Senator Ron Wyden

Question 1: Governor Rosselló, we heard that most of the hospitals on Puerto Rico now have power, but that many smaller community clinics and doctors' offices do not. I am concerned about health care access, and about a potential crisis with regard to mental health amid reports of increasing anxiety, depression, and suicidal thoughts among the population.

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What steps are you taking to speed power restoration to community clinics and doctors' offices?

In your opinion, what steps should the Federal government take in the short- and long-term to ensure that Puerto Ricans have sufficient access to effective health care, including mental health?

Question 2: Safety net programs like Medicaid and the Children's Health Insurance Program (CHIP) have been shown to be vital following natural disasters. Indeed, following disasters like Hurricane Katrina, previous Administrations have proactively reached out to states to ensure access to needed care for vulnerable individuals. Because Congress has allowed CHIP funding to lapse for the first time in the program's history, many states, even those not impacted by significant disaster, are struggling to fund their programs, which may compromise access to needed health services for millions of children.

- **Given the extra strain that this disaster has placed on Puerto Rico, when do you anticipate that Puerto Rico will run out of federal funding for CHIP, if it has not already?**
- **Has the Department of Health and Human Services reached out to you to offer assistance or redistribution funding in case funding does run out?**
- **If Puerto Rico were to run out of CHIP funding, what would be the impact for children covered by CHIP and the territory's ability to successfully recover from this disaster?**

Question 3: Safety net health care programs play a critical role in helping states and territories address the impact of natural disasters, including devastating hurricanes like Hurricanes Irma and Maria. However, Puerto Rico's Medicaid program has faced significant challenges due to the capped financing structure of the program. Unlike the fifty states and the District of Columbia, which receive open-ended federal funds according to their need, Puerto Rico and the other U.S. territories operate capped Medicaid programs with lower, fixed federal match rates for Medicaid expenditures. These limitations have strained Puerto Rico's Medicaid program, which provides coverage to approximately 1.3 million enrollees, nearly half of Puerto Rico's population. The Affordable Care Act attempted to ease these strains by providing an additional \$7.3 billion in federal Medicaid funding to the territories, and by raising the fixed federal match rate to 55 percent. After Puerto Rico exhausted a significant portion of their ACA funding, Congress provided an additional \$295.9 million in Medicaid funding through the Consolidated Appropriations Act of 2017. Despite these steps, estimates before Hurricane Maria projected that Puerto Rico would exhaust its remaining federal Medicaid funding in the spring of 2018. These estimates also suggested that up to 900,000 people could lose access to health care as a result.

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- **As people seek care after natural disasters, states and territories are often forced to rely heavily on their Medicaid programs to address the health care needs of affected individuals. How has Puerto Rico's Medicaid program been impacted by the territory's response to Hurricanes Irma and Maria? To what extent, if any, have the hurricanes changed the projection of when Puerto Rico's federal Medicaid funding will be exhausted?**
- **Please describe how CMS has worked with Puerto Rico to ensure that impacted individuals and evacuees have access to needed health care coverage and services under Medicaid.**
- **Please describe how CMS has worked with Puerto Rico to ensure impacted individuals who have evacuated from the island after the disaster continue to maintain access to their Medicaid coverage and essential services and providers, regardless of where they seek care?**
- **Do you think Congress should provide additional Medicaid funding to areas affected by disasters like Hurricane Maria, as it did after Hurricane Katrina in 2005?**
- **In 2005, Congress allowed additional federal Medicaid funding to be used for the non-federal share of Medicaid expenditures for individuals impacted by Hurricane Katrina. In your view, should areas affected by Hurricane Maria like Puerto Rico also receive additional support for their non-federal share of Medicaid expenditures in light of the disaster?**
- **If Congress does not act to provide additional Medicaid funding to Puerto Rico, how will this impact access to benefits and services under the program for beneficiaries?**

Question 4: Safety net health care programs are critical during disaster relief efforts to help affected individuals access the medical care and services they need. With approximately 750,000 beneficiaries in Puerto Rico, Medicare has and will continue to play a key role for older and disabled individuals dealing with the aftermath of Hurricanes Irma and Maria. The majority of these beneficiaries, roughly 567,000, are enrolled in Medicare Advantage, nearly half of whom are in Medicare Advantage Dual-Eligible Special Needs Plans.

- **Please describe how the Centers for Medicare and Medicaid Services (CMS) and other federal agencies have worked with Puerto Rico to ensure that impacted individuals and evacuees have access to needed health care coverage and services under Medicare.**
- **The Department of Health and Human Services has announced special enrollment periods for affected individuals seeking to enroll in Medicare Advantage or**

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Medicare Part D. Has Puerto Rico requested a special enrollment period for those unable to enroll in Medicare Part B due to Hurricanes Irma and Maria? If so, has Puerto Rico received a response from CMS?

Questions from Senator Steve Daines

Question 1: Did you encourage the PREPA board to approve the Whitefish contract?

Question 2: Have you coordinated with the Federal Oversight Board before enacting various executive orders or decisions like agreeing to the Whitefish contract, taking action to suspend the sales tax collections, or establishing the Central Recovery and Reconstruction Office, and if not, why not?

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Responses of the Honorable Kenneth Mapp, Governor of the U.S. Virgin Islands

Question from Chairman Lisa Murkowski

Question: Alaska has quite a bit of experience working with microgrids due to the isolated nature of most of our communities. What role do you see microgrids having in the islands post-hurricane and how can Alaska's experience be best put to use?

Response: The microgrids, once added to the electric grid, have the potential to allow the Authority to maintain service in the areas serviced by the micro grids during times when other areas experience a power disruption. The length of time that the microgrids remain on line is contingent on the amount of storage capacity. The microgrids as envisioned have the ability to function in conjunction with the generation produced by the power plants. Alaska can be used as a resource for information on the best practices for implementation for the microgrids.

Questions from Ranking Member Maria Cantwell

Question 1: Though much attention has focused on Puerto Rico's grid, when hurricanes Irma and Maria swept through the U.S. Virgin Islands virtually all power infrastructure was wiped out. It is estimated that power will be fully restored by Christmas, but, as you mentioned in your testimony, this will be the fifth time that the federal government has had to pay to rebuild the power distribution systems in the USVI. How can the federal government work better with your government to construct a grid that is more resilient to future natural disasters?

Response: The Virgin Islands and its Water and Power Authority ("WAPA") can be best assisted through federal funding for the purchase of smaller sized generators and storage components. When service interruptions occur as a result of the failure of smaller units, smaller numbers of customers are affected when compared to larger generators which affect a significant number of customers. In addition, more resilience can be built into the transmission and distribution system through the undergrounding of feeders coming out of the power plants. Our focus continues to be the undergrounding of feeders to critical facilities such as schools, the container ports, marinas, and the business districts. For above-ground systems, WAPA has already begun to install composite poles, which can sustain higher wind speeds, in remote areas such as Coral Bay on St. John and on many of the main transmission feeders.

We must build our energy transmission and distribution systems to be stronger and more resilient than what existed before the hurricanes. To eliminate any doubt that federal Stafford Act funds can be used to not only restore these systems, but also to make them stronger and more resilient, we urge your support for amendments to the Stafford Act that will specifically authorize federal funding for such purposes.

Question 2: What innovations do you suggest we embrace when rebuilding a grid to be more resilient to natural disasters in the USVI?

Response: We suggest innovations such as the use of composite poles and the undergrounding of as many feeders as possible in large areas. The composite poles have been proven to withstand higher sustained winds, and the undergrounding can significantly reduce the large portion of the current system that consists of vulnerable aerial cable runs.

Question 3: How would you characterize the Federal Government’s overall response to Hurricanes Irma and Maria in the U.S. Virgin Islands? What areas do you feel are most lacking?

Response: Overall, the response of the Federal Government has been outstanding and is much appreciated. We have had differences of opinion on a few issues, but those differences so far have been resolved in a cooperative and constructive manner. Ultimately, sufficient federal funding will be needed in order for the Territory to recover fully from these natural disasters and better withstand future hurricanes.

Question 4: What would be the consequences be if the U.S. Virgin Islands are not given the proper resources and support from the Federal Government?

Response: The potential negative consequences of such a scenario would be too severe and too numerous to adequately describe here. As an example, if Community Disaster Loans (“CDLs”) are not timely provided in sufficient amounts and on reasonable terms, the Virgin Islands Government would not have sufficient funds to provide basic and necessary government services, many of the more than 100,000 of your fellow American citizens in the Territory will be without adequate permanent shelter, the fragile economic situation would further worsen, and the Territory will be even more vulnerable to future natural disasters and economic downturns.

Question 5: How are the National Park sites on the Virgin Islands recovering, especially Virgin Islands National Park? What resources are still needed to get these parks, and the communities they support, back up and running?

Response: The Virgin Islands National Park, Coral Reef National Monument, and the Salt River Bay National Historic Park and Ecological Preserve sustained significant damage and in some areas, total loss. Many beaches, trails, and other areas have been cleared and are now open to visitors to enjoy. The National Park Service, along with other federal agencies and Territorial resources, are working hard to reopen additional areas.

The hurricanes destroyed Caneel Bay Resort, located within the Virgin Islands National Park, which has provided world-class accommodations for visitors to the Park and to St. John. The resort has been a mainstay of the local job market and economy for many years. The operator of the resort is committed to rebuild, at its own considerable expense, if the federal lease is extended by [60] years, which would make the investment financially viable. We request that Congress authorize the Department of the Interior [and National Park Service] to enter into a lease of at least that duration to allow this important project to move forward as quickly as possible.

Question 6: In your testimony, and in the hearing, you discussed the educational challenges facing students in the USVI. What resources do you need on the federal level to ensure that students in the USVI does not fall behind due to these natural disasters?

Response: Hurricanes Irma and Maria destroyed nine of our public schools, and other public schools were severely damaged. Additionally, school gymnasiums and the Curriculum Center in St. Thomas were destroyed, and school buses, hundreds of computers, smart boards, and other technology-centered materials, books, school supplies, musical instruments, and many other school resources have been lost. We've managed to open enough schools to continue teaching our children, but most are learning in difficult conditions and on shortened schedules or have to endure long commutes.

Federal funding is needed to build schools. Given our smaller school population, we plan to consolidate and build six new resilient schools (one in St. John, two in St. Thomas, and three in St. Croix) in place of the nine schools that were destroyed. We also respectfully request federal funding to replace textbooks, supplemental instructional and assessment materials, equipment/furnishings, libraries, school buses, as well as software (including Management Information Systems), servers, computers, laptops, tablets, and other components of an IT infrastructure damaged or destroyed as a result of the hurricanes. Further, federal technical and financial assistance is needed to provide for remote learning, a necessity given our geographic isolation and shortage of teachers. A more stable and equitable level of federal educational funding is also needed to allow us to improve our educational system and provide our students a fair shot at competing with their peers on the U.S. mainland and elsewhere in the Caribbean.

Question from Senator Ron Wyden

Question: Governor Mapp, in your written testimony, you highlighted that Virgin Islanders do not have access to critical health care. You also described difficulties arising from the Federal matching rate for Medicaid in the Virgin Islands. I am concerned about health care access, and about a potential crisis with regard to mental health amid reports of increasing anxiety, depression, and suicidal thoughts among the population.

In your opinion, what steps should the Federal government take in the short- and long-term to ensure that Virgin Islanders have better access to effective health care, including mental health?

Response: Because of the extreme and extensive damage to the Territory's infrastructure caused by the hurricanes, and the resulting stress to the Territory's finances, the Government of the Virgin Islands cannot continue to shoulder the current burden of the local matching requirement for Medicaid funding, which we estimate to be \$64 million in FY 2018 and an additional \$50 million in FY 2019. We respectfully request that the Medicaid provisions of the Social Security Act be amended to provide for a temporary disaster-relief increase in the Territory's federal matching rate ("FMAP") to 100% for all Medicaid expenditures through September 30, 2020. There is ample precedent for an increase in a jurisdiction's FMAP in response to disasters or for other reasons. If that is not possible, we respectfully request that the Social Security Act be amended to provide the Territory an FMAP calculated beginning in FY 2018 like that of every other State (consistent with the December 2015 recommendations of the bipartisan

Congressional Task Force on Puerto Rico) or, at least, a 70% FMAP (the same as for the District of Columbia).

Further, we expect to experience, as a result of the hurricanes, a significant increase in demand for Medicaid services, an increase in our Medicaid-eligible population, as well as increased demands for reimbursement from states providing services to displaced Virgin Islands residents. All of these factors will substantially increase our Medicaid costs, which will accelerate the rate at which federal Medicaid funds are accessed. Consequently, as a result of the hurricanes, there may be little or no ACA Medicaid allotment remaining as of September 30, 2019 unless Congress acts. We therefore request that Congress address the “fiscal cliff” by eliminating the cap on Territorial Medicaid reimbursements, or at least providing annual allotments of at least \$80 million (with the applicable growth factor) beyond September 30, 2019.

The Virgin Islands is also fiscally disadvantaged because the Centers for Medicare and Medicaid Services uses decades-old benchmarks and methodologies for reimbursing our publicly-owned hospitals under Medicare, as well as unrealistic benchmarks under Medicaid. These shortfalls in federal healthcare funding have adversely affected the quality of healthcare in the Islands and have required our Government to borrow money to cover a significant portion of the gaps. We ask for Congress’ help in directing CMS to provide fair and equitable reimbursements to our hospitals.

In addition, we respectfully request the continuation—at least for the short term (six months)—of certain critically-needed services to deal with the effects of the hurricanes, including the air ambulance contract for medical evacuees, the National Disaster Medical System and Federal Patient Movement Operation, assistance in obtaining functional dialysis services so that we can bring the evacuees back to the USVI, and access to the Emergency Management Assistance Compact (“EMAC”) and other deployment methods to supplement staffing for health department services, including mental health (psychiatry and counselors) and other specialty care (for example, dental, pediatrics, and nurse practitioners). Further, we request federal technical assistance (for example, the expertise of a health economist) to help the USVI evaluate public health, behavioral health, and health care policies, evaluate our healthcare market, public health, and healthcare programs, and assess the economic benefit of our current and proposed public health and healthcare interventions, so we can make informed and strategic decisions as we rebuild our public health, behavioral health, and healthcare systems.

Longer term, federal funding is needed to replace our healthcare facilities that were destroyed—including our two hospitals, and the Myra Keating clinic on St. John—and to repair and rebuild our other clinic on St. John (Morris DeCastro). Assistance is also required in order to grow our own public health and healthcare professionals, through apprentice and certificate programs, and recruiting and retaining clinical specialists to come to work in the USVI.

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QUESTIONS FROM CHAIRMAN MURKOWSKI

Q1. Can you discuss the efforts underway with the national labs to look at a more resilient grid for Puerto Rico? Have they had any contact with PREPA in developing their plans?

A1. The U.S. Department of Energy (DOE) is leveraging the knowledge, capabilities, and expertise available at the national laboratories to identify various options to assist in the restoration of Puerto Rico's electric grid with added resilience. At this time, DOE has not received a Federal Emergency Management Agency (FEMA) mission assignment to undertake this work. The intended impact of this effort is to ultimately improve power availability during and after disruptive events. Some of the options can be implemented easily and with little cost, but many of the options are more complex and would take more time and resources to implement.

DOE, through the Emergency Support Function #12 – Energy (ESF-12), has been the primary contact with Puerto Rico with respect to restoration. At this time, national laboratories have not had direct contact with PREPA or the Puerto Rican government in long-term planning. The national laboratories have worked with DOE to consider longer-term restoration actions. However, DOE has contacted Puerto Rico representatives for participation in ongoing DOE research and development activities, which can spur direct exchanges between Puerto Rico and the national laboratories.

Q2. Please outline the current arrangement with PREPA and the Virgin Islands Water and Power Authority to restore power to territories. What is the role of the Department of Energy and the Army Corps in each location?

A2. DOE is the coordinating agency for ESF-12 under the National Response Framework and a primary agency for the Infrastructure Systems Recovery Support Function (RSF) under the National Disaster Recovery Framework. As the coordinating agency for ESF-12, DOE works to facilitate the reestablishment of damaged energy systems and components, in coordination with the state, local, territorial, and tribal governments, FEMA, other Federal agencies, and industry.

At the peak of the response efforts, DOE had 29 personnel deployed to the U.S. Virgin Islands: three ESF-12 responders who are supporting FEMA at the Joint Field Office on

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St. Croix and the Area Field Office on St. Thomas, and 25 personnel, as well as 10 line-trucks, from the Western Area Power Administration to provide mutual assistance through multiple mission assignments from FEMA. As of December 11, three ESF-12 responders remain deployed to the U.S. Virgin Islands along with three subject matter experts, while the personnel from the Western Area Power Administration have completed their restoration work on the electrical transmission system on St. Thomas and finished their demobilization of equipment and personnel on November 29. The deployed ESF-12 responders work to coordinate efforts between FEMA and the U.S. Virgin Islands Water and Power Authority and to collect and evaluate information on damage to the energy system and the status of restoration efforts across the Territory. In the U.S. Virgin Islands, the U.S. Army Corps of Engineers (USACE) has been providing temporary emergency power for critical facilities, infrastructure assessments, and debris management; however, USACE does not have a direct role in the power restoration mission.

At the peak of response efforts, DOE had 14 personnel deployed to Puerto Rico: three ESF-12 responders, seven subject matter experts, and four personnel supporting FEMA ESF-15—External Affairs efforts. As of December 11, two ESF-12 responders remain deployed to Puerto Rico, along with four subject matter experts and one person supporting ESF-15. Deployed ESF-12 responders in Puerto Rico have supported a wide variety of efforts, including damage assessments of energy infrastructure, collection and evaluation of information on the status of various components of the energy systems, including progress on electric system restorations and the availability of fuel, validation of materials requests from Puerto Rico for restoration efforts, and coordination among the Puerto Rico Electric Power Authority (PREPA), FEMA, USACE, and industry partners. Deployed DOE subject matter experts are providing technical assistance to USACE with planning, estimates, validation, and quality assurance/quality control. In Puerto Rico, USACE received a mission assignment from FEMA under the Stafford Act and National Response Framework to lead the Federal role in repairing the hurricane-damaged electrical power grid in support of the government of Puerto Rico. USACE has partnered with PREPA, DOE, and FEMA, to restore safe and reliable power to the people of Puerto

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Rico. USACE has awarded several major contracts to assist with the restoration efforts covering the crews and equipment needed to work on the approximately 33,000 miles of transmission and distribution lines that need repairs, and for generators to stabilize the power grid, such as those installed in Palo Seco and scheduled for Yabucoa. USACE has also worked with PREPA to identify the materials and equipment needed for this effort, which have been procured through the Defense Logistics Agency. USACE is relying on the U.S. Navy's USNS Brittin Roll-On-Roll-Off Cargo Ship to transport these materials and equipment between Charleston, South Carolina and the Puerto Rico.

In addition to DOE's deployments of personnel, there are also DOE personnel who have volunteered for the FEMA Surge Capacity Force. As of November 30, the Department of Homeland Security (DHS) has deployed five DOE personnel, through the Surge Capacity Force, to the U.S. Virgin Islands and 22 to Puerto Rico.

- Q3. Alaska has quite a bit of experience working with microgrids due to the isolated nature of most of our communities. What role do you see microgrids having in the islands post-hurricane and how can Alaska's experience be best put to use?
- A3. A variety of advanced electric system designs that involve distributed energy resources (DER), storage technologies, and microgrids show potential to increase future system resilience. Assessing ongoing activities, such as the system of microgrids project in Alaska by the Grid Modernization Laboratory Consortium, is critical to assuring that future investments are technically informed and successfully benefit from these broader experiences. Several of the Alaska microgrid and networked DER models (storage, wind, solar, and diesel) can inform island-based grids.

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QUESTIONS FROM SENATOR CANTWELL

- Q1. You mentioned in your opening testimony that Hurricane Maria broke the limits of what PREPA's infrastructure was designed to withstand. Given its geography and climate-driven trends in extreme weather, it is reasonable to assume that Puerto Rico will be hit by another, potentially more catastrophic hurricane in the future. How would you characterize the assistance that is needed to restore PREPA's grid so that it is not only repaired, but is more resilient for the future?
- A1. The U.S. Department of Energy (DOE), leveraging the assistance of subject matter experts deployed from the Power Marketing Administrations, is working with the Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers (USACE), and Puerto Rico Electric Power Authority (PREPA) to facilitate safe and reliable power restoration of Puerto Rico's electric grid in compliance with the Stafford Act. DOE is also leveraging the expertise of the national laboratories to identify various options to assist in the restoration and development of potential long-term solutions to improve the resiliency of Puerto Rican energy infrastructure for the future.
- Q2. We understand the largest residential solar company in Puerto Rico has reported that they have assessed the damages of nearly all of their systems on the island and found that over 75% of the residential systems made it through the storms with little or no damage. Solar providers are now in the process of providing battery storage to these systems. Given the resiliency demonstrated by these systems, and the relatively quick install time, what efforts are already underway, either by FEMA, the Corps, or PREPA to incorporate deployment of residential solar as part of a more robust and resilient energy system in the territories?
- A2. As the coordinating agency for Emergency Support Function #12 – Energy (ESF-12), under the National Response Framework, DOE works to facilitate the reestablishment of damaged energy systems and components, in coordination with the state, local, territorial, and tribal governments, FEMA, other Federal agencies, and industry. Following Hurricanes Irma and Maria, initial efforts on the electricity system in Puerto Rico have focused on the safe and reliable restoration of electricity service. USACE received a mission assignment from FEMA under the Stafford Act to lead the Federal role in repairing the hurricane-damaged electrical power grid in support of the government of Puerto Rico and USACE has outlined four main lines of effort in the road to repairing the electrical grid:

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- Provide temporary emergency power and spot generation for critical facilities like hospitals and shelters;
- Ensure adequate generation at the power plants;
- Reinstall and repair transmission lines, and;
- Restore and repair distribution lines, ultimately providing power to local residences.

At this time, DOE, USACE, and FEMA do not have any efforts underway to deploy residential solar systems in Puerto Rico, and such efforts could not be undertaken under Stafford Act authority. Several private companies are working with entities in Puerto Rico to install solar and energy storage systems to provide temporary power until grid restorations are complete.

Beyond the immediate restoration efforts, DOE is leveraging the expertise of the national laboratories to develop potential long-term solutions to improve the resiliency of Puerto Rican energy infrastructure for the future. These efforts include exploring a variety of options and recommendations, including the use of solar and micro-grids.

- Q3. Part of the hearing focused on damage to generating resources, including utility-scale wind farms.
- Q3a. Was all wind generation similarly affected on the island, or did some wind farms fare better than others?
- A3a. Deployed ESF-12 responders have reported that wind farms on the southeast side of the island experienced significant damage and additional reports have noted that significant damage was also experienced by wind farms along the northeast coast. ESF-12 responders also report that the wind farm on the south central coast sustained no significant damage; however, a detailed damage assessment of all wind farms is not available as of November 20.
- Q3b. If the latter is the case, do you know yet if differences in siting or technology played a role in the resilience of existing wind farms to the hurricanes?
- A3b. Hurricane Maria made landfall along the southeast coast of Puerto Rico and the eastern portions of the Territory, which is where several of the significantly damaged wind farms

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were located, experienced the strongest winds. The wind farm along the south central coast that experienced no significant damage was located in an area that experienced less significant winds during Hurricane Maria. At this time, it is unknown if specific technology played a role in which wind turbines experienced damage and which remained intact through Hurricane Maria.

- Q3c. Could you provide any statistics, to the extent they are available, about how resilient wind and solar generation resources (both utility-scale and distributed) on the island were?
- A3c. At this time, a formal assessment of how resilient wind and solar generation resources were on Puerto Rico is not available. Per ESF-12 responders on Puerto Rico, the utility scale solar and wind farms on the southeast side of Puerto Rico, near Humacao, suffered significant damage. The utility scale solar farm on the south central coast sustained some damage and a solar farm on the northwest side of the island sustained approximately 3 percent damage to the panels. A wind farm on the south central coast sustained no significant damage. At this time, we do not have independent data on roof-top (distributed) solar generations beyond aerial observations that show that most roof-top installations visually appear to be intact.

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QUESTIONS FROM SENATOR WYDEN

- Q1. Mr. Walker, Governor Mapp testified that Congress should either amend the Stafford Act or have a separate authorization and appropriation for longer-term grid upgrades.

In your opinion, would it be more effective and efficient to build more resilient grids by amending the Stafford Act, or by creating separate authorization and appropriation bills?

- A1. The Stafford Act provides the principal Federal mechanism to reimburse state and local governments for the actual cost to repair or rebuild damaged public infrastructure. The Stafford Act also authorizes the Federal Emergency Management Agency (FEMA) to provide funds for hazard mitigation projects that can lower projected rebuilding costs or reduce the rebuilt infrastructure's risk of future damage, as authorized by a Federal Disaster declaration. However, there are some restrictions on how these funds can be utilized. In some instances, more resilient technologies could provide long-term savings by mitigating against future disasters.

- Q2. My colleague, Senator Heinrich, alluded to a power purchase agreement made by Tucson Electric Power for solar plus storage costing 4.5 cents per kilowatt-hour. As we heard, Puerto Rican electricity costs are 5 times higher than that.

What levelized cost of electricity do you believe would be possible for Puerto Ricans for a similar installation of solar plus storage?

- A2. The Department does not have access to competitive market costs of developers, nor various costs specific to Puerto Rico, and thus cannot speculate on the price a utility-scale solar plus storage project might be offered for in Puerto Rico.

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QUESTIONS FROM SENATOR FRANKEN

Q1. We need to rebuild a more resilient grid that is better able to withstand the effects of extreme weather without sacrificing the pace of power restoration. Given your experience on the ground, are there ways to provide power quickly in the short-term without investing heavily in rebuilding an antiquated electric grid?

A1. The U.S. Department of Energy (DOE), leveraging the assistance of subject matter experts deployed from the DOE Power Marketing Administrations, is working with the Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers (USACE), the Puerto Rico Electric Power Authority (PREPA), and industry partners, to facilitate the safe, reliable, and timely restoration of power to Puerto Rico, in compliance with the Stafford Act.

The restoration efforts on the portions of the system that need to be repaired or rebuilt adhere to code and current industry standards, to ensure safety and to maintain functionality. Restoration efforts are focused on segments of the electrical system that were damaged and are needed for power restoration.

DOE is also leveraging the expertise of the national laboratories to develop potential long-term solutions to improve the resiliency of Puerto Rican energy infrastructure for the future. There may also be opportunities to explore ways to cost-effectively reengineer segments of the electrical system to improve efficiency and resiliency.

Q2. What is your long-term vision of the electric grid for Puerto Rico? And what do you see as the role of national labs within that?

A2. DOE is helping PREPA and the government of Puerto Rico with their long-term vision of the electric grid. Through our national laboratory system, DOE has the technical capabilities to assist Puerto Rico in designing a grid that is better prepared for and adaptive to changing conditions, and able to withstand and recover rapidly from disruptions.

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QUESTION FROM SENATOR DAINES

Q1. Can you expand on suggested ways that Puerto Rico and U.S. Virgin Islands can make their grids more resilient for future events?

A1. There are number of technologies that can be utilized to enhance the resilience of the electric grid. Significant advances have been made with the development of smart grid technologies that improve preparation and hardening before an event, enhance awareness and response during an event, and reduce recovery and reconstruction time after an event such as that experienced in Puerto Rico. Greater deployment of distributed energy resources with storage and intelligent controls; more robust poles and, where appropriate, stronger guying (anchoring); optimizing the siting of generation assets; and even robust modeling and system-integration analysis could build greater resiliency.

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Questions from Chairman Lisa Murkowski

Question 1: Please outline the current arrangement with PREPA and the Virgin Islands Water and Power Authority to restore power to territories. What is the role of the Department of Energy and the Army Corps in each location?

Answer: Under the leadership of the Federal Emergency Management Agency (FEMA), the Corps is working with other Federal agencies as part of the overall effort to restore power, and stabilize critical infrastructure in Puerto Rico and the U.S. Virgin Islands.

On September, 30 2017, the U.S. Army Corps of Engineers (Corps) was given a FEMA Mission Assignment, within the authority of the Stafford Act, to assist the Puerto Rico Electric Power Authority (PREPA) in further repairing the power system to its pre-storm condition. This Mission Assignment from FEMA states that the Corps will "...lead planning, coordination and integration efforts in preparation to execute electrical power grid restoration in Puerto Rico due to impacts caused by Hurricane Maria. Develop and execute applicable temporary repairs to the segments electrical grid to allow interim restoration of system segments as directed by FEMA until the full electrical grid restoration can be implemented." As part of this mission, the Corps is tasked with leveraging its contracting authorities for repair work, including ordering and providing electrical repair materials to its contractors, PREPA and its contractors, and other entities conducting grid repairs under FEMA.

PREPA directs prioritization to the Corps for the grid repairs and assigns transmission and distribution lines from its electrical grid to the Corps for repair and restoration. PREPA conducts repairs to its grids with its own crews and contractors. PREPA coordinates with the Corps on the use of their available material, warehouses, and other properties. The Corps and PREPA also coordinate on access to easements, rights-of-way, and safety protocols for all personnel working on the grid.

The Government of Puerto Rico provides guidance to PREPA and has assisted the Corps and other responders with access to property and related authorities.

In the U.S. Virgin Islands, the Corps Mission Assignments from FEMA include: Temporary Power, Temporary Roofing, Debris Removal/Technical Assistance, and Infrastructure Assessment. Temporary Emergency Power assessments are underway in USVI at critical facilities (hospitals, water treatment facilities, airports, a shelter, etc.). Of the 179 temporary emergency generators installed by Corps personnel, 136 have already served their purpose. They are no longer needed in those locations and, therefore, have been uninstalled.

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Question 2: Alaska has quite a bit of experience working with microgrids due to the isolated nature of most of our communities. What role do you see microgrids having in the islands post-hurricane and how can Alaska's experience be best put to use?

Answer: The Corps, in coordination with PREPA, activated microgrid systems for the towns of Patillas, Maunabo, Yabucoa, Culebra Lares, and Naguabo to provide immediate power until full repairs could be made. The first microgrid activated in Puerto Rico was on the island of Culebra.

The decision to install a microgrid at a given location is a combined effort that includes input from the Corps PREPA, FEMA, and the local government. Not every site assessed qualifies for a microgrid. Many factors determine what makes a suitable location, such as the estimated time until main grid restoration, the number of critical facilities at the location, the state of the distribution network and the ability of the system to accept generator power, and the number of federally supported generators that can be uninstalled and used in other locations, due to the implementation of a microgrid system. First, the decision to install a microgrid must be at the request of the local government. Additionally, PREPA must determine that grid power will not be restored to the area in the near future, that the distribution network can accept power, and then finally designate the location. The Corps and FEMA then conduct meetings and assessments to determine the suitability of the site and the best power generation options for a given community.

Questions from Ranking Member Maria Cantwell

Question 1: Based on your experience working on the current recovery effort in the USVI and Puerto Rico what are the most pressing reconstruction efforts the islands are facing? What challenges have you encountered when working on these reconstruction efforts?

Answer: In any disaster, the three top priorities are to support immediate life-saving and life-safety emergency response priorities; to sustain lives with critical temporary emergency power and other needs; and to initiate recovery efforts by assessing and restoring critical infrastructure.

In the USVI, the debris mission is probably the most challenging, due to the scarcity of disposal sites for the amount of debris. The Corps is coordinating with the USVI Department of Planning and Natural Resources for approval of temporary debris disposal sites.

The pre-storm infrastructure, particularly in Puerto Rico, was an aged system with production deficiencies. The Puerto Rican power infrastructure is unique to Puerto Rico with special components only used there. That has caused one of the challenges in restoring the system as those parts are no longer produced and have to be manufactured. Another challenge in Puerto Rico compared to the mainland is the geography and difficult terrain. The biggest challenge in restoring the system is getting the amount of materials and supplies to the island. Hurricane Maria's damage to Puerto Rico's ports, airfields, roads, bridges, electric grid and

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communications has slowed initial assistance efforts but conditions and the pace of recovery continues improving.

Question 2: To compare your experience working with other disasters in the U.S., such as recovery efforts for Hurricane Harvey in Texas or Hurricane Irma in Florida: Is Congress supplying Puerto Rico and the USVI with the resources they need to adequately rebuild?

Answer: The Corps is working with other Federal agencies as part of the overall effort to assist the people of Puerto Rico and the U.S. Virgin Islands. As in any disaster, the three top priorities are to support immediate life-saving and life-safety emergency response priorities; to sustain lives with critical temporary emergency power and other needs; and to initiate recovery efforts by assessing and restoring critical infrastructure. The Corps has sufficient resources at this time.

Question 3: Why has restoring power in Puerto Rico and the USVI taken so long relative to Texas and Florida?

Answer: The damage to the power infrastructure in Puerto Rico and USVI was much more extensive due to Hurricanes Irma and Maria compared with the damages in Texas and Florida from other storms this season. It is estimated that 80 percent of the electrical grid was affected in Puerto Rico. Recently, there has been an increase in the number of private line workers arriving on the island. The Corps is also increasing its material production and delivery to support those line workers.

Questions from Senator Al Franken

Question 1: A concern raised by my constituents is regarding how power to critical infrastructure is prioritized, especially when it comes to medical treatment. If citizens need medical help right now, their option is to visit the hospitals, which are already stressed. But in many cases, a community clinic or a doctor's office might make more sense. However, I've heard that many smaller treatment facilities do not have power or generators available to them. Are these smaller facilities being prioritized for emergency power during the grid rebuilding process?

Answer: The Corps is partnering with the Puerto Rico Electric Power Authority, the Department of Energy, and FEMA to restore safe and reliable power as quickly as possible.

The Corps is assisting with assessments and with generator installations at critical facilities such as hospitals, and water and wastewater treatment facilities in Puerto Rico. Task Force Temporary Emergency Power, in coordination with PREPA, activated microgrid systems for the towns of Patillas, Maunabo, Yabucoa, Culebra Lares, and Naguabo to provide immediate power until full repairs could be made. The first microgrid activated in Puerto Rico was on the island of Culebra.

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Question 2: Does resilience factor into the Army Corp's decision making in the rebuilding process?

Answer: FEMA, per the Stafford Act, has mission assigned the Corps to perform emergency work which does not permit consideration of resilience or mitigation measures. PREPA may incorporate resilience and mitigation measures with funding, provided to it by FEMA for permanent repair and reconstruction. The Corps is required to replace, in kind, the system that was in place before the hurricanes. For the most part, this means line-for-line, pole-for-pole, and wire-for-wire. As we restore the system, we do upgrade to current PREPA standards and to U.S. electric codes for those lines, poles and wires; however, exceptions to this are in cases where the cost of a different solution is less than restoring the current system. An example of this might be when the poles run up an undeveloped stretch of mountainous terrain or through wetlands. If a better solution exists, such as running along a road near that mountain or wetland, then the Corps has the flexibility of changing the installation after it has been reviewed for cost, schedule and any right-of-way issues.

Question 3: From what I understand, many rural areas are still struggling to gain access to power. Can you speak to the specific challenges facing rural communities?

Answer: It will take significant time to restore power to the majority of people due to the challenges of terrain, the state of the grid system before the storms and the extensive damage caused by the hurricanes. Many of these rural communities are located within difficult terrain and challenging geography.

In both urban and rural areas, we are working to provide temporary emergency power and spot generation for critical facilities like hospitals and shelters; ensure adequate generation at the power plants; reinstall and repair transmission lines, and; restore and repair distribution lines, ultimately providing power to local residences.

Question 4: You stated last month at a hearing in the Senate Committee on Homeland Security that many municipalities in Puerto Rico are not accepting help from FEMA. Is this still the case, and if so why? And how is this interfering with restoring power across the island?

Answer: In some municipalities, there have been neighborhoods that have decided to not use federal assistance to dispose of their debris. In the case of power restoration, we are not aware of any communities that have declined federal assistance.

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Questions from Senator Steve Daines

Question 1: The Corps of Engineers was issued a mission agreement from FEMA to help restore power. When do you predict full power to be restored?

Answer: Restoring power to the people of Puerto Rico involves a joint effort by many agencies. The Puerto Rico Electric Power Authority continues to refine its master restoration plan, which affects the amount of remaining work and the schedule for when customers will have their electricity restored. For example, as part of the ongoing restoration effort, workers continue to identify additional damage to the island's electric infrastructure. The Corps is working as quickly as possible, as are all of the other agencies. The current estimate is by late February/early March 2018 power will be restored to 95% of the pre-storm average load.

Question 2: Did the Corps have any involvement in procuring the Whitefish Energy Contract?

Answer: No.

Question 3: What is the Corps' involvement in contracting the power restoration with PREPA now?

Answer: As part of this mission to restore power to Puerto Rico, the Corps is tasked with ordering and providing electrical repair materials to its contractors, PREPA and its contractors, and other entities conducting grid repairs under FEMA. PREPA directs prioritization to the Corps for the grid repairs, and assigns transmission and distribution lines from its electrical grid to the Corps for repair and restoration. PREPA also repairs its grids with its own crews and contractors. PREPA coordinates with the Corps on the use of their available material, warehouses, and other properties. The Corps and PREPA also coordinate on access to easements, rights-of-way, and safety protocols for all personnel working on the grid.

The Government of Puerto Rico provides guidance to PREPA and has assisted the Corps and other responders with access to property and related authorities.

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[The referenced information was not received at time of print.]

Question from Chairman Lisa Murkowski

Question: Please outline your vision for what the electric grids on your islands could and should look like moving forward. What assistance will you be seeking from the federal government to achieve this vision?

Questions from Ranking Member Maria Cantwell

Question 1: Several members raised questions at the hearing about the level of disaster planning PREPA had conducted prior to Hurricanes Irma and Maria.

- a. What requirements does PREPA have to submit up-to-date disaster plans to the Governor and Legislative Assembly?
- b. When was the last time PREPA submitted a disaster plan?
- c. Could you submit a copy of the most recent plan to the committee?

Question 2: Did potential responding utilities under mutual aid cite PREPA's fiscal situation as a deterrent to providing assistance in the wake of Hurricane Maria?

Question 3: Is it your contention that the need for responding utilities to provide their own logistical support for mutual aid crews (e.g., room and board) was the primary deterrent to activating mutual aid in the wake of Hurricane Maria?

Question 4: On September 26, the President authorized a 100 percent federal cost-share for emergency work in Puerto Rico. The same day, you signed an initial agreement with Whitefish Energy. On September 29, FEMA assigned to the Corps of Engineers the mission to ensure emergency power restoration. Almost three weeks later, on October 17, you signed a revised contract with Whitefish Energy that established a \$300 million ceiling.

Once the federal government committed to pay 100% of the cost, in many cases extend "expedited funding" before any expenses had been incurred, and assigned the Corps of Engineers a power restoration mission, why at that point did you not immediately activate mutual aid?

Question 5: Is the public contention of the owner of Whitefish Energy accurate that he made initial contact with PREPA through a message on LinkedIn?

Question 6: How many customers does PREPA have?

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Question 7: How many customers have power?

Question 8: Which regulations, standards, or codes govern construction of the grid and grid components in Puerto Rico, including but not limited to towers, poles, wires, substations, and generation facilities? Please send any and all regulations, standards, and codes that apply.

Question 9: Has PREPA completed a comprehensive damage assessment? If so, when was it completed?

Questions from Senator Ron Wyden

Question 1: Mr. Ramos, in response to questions about why it is taking so long to restore power to Puerto Ricans, you noted that it took 6 months to restore power after Hurricane Hugo in 1989, at a time when PREPA had more employees and the grid was in better shape. It is striking to me that it took so long when times were more favorable, and I am concerned about what will happen after the next storm. The hearing explored how technologies such as solar installations can boost resiliency, assuming they are built by experienced vendors.

What percentage of power needs to come from distributed resources so that future recovery efforts take only days, rather than months?

What does PREPA need to ensure that amount of distributed generation gets built?

Question 2: Mr. Rhymer noted in his testimony that the U.S. Virgin Islands used FEMA hazard mitigation grant funding to move parts of their distribution network underground and install stronger utility poles made of composites.

How is PREPA leveraging FEMA hazard mitigation funding to take similar steps to harden Puerto Rico's distribution network?

Question 3: My colleague, Senator Heinrich, alluded to a power purchase agreement made by Tucson Electric Power for solar plus storage costing 4.5 cents per kilowatt-hour. As we heard, Puerto Rican electricity costs are 5 times higher than that.

What levelized cost of electricity do you believe would be possible for Puerto Ricans for a similar installation of solar plus storage?

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Questions from Senator Al Franken

Question 1: Why did it take so long for PREPA to request mutual assistance from other utilities through the American Public Power Association and Edison Electric Institute after Hurricane Maria?

Question 2: I am very concerned about how PREPA is entering into contracts with private companies. I specifically want to inquire about the PREPA contract with Cobra Acquisitions based in Oklahoma City. The company was just formed in January 2017 to work in electricity transmission and distribution, and they've now won a \$200 million contract with very little experience in the field. What was the process for selecting Cobra Acquisitions and the size of the contract they would be awarded?

Question 3: Is PREPA pursuing additional private sector contracts?

Question 4: In what ways is PREPA working towards a long term plan for building resilient grid infrastructure?

Questions from Senator Steve Daines

Question 1: Can you describe how Whitefish Energy, a company of two people with minimal track record of projects, made good financial sense to contract with to begin restoring the island's power?

Question 2: What progress has Whitefish Energy made since being awarded the contract?

Question 3: Will PREPA negotiate advance contracts in a transparent and cost-effective manner before the next disaster, to ensure maximum accountability and effectiveness of taxpayer resources?

Question 4: In your testimony you mention that there could be ways to improve the contracting process. What are some of those ways?

Question 5: As the Whitefish Energy contract phases down, is there a plan in place to work with other partners to ensure the work gets done?

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Questions for the Record Submitted to Mr. Julio Rhymer, Sr.

Responses of Mr. Julio Rhymer, Executive Director, U.S. Virgin Islands Water & Power Authority

Question from Chairman Lisa Murkowski

Question: Please outline your vision for what the electric grids on your islands could and should look like moving forward. What assistance will you be seeking from the federal government to achieve this vision?

Response: The Virgin Islands Water and Power Authority (“WAPA”) envisions the reconstruction of a generation system as well as a transmission and distribution system that are more reliable, efficient, and resilient. This goal can be achieved through the addition of smaller sized generating units, electric microgrids, and composite poles. Smaller-sized generating units will prevent large geographical areas from experiencing extended electrical outages due to the failure of larger units at the power plants. The benefits of adding microgrids to the distribution system is two-fold. The microgrids function in tandem with the power produced at the plants but have the flexibility to function on their own, in the event of a service interruption. In the event of an outage, the microgrids rely on the stored energy to maintain electricity to the area it serves. WAPA seeks a combination of hazard mitigation and federal government funding totaling \$850 million to accomplish this goal.

Question from Ranking Member Maria Cantwell

Question: Mr. Rhymer, in your opening statement, you described efforts to move toward developing micro grids across the Territory to act as small generating facilities in the event of a major electrical service interruption, providing greater electrical reliability for the US Virgin Islands. WAPA is currently developing an initial micro grid that utilizes solar power and battery storage, which may assist the effort to reduce the reliance on fuels by 60% by the year 2025. Though investing in these micro grids could be costly up front, do you expect that they would provide a long-term solution to potential future power outages in the Territory?

Response: While microgrid technology is a costly undertaking, its introduction to the Territory’s electric grid is a part of an overall long-term solution to future electrical service interruptions in the Territory. The microgrids, in combination with smaller-sized generating units and renewables, will enable continued improvements in efficiency and reliability of the utility.



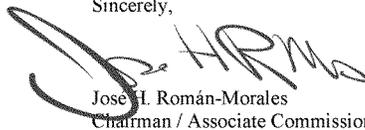
December 12, 2017

Darla Ripchensky, PMP
Chief Clerk
U.S. Senate Committee on Energy and Natural Resources
304 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Murkowski and Ranking Member Cantwell,

Attached please find my responses to questions submitted by members of the U.S. Senate Committee on Energy and Natural Resources following my testimony at the hearing of November 14, 2017. If you have any additional questions, I will be pleased to answer them.

Sincerely,



José H. Román-Morales
Chairman / Associate Commissioner

**Responses of Acting Chairman José Román Morales, Puerto Rico Energy
Commission**

Question from Chairman Lisa Murkowski

Question: Do you believe that PREPA's transmission lines should be open-access and open-retail for any power generator and purchaser to sell and buy power through? Would that provide for greater private sector investment opportunities?

Response: The Commission has not issued orders that address these questions explicitly. There are, however, three principles, each one central to effective utility regulation, that will guide the Commission when it is time to issue such orders.

1. For each major service required to bring electricity to our citizens, the provider should be the one most qualified to do so cost-effectively and reliably. Whether the selected entities come from the private sector or the public sector is less important than whether they have proven themselves the best at acting efficiently, responsively, cost-effectively, and in compliance with all appropriate utility standards. An objective understanding of the century of electric service on the mainland shows that customers are best served when there is a mix of private and public sector actors, all competing for the unique opportunity to provide electric service.

2. For electric services that are most cost-effectively provided through competition, there must be non-discriminatory access to all "bottleneck facilities"—facilities for which access is necessary to competition and which are not economically duplicable by new entrants. The classic examples are transmission and distribution facilities, but in the new world of decentralized electricity production, the category might include geographic sites, interoperability protocols and customer information. An appropriate policy ensures non-discriminatory access to such facilities on a basis that properly compensates their owners. Supporting this point are the nation's experience in telecommunications, gas and electricity, as seen in the 1996 Telecommunications Act; FERC's Order No. 636; and FERC's Order Nos. 888, 889, 890 and 1000 respectively.

Commonwealth law empowers the Commission to create comparable regulatory requirements. The Commission is prepared to use that authority once the facts demonstrate that competition at wholesale and at retail will serve the long-term interests of Puerto Rico's citizens. As the Committee certainly knows from its own experience, such transitions—from monopoly markets long dominated by a vertically integrated company to competitive markets hosting numerous viable sellers—takes expertise, patience and time; and is best accomplished by an objective, well-resourced regulatory agency free of political pressure.

3. Introducing competition for wholesale generation is a very different task from introducing competition for retail service. In both efforts, one must be careful to align competitive opportunism with economic efficiency; otherwise there is risk of cherry-picking, uneconomic bypass and stranded investment, along with cost-shifting to the most vulnerable segments of the population.

To summarize, existing Commonwealth law provides for open-access and open-retail to power generators and directs the Commission to craft the framework necessary for its successful implementation.¹ In doing so, the Commission will use the three principles described above to guide Puerto Rico towards an orderly and articulate transition from a public, vertically integrated monopoly towards a competitive, competence-based market structure.

Questions from Ranking Member Maria Cantwell

Question 1: The Puerto Rico Energy Commission was established in 2014 to regulate, monitor and enforce energy policy, and protect ratepayers. Ensuring you have a strong independent utility commission is crucial for Puerto Rico's future. An independent utility commission or board is an almost universal feature of American electric utility governance. In your assessment what else is needed to ensure that PREPA is run in a transparent and effective way while delivering reliable electricity at reasonable rates to its customers?

Response: To ensure that a utility is "run in a transparent and effective way while delivering reliable electricity at reasonable rates to its customers," an independent commission is necessary but not sufficient. Here are some additional necessary elements:

1. The independent commission must have sufficient resources to assess all areas of the utility's performance; and then, for areas where performance is subpar, identify, order and oversee solutions. The necessary commission resources include access to expertise comparable to the utility's expertise, so that the Commission's judgments carry professional credibility.

2. There must be no political interference in the utility's decisions. The utility's board must be populated by responsible citizens who have the necessary expertise; citizens who are answerable only to their statutory and managerial duties. The utility's top management must be selected by that independent board after a thorough search conducted by an independent, qualified search firm. As well, the top management's hiring decisions, at all levels, must be based solely on merit, free of nepotism and political pressure.

3. The utility must build and maintain a culture that insists on making all problems transparent, and solving those problems when they arise rather than deferring them to some indefinite future—especially problems whose solutions become more expensive the longer they are delayed.

4. The utility must demonstrate a culture that accepts the presence and decisions of the independent regulator. That does not mean that the utility must agree with each of the regulator's many judgments, or must refrain from challenging unlawful regulatory decisions in court. But ignoring Commission rules and orders, and insisting that the Commission disregard its statutory duties—all of which PREPA has done—reflects a culture unprepared

¹ See Article 4, Section 2 of Act 73-2008, 13 L.P.R.A. §10672, and Article 6.30 of Act 57-2014, 13 L.P.R.A. §1054cc.

to accept the need for regulation. The Commonwealth had 70 years of an unregulated monopoly, literally. Act 57-2014 ended that era, emphatically.

5. Turning to policymaking: For each policy area requiring decisions, there must be a single ultimate decision-maker. That does not mean that the Commission must be the decision-maker on everything affecting electric service. Certainly, there is a need for separate decisions and decision-makers on subjects like zoning, environmental issues and labor relations, to name a few. But on the issue of economic performance for the electricity customers, the utility must be answerable to a single entity—the Commission. That is what Commonwealth law says, and that is how things work in the 50 mainland states. Otherwise the utility can avoid orders from one government agency by getting a different answer from another government agency.

The current situation lacks this clarity. At least four governmental entities are claiming some legal authority to address PREPA's performance: the Commission, the Governor, AFFAF, and FOMB. The federal court overseeing the PROMESA litigation also has a role. The absence of clarity and coordination concerning each entity's role is a serious current problem. For more thoughts on this question, see our response to Senator Wyden's questions below.

Question 2: What measures should Congress consider taking to ensure the commission remains in position as a strong independent regulator on behalf of ratepayers?

Response: Under Act 57-2014, the Commission has the legal authority it needs to discipline PREPA's performance and to introduce and oversee market structures that create an appropriate mix of competitive service and regulated monopoly service. What is necessary, and what Congress could assist with, are the following:

1. Ensure that the Commission has sufficient resources. As explained in my previously submitted testimony, the Commission's annual resources are currently limited to the statutory level of \$5.8 million, supplemented by approximately \$1.25 million that we collect through fees. This amount was not well-aligned with the Commission's responsibilities from the outset; it is unrealistically small given the complex questions we now need to address. Should Congress be willing to supplement the Commission's budget, the needs fall into four main areas: (a) overseeing the immediate recovery period; (b) monitoring (in part via independent auditors) of PREPA's restoration process; (c) audits of PREPA's existing system, resources, and assets; and (d) proceedings to transform Puerto Rico's electric sector and identify and implement an appropriate market structure. The Commission is prepared to provide more details on its budgetary needs if requested.

2. Ensure the Commission's ability to use those resources independently. Sufficient resources alone do not result in a strong, independent Commission. The Commission must also be able to use those resources effectively, efficiently and in furtherance of its statutory mandates, free from political or misguided intervention.² In recognizing the Commission's

² For example, current, across-the-board cost control measures threaten the Commission's operational and substantive independence, by limiting its ability to use its independently-sourced funds and placing the final saying on the use of such funds on entities with a direct interest on the result of Commission proceedings,

unique and central role in overseeing immediate restoration efforts and formulating mid- and long-term strategies for implementing a resilient, competitive and modern energy market structure, Congress should also recognize the Commission's operational and substantive independence as a necessary condition for effectively addressing Puerto Rico's chronic energy problems.

3. Direct FOMB to work out with the Commission a memorandum of understanding that systematically and clearly allocates to each entity regulatory responsibilities that are consistent with, and avoid conflict between, their existing statutory authorities. On that subject, see the response to the questions from Senator Wyden.

4. Define the FOMB's authority with more clarity so that it does not encompass areas traditionally and properly within the realm of an independent, expert utility regulator. Otherwise there is serious risk of a "multiple chefs in the kitchen" problem described in response to the questions from Senator Wyden below.

5. Condition the spending of federal funds for Puerto Rico's electric system on the Commission's approval of the projects and associated budgets to which those funds will be deployed. Doing so will ensure that the spending conforms to a unitary plan that, long after federal involvement ends, will be subject to the Commission's oversight.

Questions from Senator Ron Wyden

Mr. Morales, a longer-term rebuilding of Puerto Rico's electricity system to be more resilient, efficient, and clean will take years and coordination among many stakeholders.

Question 1: Who do you believe should take the lead in such a long-term revisioning and rebuilding process?

Response: This question is critical because there are, at present, multiple "chefs in the same kitchen"; specifically:

1. Government entities with legal obligations: PREPA, FOMB, Governor and Legislature, Commission.
2. Government entities with legal discretion: FEMA, U.S. DOE (including National Labs), U.S. Army Corp of Engineers, Congress.
3. Federal court

In addition, there are think tanks, businesses, and industry groups—all trying to influence the actions of the above-mentioned government entities.

This diversity of actors, interests and passions could make for a vibrant, disciplined process of problem-solving. But that is not the current situation. Instead we have the following problems:

1. There is no single coordinating entity.

thereby undermining the budgetary, operational and substantive independence necessary for the Commission to fulfill its role in achieving the reforms sought after by Congress and Act 57-2014.

2. There is no single set of policymaking principles.
3. There is no single decision-making procedure.
4. There is no single decision-maker.
5. There is no single body of law.
6. In many situations, one entity's decision or recommendation can be blocked by some other entity.
7. Each entity is acting in what it thinks is its organizational obligation or its self-interest, without necessarily accounting for the obligations of other entities.
8. In some situations, a decision that seems to be "right" for the short term could be "wrong" for the long-term.

Prior to PROMESA and prior to federal involvement in the hurricane aftermath, the legal responsibility for the Puerto Rico's electric industry's performance rested with the Commission. Once federal involvement ends, that same legal responsibility will rest with the Commission. During this interim period of federal involvement, it is both logical and necessary for the Commission to continue playing a central role. The Commission does not expect, however, to be the final decision maker during this period on every single subject. It is willing and prepared to work with multiple agencies at the federal and Commonwealth level. But for the working relationships to work, the coordination and hand-offs must be clear, and the central principles must be widely accepted.

It is less important to determine that one entity "takes the lead," than it is to determine the unique expertise and role that each entity must play. As indicated above, there is at present no coordination between any federal agency and the Commission, no single steering committee to achieve coordination among all the acting entities, and no effort to create that coordination through a steering committee or other means. We have some sympathy for PREPA, which has to answer to these multiple masters. Our sympathy diminishes, however, when PREPA's response is to disregard Commission orders, to enter into expensive contracts without Commission review, and especially to continue incurring costs that it will ultimately insist be included in rates by the same Commission it has ignored.

The Commission is ready and willing to take on that coordinating role, assuming it has sufficient resources. The Commission also is ready and willing to share that role with others, and to accept that someone else plays that role—provided that such other entity acts objectively, preserving the Commission's authority while helping to avoid conflicts as the Commission carries out its authority.

Question 2: What should that process look like to ensure it is timely and a sound expenditure of taxpayer dollars?

Response: Our immediate recommendation is twofold: (a) As we already have explained, there must be a memorandum of understanding between FOMB and the

Commission that allocates roles and schedules clearly, to make appropriate use of each body's expertise while avoiding conflict. (b) There should be a steering committee of all the governmental entities, led by an objective person with no "agenda" other than the public interest, which uses a decision-making process that is respectful of the authority of each entity.

Questions from Senator Al Franken

Question 1: Mr. Morales, I noticed in your testimony that the Puerto Rico Energy Commission has issued recent orders to promote the resilient rebuilding of the grid. Before the hurricane, the Commission was charged with oversight of PREPA and pushing for increased use of renewable energy as mandated in the island's Renewable Portfolio Standard. I believe that the Commission should have a key role in the rebuilding process. What do you see the role of the Puerto Rico Energy Commission to be in the rebuilding process, both short and long term?

Response: The Commission's role is defined by Act 57-2014. As my previously submitted testimony explained, the statute commands that the Commission—

"shall be able to guarantee the orderly and integrated development of our electrical system, thus ensuring the reliability, efficiency, and transparency thereof, and the provision of electric power services at reasonable prices."

"shall evaluate [PREPA's plans] regarding its obligation to efficiently generate electric power, various operational issues, and the integration of renewable energy, among other mandates."

"shall oversee all types of operations, processes, and mandates pertaining to the efficiency of the energy sector of the Island."

"shall oversee [that] PREPA's debt issues are in the public interest."

"shall approve the electricity rates proposed by PREPA."

"shall require that the prices included in any power purchase agreement, wheeling rate, and interconnection charge are fair and reasonable, consistent with the public interest, and compliant with the parameters established by this Commission...."

"shall ... guarantee that PREPA meets its obligations to bondholders."

Under these general provisions and the many associated specific provisions in Act 57-2014, the Commission must shape the future electricity landscape so that it attracts those players best able to serve our citizens. The process of making those determinations must address the following points, in sequence:

1. Determine the desired mix of products and services, for the Commonwealth and for various geographic areas.

2. For that mix of products and services, determine the likely quantity required.
3. Determine which products and services are natural monopolies, and which ones can potentially be provided more cost effectively through competition.
4. For each category of product and service, determine the types of companies that are most likely to provide it cost-effectively.
5. Create criteria for competition to select the provider of monopoly services.
6. Create criteria for licensing companies seeking to provide competitive services.
7. For the competitive services, take all steps necessary to convert the market from a monopoly market to a competitive market.
8. Arrange for any necessary sale of PREPA assets to the providers of the new services.

Of course, the Commission must address these issues in the open, transparently, inviting the best minds and best ideas, and subjecting those minds and ideas to vigorous questioning.

Question 2: Has the Puerto Rico Energy Commission interacted with the Financial Oversight and Management Board to discuss the commission's authority and role in the rebuilding process?

Response: On multiple occasions, since May 2017, the Commission has sought to engage the FOMB in a detailed discussion about our respective authorities. The Commission's efforts have not borne fruit.

In May 2017, the Commission's outside counsel held a conference call with attorneys at the Proskauer firm (one of FOMB's outside firms), for purposes of initiating conversations about our respective authorities. The Commission's outside counsel urged the Proskauer attorneys to recommend to their client the formal commencement of such discussions. The Proskauer attorneys chose not to accept that recommendation, saying instead it was the Commission's task to contact the FOMB.

The Commission has held several informal discussions with the FOMB Chairman and Executive Director, urging them to direct their attorneys to meet with the Commission's attorneys to develop protocols.

On October 29, 2017, the Commission, on its own, prepared a two-page memorandum of understanding. This document, to be signed by the Chairmen of the Commission and of the FOMB, would simply direct each entity's lawyers to work on a master protocol and to complete it by a date certain. The intent was to commit both agencies to this essential dialogue. By email of November 2, 2017, the FOMB's executive director declined to adopt this MOU, stating that FOMB's legal counsel would be in touch. Thus, as far we know, the FOMB has not directed its lawyers to work with us to produce a master MOU by any date certain.

Subsequently, the Commission's General Counsel, attempting again to get a dialogue in place, sent to FOMB's outside lawyers a master list of all actions the Commission has the duty to take under Act 57-2014. The Commission's General Counsel suggested that the two sets of lawyers use this list as an agenda, to determine how the commission's duties should interact with the FOMB's duties. A telephone conference (November 9, 2017) held to address this list ended prematurely when the FOMB's lawyers said they needed more time to study it and would reschedule. That was four weeks ago.

FOMB representatives have said on several occasions they intend to cooperate with the Commission, but no steps toward cooperation have occurred. In the absence of any substantive dialogue with the FOMB, the Commission's advisors have now completed a first draft of a detailed protocol for coordination that it will submit to FOMB shortly.

Compounding the problem of FOMB unresponsiveness is its position before the federal court. Brief background: In its rate order issued in January 2017, at Part Four, the Commission required PREPA to submit its annual budgets for Commission approval, such submission to occur prior to PREPA incurring any costs under those budgets. The Commission explained that because PREPA was a non-profit entity, the conventional regulatory treatment of imprudent costs—requiring their absorption by shareholders rather than imposing them on ratepayers—is infeasible because a non-profit company has no private shareholders. In the non-profit context, unless all costs are recovered from ratepayers the utility will have insufficient revenues to operate; so disallowing costs from rates is cutting off one's nose to spite one's face. Given this constraint, the only way to protect ratepayers from imprudent costs is to prevent PREPA from incurring them to begin with. The Commission therefore required PREPA to submit an annual budget before spending its money. (PREPA had proposed an annual "true-up" process that amounted to "We spend it, we tell you about it, you make ratepayers pay it"—the very absence of accountability that Act 57-2014 was enacted to fix.) PREPA has challenged this feature of the Commission's rate order in the Commonwealth court system. The Puerto Rico Fiscal Agency and Financial Advisory Authority (AFFAF) then filed with the federal court in September a "Notice of Removal" removing that appeal to the federal court, arguing that the Commission's action was preempted by the FOMB's authority under PROMESA. AFFAF's removal action was joined by the FOMB.

Thus, the irony: While arguing to the federal court that the Commission cannot act on PREPA's budgets because of conflict with FOMB, FOMB has cited no specific conflict and is failing to work with the Commission to develop protocols that will avoid conflict. PROMESA section 4 is clear that if a Commonwealth agency issues an order that is "inconsistent" with an FOMB action, the FOMB action prevails. The Commission of course accepts this legal reality, and has said as much to FOMB's lawyers. But it appears that FOMB's lawyers have confused this "conflict preemption" provision with an "occupation of the field" provision—the latter being a situation in which the congressional intent is that the federal agency occupy an entire field of play (such as budget review) with no state agency allowed to act within that field. Section 4's express language is the language only of conflict preemption. It is illogical to claim a conflict before a conflict has occurred, especially when the Commission is seeking to work out protocols to avoid conflict.

Question 3: I am very concerned about how PREPA is entering contracts with private companies. I understand that Puerto Rico Energy Commission is seeking more oversight authority for such contracts. What is your recommendation on how to conduct appropriate oversight?

Response: The Commission is not "seeking more oversight authority"; the Commission already has sufficient authority under Act 57-2014—notwithstanding PREPA's lawyers' arguments to the contrary. Under that authority, the Commission on November 17, 2017 issued an order requiring PREPA to obtain Commission approval of major contracts. That Order is attached as an Appendix to this Response. PREPA must act lawfully by following Commission orders. The alternative—PREPA insisting that it can spend money without Commission approval, then expecting the Commission to raise electricity rates to reflect costs the Commission did not approve—is contrary to the statutory requirement that rates be "just and reasonable" and is a return to the 70 years of unregulated monopoly that Act 57-2014 reversed.

Should PREPA continue to resist the Commission's authority under Commonwealth law, we recommend that the Congress use its territorial authority to compel PREPA's cooperation, including conditioning all federal funds allocated to PREPA on PREPA's complete adherence to Commission orders.

Question from Senator Steve Daines

Question: Do you have any suggestions for PREPA on how to improve contract policies and project management?

Response: Yes. PREPA must improve its bid processes, its contract evaluations, its recordkeeping, and its knowledge management practices.

With respect to contract bidding and evaluation, the Commission has found that PREPA has historically failed to execute competitive bid processes (January 2017 Rate Case Order paras. 249, 471); and accepted provisions with unacceptable allocation of risk (November 2017 Contracts Order, Appendix A, p.5). These omissions underscore the need for independent oversight of bid processes and review of proposed contracts.

With respect to recordkeeping, the Commission has found that PREPA does not maintain electronic records of work orders, project plans, or project budgets (January 2017 Rate Case Order para. 175). Even major projects are often handled at the local district level and PREPA's executive leadership has little to no visibility on project progress and budget status (Id.). This lack of visibility and appropriate recordkeeping has led to over-spending and redundancy in some cases and abandonment of needed projects due to minor budget overruns in others, as described by PREPA staff during our Rate Case hearings and technical conferences during our Performance Investigation. PREPA must modernize its recordkeeping and budgeting systems.

With respect to project management, our Order on Contract Oversight Measures notes multiple occasions on which PREPA failed to appropriately manage its consultants,

leading to cost increases and procedural delays (November 2017 Contracts Order, pp.2-3). Our Performance Investigation revealed a near-complete lack of succession planning. Our January 2017 Rate Case order discusses the special complexity of PREPA's contracts for the Aguirre Offshore Gas Port (January 2017 Rate Case Order, paras. 222-223), but during hearings in the pending AOGP Economic Analysis docket, PREPA noted that it had no staff responsible for management of several of those contracts. PREPA must establish appropriate expectations for performance on the part of its counterparties and maintain clear chains of responsibility and authority, as we ordered in Section II(b) (p7) of our November 2017 Contract Oversight Measures Order.

Appendix: Commission Order on PREPA Contracting (November 17, 2017)



**COMMONWEALTH OF PUERTO RICO
PUERTO RICO ENERGY COMMISSION**

IN RE: TEMPORARY OVERSIGHT MEASURES
RELATED TO THE PROCUREMENT AND
MANAGEMENT OF RESTORATION SERVICES
BY PREPA

CASE NO.: CEPR-MI-2017-0008

SUBJECT: Order identifying and
implementing temporary oversight
measures.

ORDER

Through this Order, the Puerto Rico Energy Commission (“Commission”) identifies and implements a set of measures, requirements and directives aimed at ensuring optimal accountability, prudence and reasonability in the procurement and prospective management of restoration support services by the Puerto Rico Electric Power Authority (“PREPA”) in the wake of Hurricane María.

These measures are taken to ensure PREPA funds allocated towards the restoration and recovery of the Island’s electric grid—whether these funds come ultimately from PREPA customers, Commonwealth taxpayers or federal taxpayers—are spent effectively and efficiently, producing measurable and quantifiable results. Another objective is to avoid wasteful, fraudulent or abusive practices, by holding PREPA and its contractors and sub-contractors accountable for the quality and efficiency of their work. The measures taken herein are consistent with the Commission’s overall goal and statutory mandate of inducing administrative and financial discipline to PREPA’s operations and culture; they are not meant to duplicate any efforts by any other state or federal agency, but rather to support such efforts.¹ Finally, as detailed below, the measures and directives identified herein are necessary and essential, in light of both recent and historical examples of doubtful PREPA contracting determinations. They are especially necessary in light PREPA’s insistence, in testimony and briefs presented in the rate case petition proceeding and in arguments to state and federal courts, that the Commission has no power to review and prevent PREPA’s spending before it occurs; but rather, once that spending has occurred, must approve rates that reflect those costs, even if wasteful or imprudent.²

¹ The Commission recognizes that the Fiscal Agency and Financial Advisory Authority (“AAFAF” for its Spanish acronym) and the Financial Oversight and Management Board for Puerto Rico (“FOMB”) also may conduct some type of contract review. Those reviews do not relieve the Commission of its duty under Act 57-2014 to ensure that rates are just and reasonable generally, and do not include imprudent costs specifically. The Commission is pleased to coordinate with both AAFAF and FOMB to avoid duplication of effort but it must and will carry out its independent legal obligation. To that end, the Commission contacted representatives of AAFAF and FOMB in May 2017, and FOMB again in November 2017, providing a systematic path to coordination. The Commission is awaiting their response but in the meantime must and will use its unique expertise and experience with PREPA, demonstrated in numerous prior orders—most importantly the Transition Charge, the Integrated Resource Plan and Rate Case—to protect Puerto Rico’s citizens.

² See, *in general*, Part Four of the Commission’s Final Resolution and Order, In Re: Review of Rates of the Puerto Rico Electric Power Authority, CEPR-AP-2015-0001, January 10, 2017 at pp. 147-156 (“Resolution and Order”).



In ideal circumstances, the Commission would ask for comments on procedures to ensure prudent, least-cost contracting, then craft requirements that align with PREPA's practical abilities. The present emergency does not allow for taking extra time with such procedures. Accordingly, this Order goes into effect immediately. The Commission does, however, invite PREPA to suggest alternative means of accomplishing the same objectives as the ones furthered through this Order.

I. BACKGROUND

a. PREPA's History of Imprudent Procurement and Contracting

On October 17, 2017, PREPA signed a contract with Whitefish Energy Holdings, LLC ("Whitefish") for the provision of certain services related to the restoration and recovery of PREPA's electric grid. Less than two weeks later, amid a myriad of controversies, PREPA announced its intention to cancel the Whitefish contract on October 29, 2017.³ In the 12-day period in between, PREPA incurred at least \$20.7 million of costs associated with this contract.⁴ PREPA entered into the Whitefish contract without notifying or seeking prior approval from the Commission.

Whitefish is not the only instance in which PREPA's actions with regards to the procurement, contracting and management of contracted services have shown to lack the level of discipline and scrutiny expected from a public utility and required by Act 57-2014.⁵ Throughout many of its proceedings, the Commission or its consultants have raised concerns regarding the terms and conditions agreed to by PREPA when entering into contracts (and whether such terms and conditions are in PREPA's and ratepayer's best interest), as well as the lack of performance metrics to ensure the quality of the work performed by the contractor. Examples include, but are not limited to, the quality of the products prepared by PREPA's contractors Siemens PTI and Navigant Consulting, Inc. (submitted as part of

on PREPA's Rates") and Part II of the Commission's Final Resolution addressing PREPA's Motion for Reconsideration, CEPR-AP-2015-0001, March 8, 2017 at pp. 14-34. *See also*, PREPA's Verified Motion for Reconsideration of Provisions of the Final Resolution and Order, filed January 30, 2017, and PREPA's Appeal to the Puerto Rico Court of Appeals challenging the legality of the Commission's determinations, Case No. KLRA2017-0444, consolidated with Case No. KLRA2017-0446. Of special concern is that PREPA's attempts at freeing itself from required oversight have been supported by both AAFAF and the FOMB. *See* Notice of Removal, Case No. 17-04780 (LTS), Adversary Case No. 17-00256 (Docket Entry No. 279).

³ While PREPA announced its intention to cancel the Whitefish contract on October 29, 2017, Whitefish would continue providing services until certain milestones were completed. As of the date of this Order, Whitefish continues to provide services to PREPA.

⁴ <http://cb.pr/whitefish-no-se-va-hasta-que-entregue-la-linea-de-aguirre-y-aguas-buenas/>. This amount is expected to increase, given, as noted before, that Whitefish would continue providing services to PREPA until the completion of certain milestones.

⁵ The Puerto Rico Energy Transformation and RELIEF Act, as amended.



PREPA's IRP and Petition for Rate Review),⁶ PREPA's maintenance contracts with Mitsubishi-Hitachi and Alstom Caribe,⁷ PREPA's multiple power purchase agreements with renewable energy providers,⁸ and PREPA's power purchase agreement with EcoEléctrica.⁹ Appendix A to this Order provides detailed insight into these and other examples. As the aforementioned list shows, these concerns are not limited to contracts related to a specific area of PREPA's operations, but rather span multiple areas of PREPA's business.

While the Commission has not made a finding regarding the prudence of these actions, they provide an insight into the type of decisions within PREPA that fuel the Commission's concerns. Particularly, the Commission is concerned that PREPA's management culture, a product of its 70-year long self-regulated monopoly status, is unwilling or unable to obtaining the type of concessions from its contractors generally sought after by investor-owned utilities worried about their bottom line.

b. The case for Commission oversight

In order to be financially and operationally sustainable, a utility's rates must be sufficient to recover all of its costs, provided such costs are deemed by the regulator to be prudent. In the traditional setting of an investor-owned utility, a regulator is able to induce prudent spending and performance by preventing a utility from recovering through its rates costs which are deemed by the regulator to be the result of imprudent actions—those costs are thus paid for by the utility's shareholders, not ratepayers. This *after-the-fact* review is known as *cost disallowance*. The certainty that imprudent actions will result in lost revenues aligns the interests of shareholders and ratepayers, leading to better performance.

PREPA's case is different. PREPA is a government-owned, non-profit utility; it has no shareholders. Because it has no shareholders, all of its costs must be recovered through its rates, which means that ratepayers are entirely responsible for the costs incurred by PREPA. Once a cost is incurred, there is no practical choice but to reflect those costs in PREPA's rates. If the Commission were to prevent PREPA from recovering a cost deemed as imprudent, PREPA would operate at a deficit, or would have to cut other necessary spending. Neither result is consistent with a financially healthy and sustainable utility providing reliable service. This certainty of recovery of costs reduces management's incentives to seek during negotiations concessions from contractors that would reduce PREPA's overall costs and exposure to risks and, ultimately, benefit PREPA's ratepayers. *Before-the-fact* review by the

⁶ See, in general, the Part IV(A)(3) of the Final Resolution and Order, In Re: Integrated Resource Plan for the Puerto Rico Electric Power Authority, Case No. CEPR-AP-2015-0002, September 26, 2016 ("Resolution and Order on PREPA's IRP") and Parts Two, Three and Four of the Commission's Resolution and Order on PREPA's Rates.

⁷ Resolution and Order on PREPA's Rates at ¶¶208 and ¶¶211 – 218, respectively.

⁸ Resolution and Order on PREPA's IRP, at ¶¶171-188.

⁹ Resolution and Order on PREPA's Rates, at ¶152.



Commission is therefore a necessary action to reduce customers' exposure to imprudent costs.

The Commission recognizes that PREPA's key personnel are deeply involved in the restoration effort, as well as efforts to renegotiate debt and secure federal resources. But it is precisely at such times of crisis that discipline in spending can decrease—especially in a company whose pre-existing discipline is suboptimal. Lack of discipline and oversight can delay restoration services by reducing the effectiveness and efficiency with which emergency resources are allocated towards emergency response and restoration efforts.

The temporary measures and directives identified in Part II of this Order are specifically designed to ensure discipline during the current emergency and the period immediately after. While the Commission will subject PREPA to rigorous oversight, the measures adopted herein are also designed to avoid unnecessary burdens which may delay PREPA's restoration efforts. Requiring PREPA and its contractors to account for their activities and costs is a small matter compared to the benefits in terms of certainty, transparency and accountability. However, the Commission invites PREPA to suggest alternative means of accomplishing the level of accountability that these requirements are designed to achieve.

c. The Commission's Authority to Require Review

Act 57-2014 grants the Commission express and unambiguous authority to review PREPA's operations and implement the regulatory actions necessary to "guarantee the capacity, reliability, safety, efficiency and reasonability of electricity rate [in] Puerto Rico."¹⁰ Accordingly, the Commission is empowered to address "all types of operations, processes and mandates pertaining to the efficiency of the energy sector of the Island."¹¹ This broad authority is further strengthened by the closing sentence of Section 6.3 of Act 57-2014, which states that the Commission shall have all those "implicit and incidental powers that are pertinent and necessary" to comply with its mandates. Equally vital is the Commission unquestionable authority to "require and gather [from PREPA and certified energy companies] any pertinent or necessary information to properly carry out its powers and duties."¹²

II. REQUIREMENT FOR CONTRACT REVIEW

The foregoing factors highlight the need to establish several requirements for PREPA's contracting and spending under such contracts. These requirements will remain in effect for a period of six months, beginning on the date issuance of this Order, unless the Commission determines otherwise through resolution or order.

¹⁰ See sub-section (c) of Section 6.3 of Act 57-2014.

¹¹ See Statement of Motives of Act 57-2014 at ¶20.

¹² See sub-section (l) of Section 6.3 of Act 57-2014.



a. Required Contract Provisions

For any contract or amendment to an existing contract related to the procurement of energy, grid services, and fuel¹³ for an aggregate value of at least \$10 million; contracts for infrastructure work¹⁴ for an aggregate value of at least \$1 million; and contracts for professional services¹⁵ for an aggregate value of at least \$250,000, executed by PREPA after the issuance of this Order, the Commission **ORDERS** PREPA to include the following provisions:

- (1) A clause stating that the contract will not enter into force unless PREPA has received written approval from the Commission or unless five business days have passed after PREPA's submission of the contract to the Commission with no action from the Commission. The Commission, on notice to PREPA within the five-day period mentioned above, may extend such period for unusually complex contracts, provided such period shall never exceed 30 calendar days from the date of submission of the contract to the Commission.
- (2) A clause stating that, if the Commission finds, or has reasonable belief, that the work being performed is defective, inconsistent with the terms and conditions of the contract, with applicable legal and regulatory requirements or with any prior Commission order or directive, the Commission may order PREPA to direct a contractor to immediately cease the provision of services until the Commission states otherwise, or until 15 business days from the date the Commission's stop-order was issued if the Commission fails to take any action within such timeframe. After the issuance of a stop-order, and after granting PREPA and the contractor reasonable opportunity to be heard, the Commission may determine to authorize continuation of services, require corrective measures to be taken, including contract amendments, or require the termination of the contract.

¹³ The Commission intends the term "energy, grid services, and fuel" to refer to provision of energy to be consumed by PREPA or sold by PREPA to customers; to the commitment to make generating capacity available when needed (commonly referred to as "capacity services"); to credits associated with production of "green" or renewable energy as defined by Act 83-2010; to administration of energy efficiency, demand response, and other demand-side management programs; to the services necessary to support the transmission of electric power to customers, including but not limited to frequency and voltage regulation, operating and spinning reserves, startup-related costs, black start capabilities, and flexible ramping capabilities; to purchases of combustible fuels; and to tolling, transportation, or other delivery payments associated with fuel purchases.

¹⁴ The Commission intends the term "infrastructure work" to refer to materials purchased for and labor applied to PREPA's physical assets. These assets include, but are not limited to, generation, transmission, distribution, fuel delivery, information technology, warehousing, and transportation infrastructure and assets.

¹⁵ The Commission intends the term "professional services" to refer to work for hire that has no impact on PREPA's physical assets, including but not limited to: legal services; advisory services; modeling, potential studies, and other analyses; engineering and design work, and others.



- (3) A clear, detailed scope of the work and activities included in the contract.
- (4) A total budget associated with the described scope, provided that PREPA may seek from the Commission a modification of this requirement in extraordinary circumstances.
- (5) An estimated spending schedule associated with the described scope and budget, with both monthly spending estimates and clear and objective milestones.¹⁶ Spending schedules must include spending estimates associated with those milestones.
- (6) A schedule of all labor, material, and/or service rates associated with the contract.
- (7) A scope and budget amendment process, which shall include a requirement to provide advanced notice, with no less than 30 calendar days in advance, to the Commission, of any proposed amendment to the contract scope, budget and amount, provided PREPA may seek an exception to the 30-day requirement (but not to the advance notice requirement) in extraordinary circumstances.
- (8) Require invoices to be submitted to PREPA on, at least, a monthly basis in electronic format. Invoices must contain the amount invoiced under the contract since the last invoice and the total amount invoiced since the contract's execution, as well as a description of the work completed and being invoiced and the total amount of contract funds remaining after deducting the amount included in the most recent invoice.
- (9) A requirement wherein PREPA's contractor must submit, 10 calendar days in advance of a new month, monthly budget updates, with milestones accomplished and estimated spending and work to be completed in the upcoming month.
- (10) A clear description of performance guarantees in the contract, including a requirement that work performed under the contract will conform to all applicable legal and regulatory requirements. Contracts must include a certification from the contractor that they are aware of all legal and regulatory requirements and that, except for unforeseen or extraordinary circumstances, the contracted budget is sufficient to meet these requirements.
- (11) A clear description of risk-sharing provisions, including provisions describing the allocation of responsibility for costs between PREPA and PREPA's contractor in the event of error on PREPA's part, error on the part of PREPA's counterparty, shared error, and the occasion of circumstances beyond the control of PREPA and PREPA's counterparty.

¹⁶ In the case of contracts for energy, grid services, and fuel, "milestones" means delivery of such energy, grid services, or fuel. The requirement for spending estimates associated with delivery of milestones does not apply to such contracts. However, the schedule of labor, material, and/or service rates must include a rate for the delivery of energy (in MWh), capacity (in MW), fuel (in MMBTU and physical units), or other services (in the appropriate units).



b. Contract and Invoice Oversight

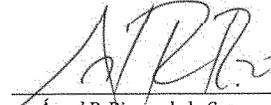
For any contracts contemplated in Part II.a of this Order, the Commission **ORDERS** the following:

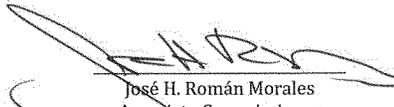
- (1) PREPA shall submit to the Commission contracts for review within one week of approval of contracting language by the contracting officer at PREPA. Contract submission must include at least: the contract itself; all appendices and attachments; a total budget estimate; a spending and milestone schedule; and a schedule of rates for labor, materials and services. The PREPA contracting officer who approved the contract shall certify to the Commission that the contract complies with the requirements established in Part II.a of this Order. None of the materials submitted by PREPA may contain any redactions whatsoever; however, PREPA may request confidential treatment of those documents, or portions thereof, it deems confidential, pursuant to Commission Order CEPR-MI-2016-0009, as amended.
- (2) PREPA shall designate and identify the individual within PREPA responsible for reviewing invoices and contractor performance for each contract and whom shall act as liaison between PREPA and the Commission on matters related to the contracts under their supervision ("PREPA contract manager"). PREPA shall submit the name, title, e-mail address, and phone number of this individual to the Commission concurrently with each contract.
- (3) PREPA shall notify the Commission within 7 calendar days of any change to the identity or contact information of the PREPA contract manager.
- (4) PREPA shall keep and maintain all documents related to each contract, including all those documents identified in sub-section (1) above, in a secure Internet server, to which server the Commission shall have access immediately upon request.
- (5) Immediately upon receipt of an invoice or budget update, and of approval of such invoices, the PREPA contract manager shall upload all relevant documentation to the secure Internet server.
- (6) Upon request from the Commission, the PREPA contract manager shall schedule a briefing call or meeting, at a mutually convenient time, with PREPA officials and contractor representatives familiar with the contract under review.
- (7) Prior to the execution of any proposed amendment to the contract amount or scope of work of the services to be performed, the PREPA contract manager shall notify the Commission the intent, scope and nature of the proposed amendment no less than 30 calendar days prior to the intended date of execution of the proposed amendment. The proposed amendment shall be deemed to have been approved if the Commission fails to make a determination with regards to the proposed amendment within the 30-day period established before. PREPA may seek an exception to the 30-day



requirement (but not to the advance notice requirement) in extraordinary circumstances.

Be it notified and published.


Ángel R. Rivera de la Cruz
Associate Commissioner

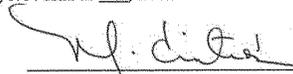

José H. Román Morales
Associate Commissioner
Interim Chairman

CERTIFICATION

I hereby certify that the majority of the members of the Puerto Rico Energy Commission has so agreed on November 17, 2017 and on this date a copy of this Order was notified by electronic mail to the following: j-morales@aepr.com, n-vazquez@aepr.com, c-aquino@aepr.com and n-ayala@aepr.com. I also certify that today, November 17, 2017, I have proceeded with the filing of the Order issued by the Puerto Rico Energy Commission and I have sent a true and exact copy to the following:

**Autoridad de Energía Eléctrica de
Puerto Rico**
Attn.: Lcdo. Javier Morales Tañón
Lcda. Lcda. Nitza D. Vázquez Rodríguez
Lcdo. Carlos M. Aquino Ramos
P.O. Box 363928
Correo General
San Juan, PR 00936-3928

For the record, I sign this in San Juan, Puerto Rico, today, November 17, 2017.


María del Mar Cintrón Alvarado
Clerk



Appendix I – Excerpts from Commission orders and supporting documents in which the Commission or its consultants have expressed concerns regarding PREPA actions and contracting policies.

(1) Renewables contracts

"In [...] existing contracts, PREPA pays a price for energy, plus a per-megawatt-hour premium that PREPA refers to as "renewable energy credit" (REC). [...] The contractual energy price (*i.e.*, the price without the so-called REC) sufficiently covers the prudent costs of constructing and financing the projects plus a reasonable profit to their owners. The REC premium is therefore in excess of that reasonable profit. [...] [T]here is no evidentiary basis for assuming that a premium, such as that built into PREPA's existing contracts, will be required in future contracts, either by law or by competitive forces. Moreover, even if it were appropriate to assume that PREPA would pay for RECs, PREPA's REC price exceeds that of other United States jurisdictions, despite the absence of a REC market in Puerto Rico."¹

"PREPA has been signing contracts for utility-scale solar facilities at prices comparable to the full retail rates for some classes."²

"The renewable contracts present uncertainty—not due to their prices (which are contractual) but due to their output, because their online dates are difficult to predict. Embodying this uncertainty is a 21% drop (\$30 million), after less than six months, in PREPA's expectations regarding spending on renewable energy contracts."³

"Regarding the prices in existing renewable contracts, the Commission is not suggesting that high prices in existing renewable contracts reflect imprudent actions by PREPA or excess costs to consumers. Windmar argues that contracts signed in 2010-2012 preceded declines in renewable energy equipment, and occurred at a time when high oil prices made such contracts attractive to PREPA. Our point is not that PREPA necessarily should seek to terminate contracts, but to examine whether renegotiations can lower prices and also make operational dates more certain."⁴

(2) Siemens PTI

"PREPA's compliance with our IRP Rule was unsatisfactory. [...] Together with its chief consultant, Siemens Power Technologies International ("Siemens PTI" or

¹ Resolution and Order on PREPA's IRP at ¶¶179-180.

² Expert Report of Paul Chernick, Docket CEPR-AP-2015-0001, at p. 115, fn. 122.

³ Resolution and Order on PREPA's Rates at ¶161.

⁴ *Id.* at fn. 133.



"Siemens"), PREPA disregarded our rules, failed to use standard planning techniques, delayed the production of required information, and displayed insufficient appreciation of the potential for energy efficiency and demand response. These behaviors led PREPA and Siemens to reach conclusions that over-emphasized costly construction, while under-emphasizing the roles of renewable energy technologies and consumer behavior as ways to achieve the energy independence envisioned by Act 57. A related result of this behavior was a proceeding that took many more months, and cost the Commission and consumers many more dollars, than should have been necessary."⁵

"The PREPA IRP was written and constructed almost entirely by Siemens PTI. [...] We infer from these facts, as well as from explicit discussions in the IRP and discovery responses, that numerous decisions and assumptions in the IRP were informed by Siemens rather than PREPA."⁶

"Siemens PTI was familiar with PREPA's system because it had provided transmission planning and renewable integration consulting to PREPA in the past. [...] Siemens PTI is owned by Siemens AG, which is also the parent company of a manufacturer of generating units. A key purpose of an IRP is to determine the need for and type of generating units. The purpose of a least-cost resource planning process is to minimize system costs over the long term. The process must be impartial, relative to the specific resources or manufacturers of generation or demand resources. The typical approach, therefore, describes resource options in generic terms only. While the characteristics of generic resources should be informed by real industry data, a choice of specific manufacturers or project specifications is typically considered only after generic resource choices have been selected; i.e., after the IRP process is concluded. Where the consultant conducting resource planning has a business interest in resource selection, there is risk of bias, intentional or unintentional. That risk rises when the modeling technique used by the consultant involves subjectivity. Given that risk, it is especially important for the utility that hires the consultant to oversee the consultant and inject its own independent judgments. Utility deference to a consultant with a potential for bias is not a prudent practice."⁷

"In this IRP, Siemens was involved in the selection of both methodology and resources – a role especially influential given PREPA's lack of IRP experience. And its analysis did not speak solely in terms of generic units. Rather, it described specific units manufactured by Siemens, along with those of several other companies. PREPA conducted a screening study that included turbines from seven manufacturers, including Alstom, GE, Hitachi, MHI, Rolls-Royce, and Wärtsilä, in addition to Siemens. But the thermal resource selection process

⁵ Final Resolution and Order on PREPA's IRP at ¶ 13.

⁶ *Id.* at ¶ 109.

⁷ *Id.* at ¶ 110.



conducted by Siemens PTI reviewed closely only three options: one from GE and two from Siemens technologies.⁸

"We acknowledge that Siemens's witness asserted that the consulting arm of Siemens was "independent" of the manufacturing arm. However, both arms are commonly owned. At a time of deep citizen concern about PREPA's rates and performance, perceptions of bias or favoritism matter. If and when PREPA seeks to purchase new generation equipment, the Commission will require, and will ensure, that PREPA's process for procurement is competitive and objective."⁹

(3) Navigant Consulting

"[M]uch of the crucial work that Navigant has done for PREPA in [the Rate Case] proceeding has been below industry standards. It has caused consultants to incur extra costs to identify errors, get clarification, seek documentary support, and sometimes even to understand the basic outlines of a proposal. Problems include the errors in the average-and-excess computations and the analysis of peak loads. Navigant witnesses have also made claims in testimony and discovery responses that they have been unable to support (such as the claimed benefits of the unbundled rates, or the response that billing determinants were decreased to reflect the residential fuel subsidy). The witnesses' have frequently been unable to identify potential solutions, in such issues as whether coincident peak contributions could be computed in the same manner as non-coincident peaks, or whether multiple monthly peaks could be used for allocating generation costs for a utility in which every month contributes to capacity requirements. They took inconsistent positions between the cost-of-service study and rate design (on such issues as seasonality), and sometimes provided misleading information (such as the suggestion that PREPA had actual monthly NCP data by tariff code).¹⁰

"With regard to cost allocation and rate design, PREPA, the Commission and the public interest have been poorly served by PREPA's consultants. PREPA should take steps to procure more competent assistance from Navigant or other firms, or bring more of this expertise in-house."¹¹

(4) EcoEléctrica¹²

"The EcoEléctrica contract [...] requires an "excess energy payment" for energy required above a 76% capacity factor. EcoEléctrica sets the usage level associated with the 76% capacity factor monthly and sets the excess energy rate weekly.

⁸ *Id.* at ¶ 111.

⁹ *Id.* at ¶ 112.

¹⁰ Chernick Expert Report at § IX.

¹¹ *Id.*

¹² Resolution and Order on PREPA's Rates at ¶¶ 150-153.



These factors make it difficult for PREPA to predict its payments to EcoEléctrica."¹³

(5) Mitsubishi-Hitachi¹⁴ and Alstom Caribe¹⁵

"The San Juan [combined cycle] contract with [Mitsubishi-Hitachi] provides for layers of inspections at multi-year intervals, and can be expected to provide ongoing service for several years. While we do not have evidence that the maintenance contract at San Juan is not currently effective, the contract lacks any form of performance incentive or metrics. The contract appears to insulate the contractor from performance failures as well. While the terms of the contract are considered proprietary, the penalties imposed on the contractor for outage delays do not appear commensurate with the cost of those delays on PREPA."¹⁶

"While the contract requires that Alstom provide a 'permanent on-site operations and maintenance advisor,' and provides a 'technical field advisor' for 'A' and 'B' inspections, the contract does not actually specify the role of the technical field advisor, who leads the inspection and refurbishment process; and, most importantly, who bears responsibility for correctly executed inspections, maintenance, and replacement."¹⁷

"The contract limits Alstom's liability for PREPA staff negligence or deficiencies. Alstom included a contract provision 'exclud[ing] any and all liquidated damages for outage schedule delays, unless such delay is 100% attributable to a negligent act or omission of ALSTOM (*i.e.*, ALSTOM fails to deliver a correct part or make available the required personnel and such late delivery/performance causes an outage delay)."¹⁸

"Since PREPA did not provide a record of forced outages at Cambalache, including any reasons for outages or delays, the Commission's consultants were unable to evaluate Alstom's performance. There was a two-year outage at Cambalache arising from a control system failure that caused an explosion in the turbine."¹⁹

¹³ *Id.* at ¶152.

¹⁴ *Id.* at ¶208.

¹⁵ *Id.* at ¶¶211-218.

¹⁶ Expert Report of Jeremy Fisher and Ariel Horowitz, Docket CEPR-AP-2015-0001 at § V(C)(6)(b)(ii).

¹⁷ Resolution and Order on PREPA's Rates at ¶215.

¹⁸ *Id.* at ¶216.

¹⁹ *Id.* at ¶217.



"[T]he Cambalache contract has no performance incentives or penalties to keep the units in operation or in a state of good repair. Alstom's liabilities are limited to a small fraction of the cost of the contract."²⁰

"The contract recognizes that Alstom relies on PREPA staff for much of the execution of maintenance, and specifically seeks to reduce Alstom's liability for PREPA staff negligence or deficiencies."²¹

(6) Excelerate and Aguirre Offshore Gasport, LLC²²

"The Time Charter agreement, a contract to hire Excelerate's FRSU for fifteen years, requires a daily fixed payment of \$111,500, or \$40.7 million per year, and includes substantial liquidated damages to withdraw from the agreement once authorized. The contract contains a "hell or high water" provision, requiring that PREPA pay for the hire of the FRSU "without regard to (j) the amount of LNG delivered to EE for Regasification, (ii) whether or not LNG deliveries are actually made by PREPA or (iii) whether or not PREPA is able to receive or requires the use of Natural Gas from or beyond the Shore-side Natural Gas Delivery Point." This contract represents a substantial—and nearly irrevocable—investment that is otherwise not disclosed by PREPA in filing this rate case."²³

The Commission's Final Resolution and Order on PREPA's IRP and Final Resolution and Order on PREPA's Rates, as well as the expert reports filed by the Commission's consultants, are available in full at the Commission website, energia.pr.gov or upon request to the Commission Clerk's Office at 787-523-6262.

²⁰ *Id.* at ¶218.

²¹ Fisher and Horowitz Expert Report at § V(C)(7)(a)(i).

²² *Id.* at § V(D)(3).

²³ *Id.* at § V(D)(3)(b)(ii).

**FINANCIAL OVERSIGHT AND MANAGEMENT BOARD
FOR PUERTO RICO**



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Chair

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Carlos M. García
Arthur J. González
José R. González
Ana J. Matosantos
David A. Skeel, Jr.

Natalie A. Jaresko
Executive Director

BY ELECTRONIC MAIL

December 12, 2017

Dear Chair Murkowski, Ranking Member Cantwell, and Members of the Committee:

On behalf of Natalie Jaresko, the Financial Oversight and Management Board (the “FOMB”) is pleased to provide the following written responses to the written questions you sent on November 17, 2017 following the Hearing on “Hurricane Recovery Efforts in Puerto Rico and the U.S. Virgin Islands” on November 14, 2017.

I understand that Judge Swain, of the U.S. District Court in New York, denied the Oversight Board’s motion to install a Chief Transformation Officer within PREPA. The Oversight Board attempted to confirm an officer “with all the powers of a chief executive officer reporting to the Oversight Board” within PREPA. Does the Oversight Board plan to appeal the Judge’s ruling? If you do not yet know, can you explain to us the process by which the Oversight Board would decide whether or not it will appeal?

No we do not. The FOMB decided to focus our efforts to transform PREPA through a revised fiscal plan and other tools at our disposal rather than appeal the decision.

The Puerto Rico Oversight, Management, and Economic Stability Act” or “PROMESA” established the Oversight Board with the express purpose of providing Puerto Rico with a method to “achieve fiscal responsibility and access to the capital markets.” The Oversight Board is in a unique position of interacting with the Puerto Rican government on a regular and close basis, with visibility into the government’s finances and inner workings. Aside from appointing a Chief Transformation Officer, what do you think are necessary next steps that the Puerto Rican government must take to ensure effective recovery efforts to ultimately achieve fiscal responsibility and access to the capital markets?

The most important goal is economic development, which is significantly dependent on the size and timing of federal aid, as well as the fiscal reforms required to balance the budget and the structural reforms necessary to spur the fundamental drivers of growth. That means liberalizing the labor, product, and service markets to encourage job creation and investment and improve productivity. The fiscal reforms laid out in the original fiscal plans remain just as important today, and in some cases, are even more so. Reforming the local tax code, reforming healthcare, right-

Page 2

sizing government, and implementing best practices for budget and cash management controls and protocols are all critical for Puerto Rico to achieve fiscal responsibility and regain access to the capital markets. However, more than ever, structural reforms are required to boost the economy's competitiveness, growth potential, and adjustment capacity.

What do you think are necessary next steps the federal government must take to ensure a smooth recovery?

It is imperative that the federal government expeditiously complete its assessments of the impact of the hurricanes on Puerto Rico's infrastructure and that Congress commit needed resources to support rebuilding a stronger, more resilient Puerto Rico. Puerto Rico's infrastructure, particularly its energy sector, water and sewer systems, and roads need to be rebuilt and transformed in the aftermath of Hurricanes Irma and Maria. Schools, hospitals and housing have also suffered extensive damage and need substantial support for repairs and replacement. Extensive hurricane damage has substantially increased the Island's infrastructure needs and accelerated the timeline under which reconstruction efforts must occur. Reconstruction funds must be subject to effective oversight, spent judiciously, and used to support transformation efforts reflected in revised and improved Fiscal Plans that the Oversight Board certifies under PROMESA. Without rebuilding and transforming its infrastructure effectively, efficiently, and prudently, Puerto Rico will not be able to address its dire fiscal and economic challenges, or restore growth and opportunity. Moreover, any tax reform legislation must not adversely impact businesses operating on the Island. Tax provisions should encourage, rather than discourage, business investment on the Island.

You agreed with Assistant Secretary Walker that federal funds expended to restore the electric grid may not go to service debt bondholders. Do you believe the same is true of revenue generated by the rebuilt grid?

PREPA's existing creditors have a net lien on revenues generated by PREPA. To the extent that the rebuilt grid increases PREPA's revenues because it is more cost-effective, then existing creditors of PREPA may indirectly benefit, to the extent any increase in revenues is available for debt service after payment of costs of operating the PREPA system and other priority obligations PREPA may incur during its Title III case.

Do you have any suggestions on how to improve the contracting process?

The FOMB recently established a contract review policy and we are working with the Government of Puerto Rico on implementing it. Through the process of providing the FOMB the required documentation and ensuring the contracts are consistent with the relevant Fiscal Plans and with FEMA requirements for reimbursement, the FOMB can help the Government of Puerto Rico to become a more efficient and effective procurer of government contracts.

Sincerely,



Kyle A. Rifkind
Deputy General Counsel

CC: Natalie A. Jaresko



Rebuilding the Electric Grid After Recent Hurricanes

Compilation of CEBN Member Comments | Nov. 1, 2017

As federal agencies, local governments, and utilities work to help communities recover from recent hurricanes, there is an urgent need to restore power while also rebuilding the electric grid in a more reliable, efficient manner capable of withstanding future disasters. Expertise from the private sector can help inform these strategies to effectively meet the dual goals of rapid restoration of power and long-term viability of a more resilient grid. Below are a handful of ideas offered by members of the Clean Energy Business Network, which are particularly tailored to recovery efforts in the Caribbean. These suggestions are intended to begin a dialogue and are by no means comprehensive. As government leaders work to rebuild these areas, we encourage them to provide transparent channels for communication with affected stakeholders and the private sector to craft potential solutions.

- 1) **First, there is a need to provide short-term solutions to restore power without locking in antiquated, inefficient energy systems.**
 - Many Caribbean islands rely on diesel. If more diesel gensets are deployed, they could be coupled with organic rankine cycle (ORC) technology to save 5-10% on diesel costs and reduce vulnerability to running out of fuel.
 - *Project example: ElectraTherm/Gulf Coast Green Energy developed an [ORC genset solution for Guantanamo Bay](#).*
 - Where internal combustion engines are used, these could be designed to be as fuel-agnostic as possible—i.e., they could run on either diesel or natural gas, so as islands gradually move away from diesel, the engines could be easily converted to LPG or LNG.
 - It may also be possible to deploy distributed generation—such as solar + storage, CHP internal combustion engines or microturbines, and other technologies at a wide variety of critical facilities in a relatively short timescale if there is a way to address interconnection issues.
 - *Project example: Capstone microturbines [kept facilities powered up after Harvey, Irma, and Maria](#)—now being deployed in FL.*

- 2) **Over the longer term, there is a need to make energy infrastructure more reliable and efficient as it is rebuilt. This ranges from building-level to community-level to grid-level solutions.**
 - At the building level, rebuilding of structures must be done in compliance with new building codes to maximize weatherization/reduce demand. Care should be taken to avoid siting mechanical equipment in vulnerable locations.
 - Distributed generation can be part of the solution for critical facilities, community-scale projects, and businesses that value resiliency. Technologies that can provide clean, reliable distributed power include: CHP, solar + batteries, biomass, fuel cells, and geothermal. The U.S. Army Corps of Engineers, Department of Defense, and other federal agencies have previously been involved in building small-scale, localized power plants in combat locations and could utilize these strategies in hurricane recovery.
 - Community microgrids can keep hospitals, grocery stores, and areas of potential community shelter (e.g., schools) in operation after a storm.



○ *Project example: Greener by Design is engineering community microgrids in Hoboken, NJ and elsewhere in the state post Hurricane Sandy.*

- Solutions to make the grid more reliable include hardening distribution infrastructure and mandating maintenance. Techniques include installing telemetry to detect outages, using reclosers to expedite circuit restoration, and pruning trees to avoid line interference.
- 3) **To move forward on resilient power rebuilding options in Puerto Rico specifically, businesses and the local government need greater certainty about the future structure of the power grid and its ownership.**
- The U.S. government must work to provide a credible path forward to restore a functioning power grid operator. The Department of Energy's Electricity Policy Technical Assistance Program can provide independent and unbiased technical support on electricity-related policies to Puerto Rico.
 - Businesses and the local government in Puerto Rico are exploring distributed generation (DG) options as communities rebuild, but their decision-making is heavily impacted by the current bankruptcy proceedings involving the Puerto Rico Electric Power Authority (PREPA) and the lack of certainty around the future structure of Puerto Rico's electric grid.
 - The Army Corps has been providing rental diesel generators and has been able to get critical sites like hospitals and banks up and running—but these are not long-term solutions. The generators are not usually meant to run constantly and there are challenges with local access to and price of both propane and diesel fuel.
 - Decisions to install more permanent distributed generation options are stalled. Existing regulations regarding on-site generation (e.g., interconnection and power purchase agreement policies) are confusing and subject to interpretation—these should be clarified as reforms are developed. Potential end users do not want to invest their time and money in a distributed generation system if the eventual grid will lock out such systems and be built around a more centralized power system approach. If a site installs a distributed generation system now, this would need to be done without permits because Clean Air Act/Title V and interconnection permitting are impossible without fully functioning governance mechanisms and certainty about PREPA's future. Therefore, the site may eventually be forced to dismantle the system in the future.
- 4) **Businesses have solutions to offer but need a point of entry for discussions with federal agencies, local governments, and utilities. These entities should utilize a transparent, open contracting process.**
- As unique needs arise in the recovery effort, relevant agencies and communities may not even be aware of all the existing technology and financing solutions to address these challenges. It would be helpful to have established points of contact and an open process for stakeholders to contribute solutions and see what works best for the affected communities.
 - A competitive process will ensure communities receive the best solutions to fit their needs.



November 14, 2017

Senator Lisa Murkowski
 United States Senate
 Committee on Energy and Natural Resources
 522 Hart Senate Office Building
 Washington, D.C. 20510

Honorable Senator Murkowski:

The Institute for a Competitive and Sustainable Economy in Puerto Rico (ICSE-PR) is the only non-profit public interest organization approved by the Puerto Rico Energy Commission of Puerto Rico (PREC) in all the regulatory proceedings to date and it is a participant in the Federal Court PROMESA Title III proceedings for the Puerto Rico Electrical Power Company (PREPA) bankruptcy proceedings.

We urge the Energy and Natural Resources Committee leadership to take note of Puerto Rico private sector capacity to contribute, to invest in the electrical grid re-design and in the distributed energy projects that can be executed now if the Fiscal and Oversight Management Board (FOMB) supports the PREC per PROMESA law. Stateside electrical system regulatory best practices can be executed now by the PREC with proper FOMB funding and federal government expert help that supplements current PREC statutory limitation of its \$5.8mill yearly budget.

Most of this private cleaner energy generation investment and local credit capacity is on hold waiting for clarity of interconnection processes and rules. If promptly provided under standard US regulatory protocols Puerto Rico businesses can help get the lights back sustainably and in support of a more resilient grid as well.

Federal and Puerto Rico laws including PROMESA support prompt enactment of this rulemaking outside of PREPA bankruptcy court proceedings. Sadly, unnecessarily with dire consequences now to Puerto Ricans the bankruptcy proceedings have crowded out tax payer and ratepayer moneys and the FOMB's attention to the fighting with Puerto Rico government for control of a reckless PREPA and an incomprehensible acceptance of the PREPA effort to sideline PREC supervision authority in bankruptcy court proceedings. If a fraction of these moneys and attention by FOMB and government of Puerto Rico went to legitimate regulatory proceedings, confidence to investors and credible hope to consumers can induce rapid private investments, commercial, industrial and residential scale energy security, low prices and power quality now.

There is no need to wait for PREPA bankruptcy resolution, nor the grand utility scale public-partnership projects with no presently known financing capability. We can fix at a minimum 20% of our currently non-existent or unreliable electrical generation if PREC budget and collaboration with FOMB are fixed, as they urgently can and should.

Modernizing our grid to U.S. standards must begin with U.S. standards of planning and independent supervision of public service utilities. When a utility fails to cooperate or to provide adequate budgeting, cost controls and reliable planning information – or all of the above as evidenced by PREPA, there must be consequences and controls only a robustly funded and empowered regulator can expertly execute until matters are corrected for the benefit of consumers. This has yet to happen in Puerto Rico and the FOMB is both empowered and tasked with supporting the PREC in carrying out its duties.

The Federal Reserve Bank of New York 2012 Report on The Competitiveness of Puerto Rico's Economy states that "[b]est practice suggests that a regulatory commission should be set up to oversee the Puerto Rico Electric Power Authority (PREPA) to protect consumers and improve the efficiency of the utility's operations". In a similar manner, the 2011 Report on the President Task Force on Puerto Rico indicates that "[t]o achieve this goal (Developing Puerto Rico as a Model for Clean Energy), the Task Force recommends that the President and Congress support Puerto Rico in the specific ways set forth below.... [w]ork with the government of Puerto Rico to develop improved regulatory and oversight conditions."

The modern legal regulatory framework enacted 2014 with Act 57 in Puerto Rico must and can promptly mature from federal government policy recommendations already put into law, into the required energy re-design and oversight that sufficiently expert and independent can strongly support PROMESA objectives and which FOMB can rely on and provide support to.

There is no need to wait further given the proven inability of PREPA to work with the FOMB and the PREC. Title V of PROMESA specifically states that the Revitalization Coordinator must "support the Energy Commission of Puerto Rico in achievement of its goal of reducing energy costs and ensuring affordable energy rates for consumers and business"; and in terms of Energy and Critical Projects to be implemented by the Revitalization Coordinator "[i]f the Energy Commission determines the Energy Project will adversely affect an approved Integrated Resource Plan, then the Energy Commission shall provide the reasons for such determination and the Energy Project shall be ineligible for Critical Project designation...".

The events surrounding the Whitefish contract, the seemingly premeditated PREPA delay in getting further help which Puerto Ricans without power are receiving over a month too late, are the most recent example of the need for extraordinarily strong, independent and constant Commission supervision. Prior to hurricane Maria the Commission found and documented substantial mismanagement, lack of controls and information. The documented failings included excessive and unnecessary consulting fees, overly expensive renewable energy contracts and poor selection of energy and engineering consultants.

After the denial of Judge Laura Taylor Swain of the FOMB motion to appoint a Chief Transformational Officer (CTO) for PREPA, more than ever, unequivocal actions should be taken by Congress to assure transparency processes, a very strong and constant oversight by the PREC over all costs that PREPA must be accountable for before passing them on as tariffs to ratepayers, negatively impacting the economic stabilization that must accompany a fiscal stabilization.

The importance of a strong well-funded PREC is especially relevant in our post-Maria reality where new proceedings need to be developed in an expedited manner by the PREC to assure the modernization and transformation of the Puerto Rico electrical grid. Amendments to Title V will further ensure the powers and independence of the PREC and the prompt construction of new projects, all necessary to ensure the transformation and modernization of the Puerto Rico electrical system. In the meantime, the PREC can be strengthened by actual FOMB and federal government powers and capabilities.

Your expedite consideration on this subject will be appreciated. Delays in addressing this important subject could hurt the health and opportunities for recuperation further than what the outdated PREPA monopoly and the lack of coordination between the FOMB and PREC already have.

Sincerely,



Tomás J. Torres, MPL, PE, LPP
Executive Director

XC: Files

Government, Public Sector and Housing Needs	Cost (Millions)	Input/Assumptions	Funding Sources
Housing	\$ 1,750	<ul style="list-style-type: none"> - STEP temporary housing program - HUD CDBG-DR housing repair program - Repair/replacement of public housing units (VIHA) - Cost estimate based on field assessment and USED estimate 	<ul style="list-style-type: none"> - FEMA (\$750 M) - HUD CDBG-DR (\$1 B)
Education	\$ 715	<ul style="list-style-type: none"> - WAPA estimate includes cost to repair (\$250-300 M), resilience/mitigation and new emergency plant on St. John (\$300 M) and new generators (\$250M) - Assessment of 6 government buildings - Funding request from Judicial Branch - Broad desktop assessment of 800 government facilities - Repair/resiliency for water infrastructure - Public works damage estimate - High level estimate for airport, ports/harbors and road network - Need waiver of annual FHWA Emergency Relief Program - Replacement cost estimates for Juan Luis Hospital - Replacement cost estimates for Schneider Regional Medical Center - Replacement cost estimates for Myrah Keating Health Clinic - v/INGN estimate includes repair (\$26M) , resilience/mitigation (towers \$72 M, underground last-mile fiber \$110M), etc. - Wastewater treatment plant and pump station repair and resiliency - System level improvements beyond damaged facilities 	<ul style="list-style-type: none"> - FEMA (\$600 M) - US Dept of Education (\$115 M)
Energy	\$ 850	<ul style="list-style-type: none"> - FEMA (\$550 M) - HUD CDBG-DR (\$300 M) 	<ul style="list-style-type: none"> - FEMA (\$550 M) - HUD CDBG-DR (\$300 M)
Government Facilities	\$ 475	<ul style="list-style-type: none"> - FEMA (\$350 M) - HUD CDBG-DR (\$125 M) 	<ul style="list-style-type: none"> - FEMA (\$350 M) - HUD CDBG-DR (\$125 M)
Transportation	\$ 425	<ul style="list-style-type: none"> - FEMA (\$225 M) - FHWA (\$100 M) - HUD CDBG-DR (\$100 M) 	<ul style="list-style-type: none"> - FEMA (\$225 M) - FHWA (\$100 M) - HUD CDBG-DR (\$100 M)
Hospitals & Healthcare	\$ 575	<ul style="list-style-type: none"> - FEMA (\$350 M) - HUD CDBG-DR (\$225 M) 	<ul style="list-style-type: none"> - FEMA (\$350 M) - HUD CDBG-DR (\$225 M)
Telecommunications	\$ 250	<ul style="list-style-type: none"> - FEMA (\$150 M) - HUD CDBG-DR (\$100 M) 	<ul style="list-style-type: none"> - FEMA (\$150 M) - HUD CDBG-DR (\$100 M)
Other Government Sectors	\$ 125	<ul style="list-style-type: none"> - FEMA (\$75 M) - HUD CDBG-DR (\$50 M) 	<ul style="list-style-type: none"> - FEMA (\$75 M) - HUD CDBG-DR (\$50 M)
Public Resilience Measures	\$ 300	<ul style="list-style-type: none"> - FEMA (\$150 M) - HUD CDBG-DR (\$150 M) 	<ul style="list-style-type: none"> - FEMA (\$150 M) - HUD CDBG-DR (\$150 M)
Ongoing Emergency Response Activities	\$ 1,300	<ul style="list-style-type: none"> - FEMA (\$1,300 B) 	<ul style="list-style-type: none"> - FEMA (\$1,300 B)
Non-Federal Share on FEMA Projects	\$ 725	<ul style="list-style-type: none"> - Includes Debris Removal (FEMA PA Cat A) and Emergency Protective Measures (FEMA PA Cat B) - Assumes 10% on PA and 25% of FEMA HMGP – UNLESS WAIVED – WAIVER NEEDED AND REQUESTED 	<ul style="list-style-type: none"> - HUD CDBG-DR (\$725 M)
Total	\$ 7,490		

U.S. Virgin Islands Request for Disaster Recovery Support

November 2017



The catastrophic destruction to the U.S. Virgin Islands by Category 5 Hurricanes Irma and Maria in September 2017 resulted in significant physical and economic damage that will take years to repair. The 185+ mph winds and 20 inches of rain devastated all aspects of life for 100,000 Americans living on the islands. The hurricane damage is estimated to be more than \$1.7 billion over the next 3 years for the islands' key industries. Damages to commercial facilities are estimated at \$900 million. Uninsured hurricane-related damages are expected to exceed \$7.5 billion.

Over 15,000 homes were damaged or destroyed, over 400 boats were sunk, and damage to commercial buildings was extensive. Housing is critical, as there are very few available homes or apartments to rent, and hotels are struggling to repair damage or are housing response workers. The islands' infrastructure and public institutions were also heavily damaged. Significant damage to numerous schools, the airports, government buildings, and other critical and essential buildings mean that many vital services have been disrupted.

The islands' power transmission and distribution systems were 80% to 90% damaged.

Our vision is to rebuild stronger than before, to make our buildings and infrastructure more resilient. To break the cycle of damage and repair, our recovery goal this time is to include resiliency measures such as burying utility lines and using micro-grid systems that can add renewable generation capacity to our power system.

GOVERNMENT, PUBLIC SECTOR, AND HOUSING NEEDS	\$ 7,490 M
Housing	\$ 1,750 M
Education	\$ 715 M
Energy	\$ 850 M
Government Facilities	\$ 475 M
Transportation	\$ 425 M
Hospitals and Healthcare	\$ 575 M
Telecommunications	\$ 250 M
Other Government Sectors	\$ 125 M
Public Resilience Measures	\$ 300 M
Ongoing Emergency Response Activities	\$ 1,300 M
Non-Federal Share on FEMA Projects	\$ 725 M

Damage by Sector*

HOUSING | \$1,750,000,000



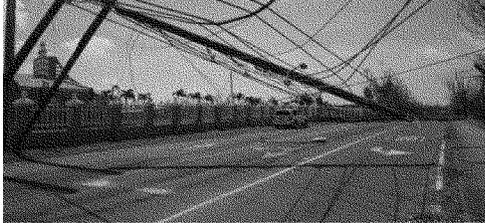
- Sheltering and Temporary and Essential Power (STEP)/Rapid Repairs Program - 10,000+ homes
- Permanent housing repairs (6-8,000 homes)
- Public housing repair and replacement (330 destroyed units, 600+ damaged units)

EDUCATION | \$715,000,000



- Replacement of nine destroyed and condemned schools with six more resilient schools to more effectively serve the reduced school population on the islands
- Replacement of wide range of equipment including school buses, aquaponics labs, poultry farm, computers, smart boards, musical equipment, etc.

ENERGY | \$850,000,000



- \$250-300 million system repair
- \$300 million for resiliency/mitigation including composite poles, some underground lines, new emergency plant on St. John
- \$250 million for emergency back-up generators

GOVERNMENT FACILITIES | \$475,000,000



- \$400+ million for repairs/replacement of government facilities including:
 - Key government offices
 - Judicial facilities
 - Damaged/destroyed drinking water infrastructure
 - Public safety facilities including two fire stations, one police station and Emergency Operations Center
 - University of the Virgin Islands campus facilities

*Cost estimates include contingency and resiliency estimates

TRANSPORTATION | \$425,000,000



- \$150+ million for road infrastructure repairs
- \$250+ million for key transportation infrastructure including:
 - airport terminal, tower, and other assets
 - Ports and harbors including cruise ship terminals

HOSPITALS AND HEALTHCARE | \$575,000,000



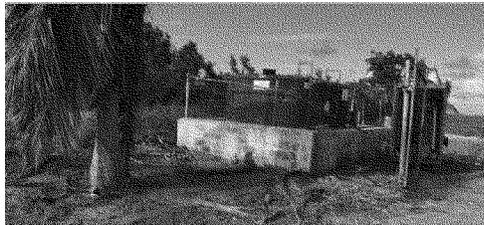
- Critical care currently unavailable in the Virgin Islands
- \$250+ million for replacement of Juan Luis Hospital
- \$250+ million for replacement of Schneider Regional Medical Center
- \$25+ million for damages to Myrah Keating Health Clinic

TELECOMMUNICATIONS | \$250,000,000



- \$25+ million repairs to existing network including towers
- \$75+ million resilience/mitigation including undergrounding of middle mile fiber
- \$110+ million for undergrounding of last mile fiber where feasible

OTHER GOVERNMENT SECTORS | \$125,000,000



- \$75+ million of wastewater treatment plant repair and resilience
- \$50+ million for pump station repair and resilience

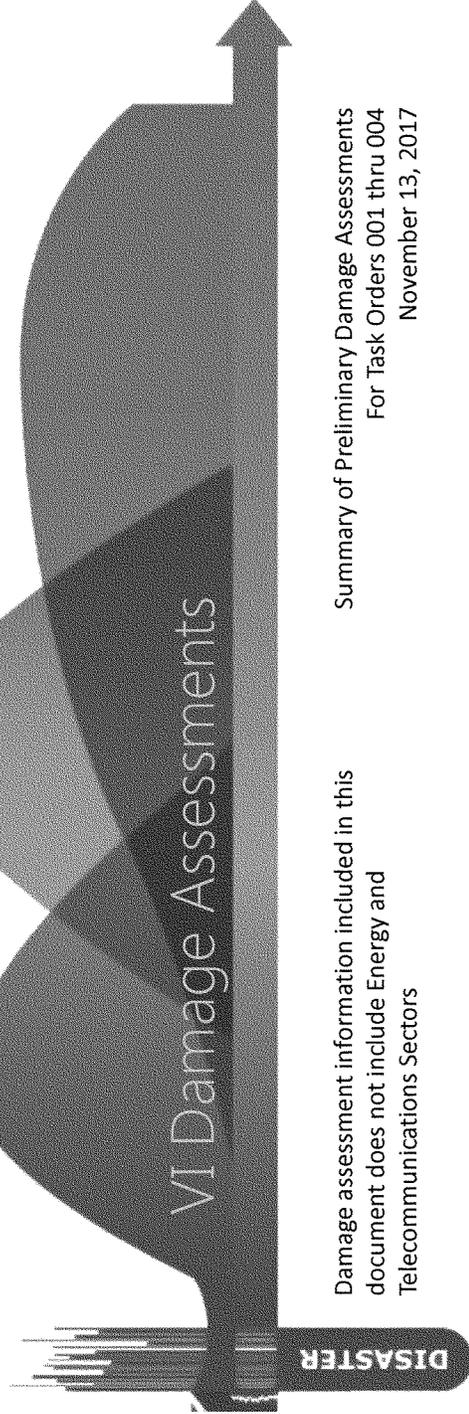
*Cost estimates include contingency and resiliency estimates

CDL - Disaster-Related Revenue Losses:

<i>Central Government:</i>	FY 2018	\$495 million
	FY 2019	\$440 million
	FY 2020	\$410 million
<i>Autonomous and Semi-Autonomous Authorities:</i>		\$250 million



AECOM



Damage assessment information included in this document does not include Energy and Telecommunications Sectors

Summary of Preliminary Damage Assessments
For Task Orders 001 thru 004
November 13, 2017

USVI Recovery Program Cost Summary

\$7,490 M



Sum Total of Repair Cost Across All Sectors

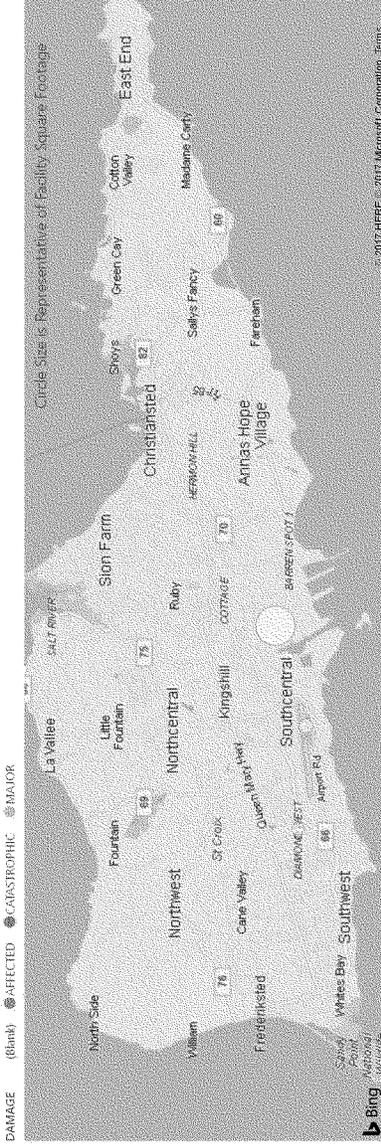
- SECTOR**
- Education
 - Government Facilities
 - Hospitals and Healthcare
 - Housing
 - Other Government Sectors
 - Transportation



Note: this damage summary report does not include assessments of the Energy or Telecommunications sectors. However, the total estimate of \$7,490 M does include the costs associated with both of those sectors.

Transportation

\$425,000,00
Estimated Cost



Estimate Includes:

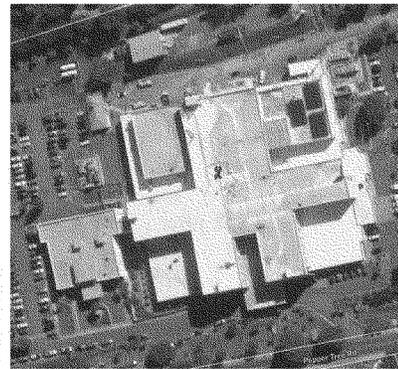
- Road infrastructure repairs
- Airport terminal and tower repairs
- Port/harbor and cruise ship terminal repairs

Total Cost to Repair

After Storm



Before Storm



Catastrophic
Disaster Damage

1982

Year Built

**Non-Flood: Wind Driven Rain,
Roof Damage, Water Intrusion**

Disaster Damage

**Steel Structure with
Exterior Insulation Finish Syst...**

Building Materials

240,000

Square Footage

Repair Cost	\$63,600,000
Replacement Cost	\$155,000,000
Saving Space Cost	\$16,000,000
FFE	\$1,100,000
Total Cost to Repair	\$80,700,000
Total Cost of Replace...	\$171,000,000

Cost to Repair vs. Cost of Replacement

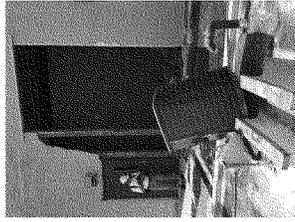
\$81M



\$0M \$171.00M

Preliminary Assessments by Discipline

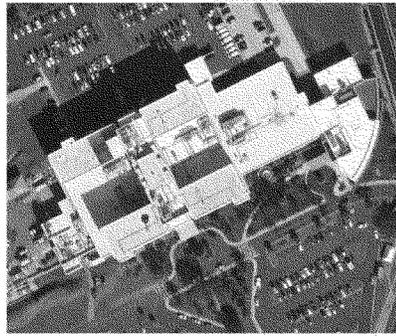
Facility Name	Architecture	Structure	Site	Mechanical/Plumbing	Electrical/Comm/Security	Fire Protection	Overall Narrative Rating
Juan F. Luis Hospital	Catastrophic Damage to roofing and roof insulation causing mold remediation in ceiling, pleatonic, and replacement of spray-on fireproofing. Minor damage to EFR siding and louvers. Minor to moderate damage to interior walls and floors from water damage.	Moderate Damage: only limited structural damage. Multiple large openings, especially louvers, which failed now require reinforcing around the rough openings. Some long span steel stud walls in building require interior steel joists to support the walls.	Minor to Moderate Damage: Majority of site infrastructure is in useable condition, some damage present from elements of the building. Majority of exterior lighting damaged.	Moderate to significant damage. Multiple exterior equipment including pumps, fans, condensing units, and exterior piping and duct insulation has sustained significant to major damage on the roof and exterior locations. Variable refrigerant system serving the CR area has been destroyed. Insulation within the building on duct and piping that was water damaged has to be removed and replaced.	Moderate to significant damage. Main electrical concerns are automatic transfer switches not operating automatically and almost half of the interior lighting is nonoperational. Main communications damage is public address system has very poor sound quality.	Significant damage: FA devices on level 3 damaged, moderate FA device issues on level 2, and on level 1.	Catastrophic. Remediation efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.



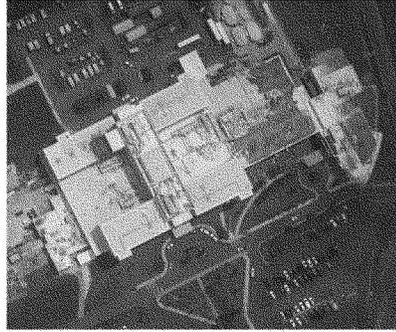
Schneider Regional Medical Center

9048 Sugar Estate Rd.
Charlotte Amalie, St. Thomas ...

Before Storm



After Storm



\$78,000,000	Repair Cost
\$16,000,000	Swing Space Cost
\$12,354,400	FFE
\$106,354,400	Total Cost to Repair

\$160,000,000	Replacement Cost
\$16,000,000	Swing Space Cost
\$176,000,000	Total Cost of Replace...

Cost to Repair vs. Cost of Replacement



Catastrophic
Disaster Damage

1982 and 2005

Year Built

Non-Flood: Wind Driven Rain, Roof Damage, Water Intrusion

Disaster Damage

Steel and Concrete Structure with Exterior Insulation Finish System

Building Materials

294,453

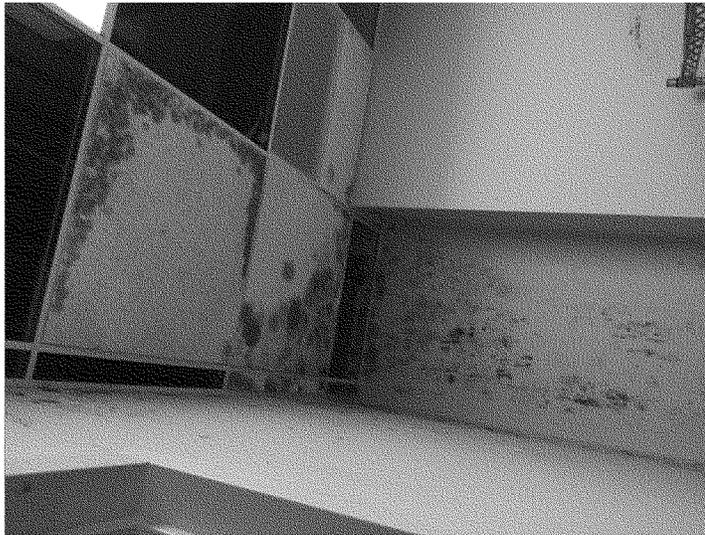
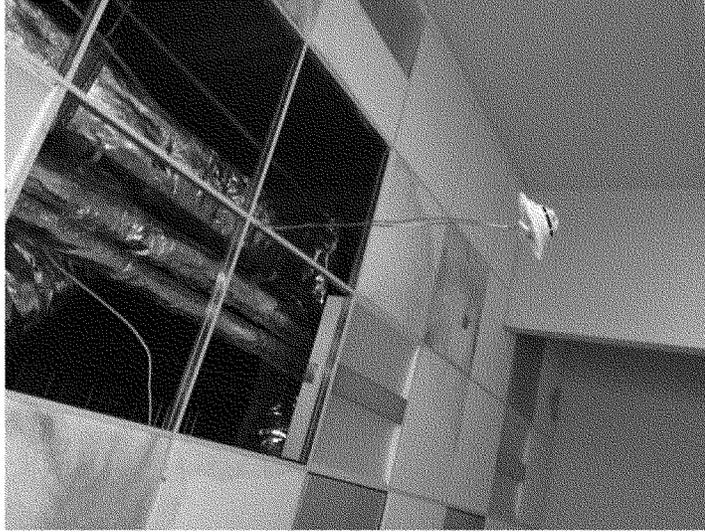
Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Site /	Mechanical/Plumbing	Electrical / Comm / Security	Fire Protection	Overall Narrative Rating
Schneider Regional Medical Center	Catastrophic Damage to roofing and roof insulation causing mold remediation in ceiling plenums and replacement of spray-on fireproofing. Minor damage to EPS siding and doors. Moderate damage to ceilings, walls and doors from water damage.	Moderate Damage to limited structural systems damaged. Multiple large openings, especially louvers, which failed now require reinforcing around the rough openings. Some long span steel stud walls and columns require reinforcement to support the walls.	Minor to Moderate Damage. Majority of site infrastructure is in usable condition; some debris is present from elements of the building, all exterior lighting damaged.	Catastrophic Damage to the HVAC roof top equipment is missing or dislodged from roof curbs or original locations. Roof equipment ponding and leaking into lower levels. Insulation and equipment on upper levels has been compromised with water from leaking through roof, domestic water shutdown due to leaks in the system.	Catastrophic Damage. The interior lighting and branch wiring suffered moderate to significant damage estimated at approximately half.	Moderate damage. FA Devices appear to be damaged by water infiltration. Sprinkler System does not appear to show any damage.	Catastrophic Remediation efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.

AECOM

Schneider Regional Medical Center



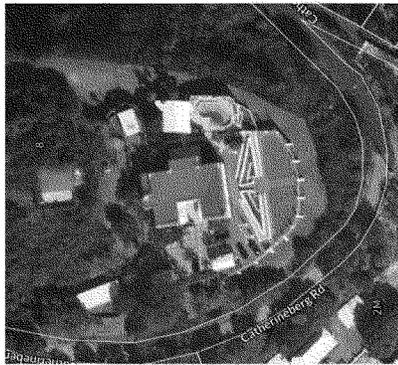
Estate Catherineberg

\$2M

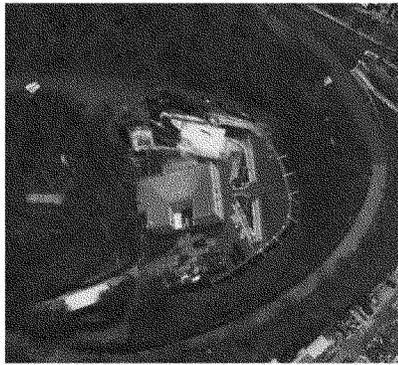
AECOM

Catherineberg Rd., Charlotte
Amalee, St Thomas 00802, U.S...

Before Storm



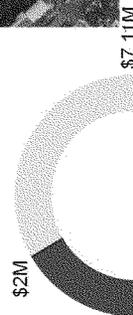
After Storm



\$1,297,727	Repair Cost
\$790,000	Swing Space Cost
\$259,545	FFE
\$2,347,272	
Total Cost to Repair	

\$6,320,000	Replacement Cost
\$790,000	Swing Space Cost
\$7,110,000	
Total Cost of Replace	

Cost to Repair vs. Cost of Replacement



\$2M

\$7.11M

\$0M

Non-Flood: Wind Driven, Water Intrusion.

Disaster Damage

Brick and stone masonry construction with plaster/stucco...

Building Materials

7,900

Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical/Comp/Security	Overall Narrative Esting
Estate Catherineberg	<p>Significant damages. The storm breached/blew out several exterior shutters/windows. Wind and rain damage to interiors. Damage to historic plasterwork and floors, and damage to exterior masonry. Significant mold growth.</p>	<p>Significant Damage. Exterior two flag poles yielded at base. All windows and shorter broken. Ceiling Damage due to water intrusion. Significant damage to building exterior and patio.</p>	<p>Mechanical/Plumbing moderate to catastrophic damage. Outdoor condensing units were dislodged and destroyed. Some indoor units sustained water damage as well.</p>	<p>Electrical conduits and wiring of branch have been affected. The generator is operational but further inspection and maintenance is required. Almost half of exterior lighting fixtures have been affected. Further inspection is required. Some interior lighting fixtures have been affected. Some Comm/Security and public address devices have been affected.</p>	<p>Severe but repairable. Remediation efforts that will be necessary as a result of water intrusion will required replacement of a significant portion of all partitions and building systems within the building.</p>

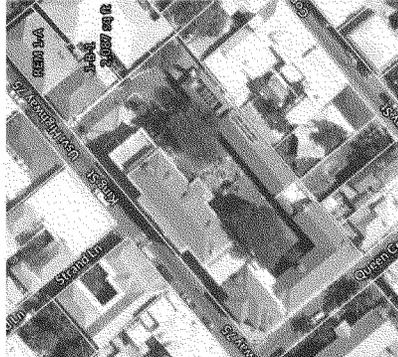
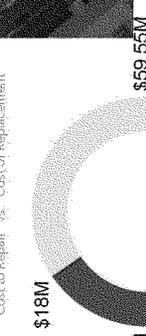


Government House, St. Croix, Christiansted

1105 King Street, Christiansted,
St. Croix 00820 USVI

After Storm

Before Storm



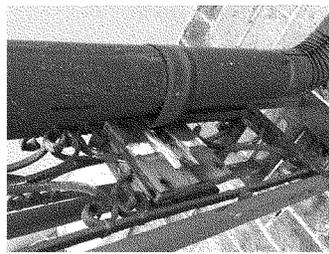
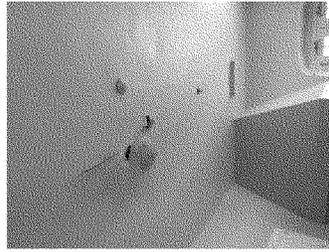
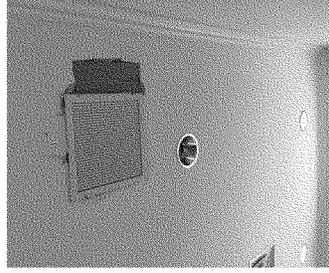
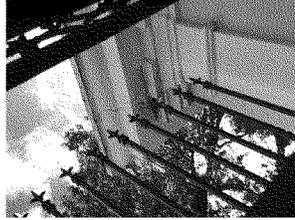
Major
Damage Rating
1742
Year Built

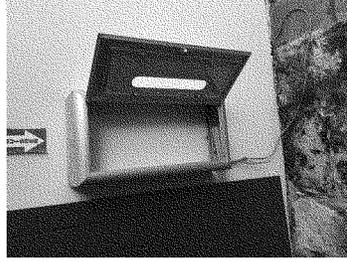
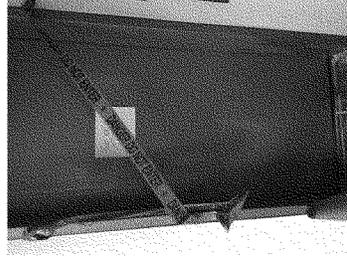
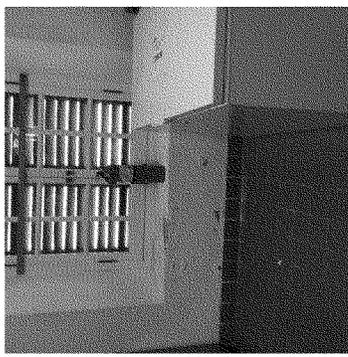
Non-Flood: Wind Driven, Water Intrusion.
Disaster Damage
Brick and stone masonry construction with plaster/stucco...

Building Materials
66,170
Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical/Comm/Security	Fire Protection	Overall Narrative Rating
Government House, St. Croix, Christiansted	Exterior: Overall minor damage. Roofing: Portion of gutter and downspout drainage system Resealing of all roof corrugated metal deck laps joints. HAZMAT materials verification recommended prior to any scope of work performance. Walls: Damage requires crack and stucco repairs (finishing and walls). Repainting of exterior facade/walls areas required. Interior: Moderate damage. Floor: Wood trim and ceiling damaged by water penetration. Some mold is present.	Moderate Damage. Exterior cracks to column capitals. Exterior walkway slab cracks due to possible foundation settlements, ceiling damage, and minor wall cracking at third floor kitchen wall.	Mechanical equipment has minor to significant damage. exterior louvers sustained a majority of the damage ranging from blockage and screen damage to bent louver blades. Exterior condensing units had moderate coil damage. Plumbing equipment suffered moderate to catastrophic damage. Roof drains and gutter systems were significantly impacted causing minor water damage. Corrosion on plumbing fixtures was also noted in a few areas.	Electrical: branch circuits and wiring of branch circuits have been affected due to roof leaking. One of two generators is not operational. The elevator is not working. Almost half of all exterior lighting fixtures have been affected.	Fire alarm system damaged. Fire alarm devices suffered moderate to catastrophic damage in the Inner Courtyard.	Severe but repairable. Remediation efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.





Government House, St. Croix, Fredricksted

315 Prince Street, Frederiksted,
St. Croix, 00840

Before Storm



After Storm



\$2,698,874	\$28,616,000
Repair Cost	Replacement Cost
\$3,577,000	\$3,577,000
Living Space Cost	Living Space Cost
\$539,775	
PFEE	

\$6,815,649	\$32,193,000
Total Cost to Repair	Total Cost of Replace...

Cost to Repair vs. Cost of Replacement



Major
Damage Rating

1799

Year Built:

**Non-Flood: Wind Driven, Roof
Damage, Water Intrusion.**

Disaster Damage:

**Brick and stone masonry
construction with plaster/stucco...**

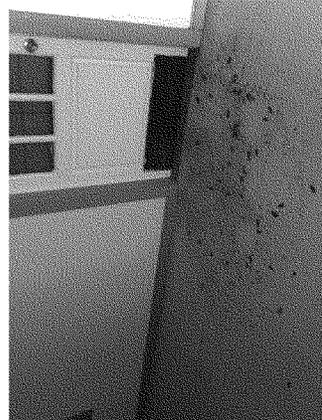
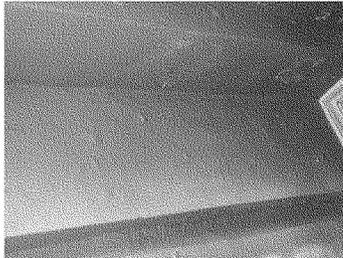
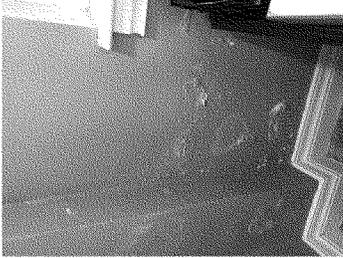
Building Materials

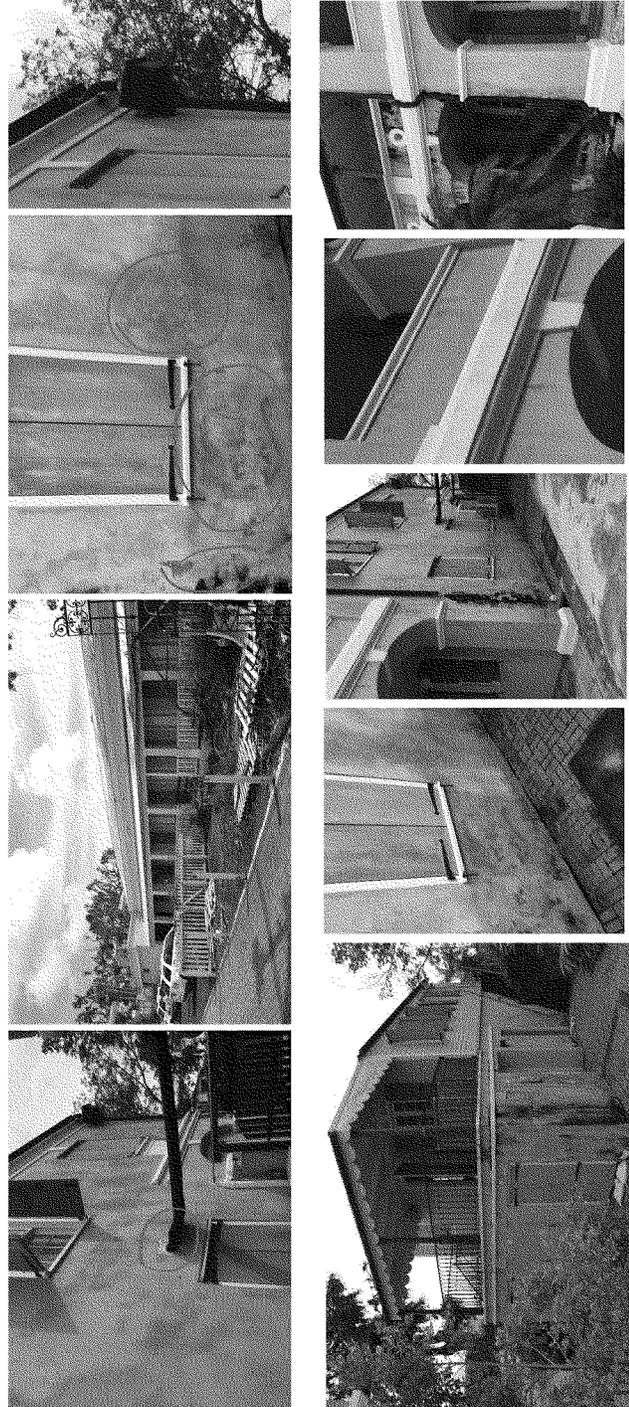
35,770

Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical/Comm/Security	Fire Protection	Overall Narrative Rating
Government House, St. Croix, Fredricksted	Exterior: Overall significant damage. Roofs: majority of gutter and downspout drainage system have been damaged or blown off due to high wind event. Resealing of all existing roof corrugated metal deck laps joints and flashings required. HAZMAT materials verification recommended prior to any scope of work performance. Walls: portion of existing stucco has been damaged or blown off due to high wind event. Replacement of exterior facade/walls arise required. Recommendation for crack/stucco/waterproofing/ paint for exterior building envelope walls. Replacement of existing broken window glazing required. Plaster: cracked trim and paint damaged by water penetration, some mold is present.	Minor Damage Minor wall cracks in second floor and hearing house. Some minor water damage to architectural finishes due to roof leaks.	Plumbing systems have moderate to catastrophic damage. Plumbing fixtures require moderate repairs or replacement but roof gutter system has substantial damage and leaks. Mechanical to generator exhaust	Electrical circuits and wiring of Exterior lighting fixtures have been affected. Exterior disconnect Switches have been affected. all need complete replacement.	Some damaged, require further inspection.	Severe but repairable. Remediation efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.





Government House, St. John

Henry Samuel street, Cruz Bay,
St. John, 00831

Total Cost to Repair

Before Storm

After Storm



Repair Cost	\$1,743,644
Replacement Cost	\$3,820,800
Swing Space Cost	\$477,600
FFC	\$348,729
Total Cost to Repair	\$2,569,972
Cost of Replacement	\$4,298,400

Cost to Repair vs. Cost of Replacement

\$3M

Catastrophic

1825

Year Built

Non-Flood: Wind Driven, Roof Damage, Water Intrusion.

Disaster Damage

Brick and stone masonry construction with plaster/stucco...

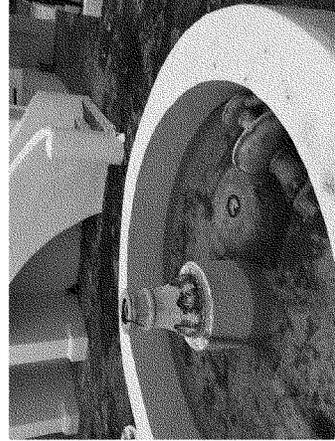
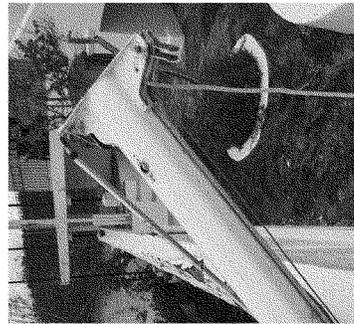
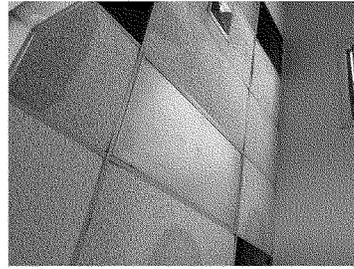
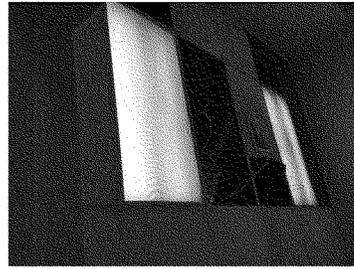
Building Materials:

4,776

Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical / Comm/ Security	Fire Protection	Overall Narrative Rating
Government House, St. John	<p>Exterior: Overall catastrophic damage. Forging (stair) road system at main entry including gutter and downspouts and structural wood T&G beam assembly failure in high wind event. Walls: portion of exterior stucco has been damaged or blown off. Repainting of exterior facade walls areas required. Recommendation for cracks/stucco: waterproofing/ paint for exterior building envelope walls and concrete spalling conditions. Replacement of existing broken windows/glassing required. Exterior water damage to all exterior finishes. Overall interior damage: 2nd secondary bldg. portion of gutter and parapet/trim system. Resealing of all roof (congrated metal deck) bays. Repairs to interior systems. Overall: Significant damage to exterior and performance. Walls/ damage requires work and stucco repair. (Roofing and walls).</p>	<p>Significant damage to catastrophic items. Complete roof was blown away. Cracked balcony beams. Roof ornaments broken. Roof most broken and damaged support retaining wall and floor ceilings and slab. Less than 10% of building gutter blown away on one side.</p>	<p>Mechanical systems satisfied. Significant to catastrophic damage. most split systems were destroyed or damaged. Some ductwork/plumbing systems experienced significant catastrophic damage. Roof puttery system was completely destroyed and the existing electrical system to be replaced.</p>	<p>Electrical readings and wiring of branch circuits have been severely damaged. Half of interior lighting has been severely damaged. The exterior lighting is a total loss. All high voltage systems are to be replaced.</p>	<p>Almost all of the fire alarm system damaged.</p>	<p>Severe to catastrophic. Penetration efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.</p>



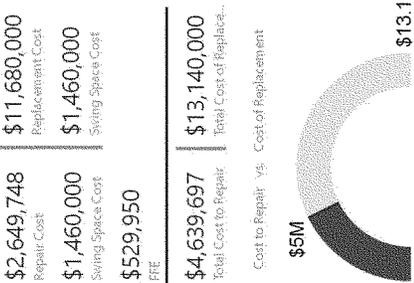
Government House, St. Thomas

21-22 Kongens Gade, Charlotte Amalie, St Thomas 00804

Before Storm



After Storm



Catastrophic
Disaster Rating

1867

Year Built

Non-Flood: Wind Driven, Roof Damage, Water Intrusion.

Disaster Damage

Brick and stone rubble masonry, stucco finish, corrugated metal...

Building Materials

14,600

Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical /Comm/ Security	Fire Protection	Overall Narrative Rating
Government House, St. Thomas	<p>Exterior: Overall catastrophic damage. Roofing missing, roof and accessories damaged during high wind event, water tight integrity compromised, most assembly system recommendation for replacement.</p> <p>Walls: Preparation of exterior facade/walls, areas required.</p> <p>Recommendations for crack/stucco/waterproofing/paint for exterior building envelope walls and concrete-spalling conditions. Replacement of existing broken windows/glazing / shutters required. Extensive water damage to all exterior finishes. HAZMAT materials verification recommended prior to any scope of work performance. Walls: Damage requires crack and stucco repairs, or hollow out, roof trim and paint damaged by water penetration, mold in bathroom, water damage to wood floors, water.</p>	<p>Moderate damage.</p> <p>Roof over addition portion collapsed. Entire roof structure to be replaced there.</p> <p>Water damage to ceilings. No floor slab structural damage noticed.</p> <p>Significant cracking in wall brick wall, floods repair. Guard booth completely sheared, retaining wall to be replaced.</p>	<p>Mechanical equipment suffered minor to catastrophic damage. Minor damage was an electrical connection at a unit and a number of units were completely destroyed and must be replaced. Plumbing systems had no obvious damage.</p>	<p>Approx half of interior lighting has been severely damaged, so for this respect it must be considered catastrophic damage. The exterior lighting is a total loss, catastrophic damage. Comm/Security systems remain functional, but have been affected by water filtration. Even all electrical systems remain functional, it seems to be reasonable to use if life system to be replaced.</p>	<p>The Fire alarm Systems are operational but has been partially affected by water filtration.</p>	<p>Catastrophic. Remediation efforts that will be necessary as a result of roof damage will require replacement of a significant portion of all partitions and building systems within the building.</p>



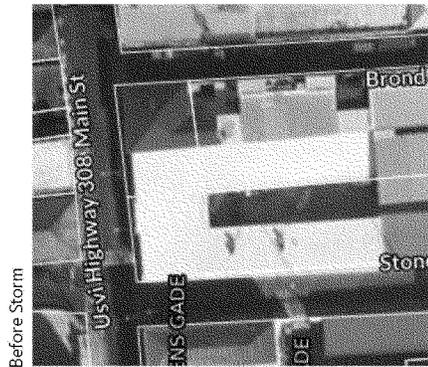
Office of the Governor's Finance and Communication Building

\$3M

AECOM

32-33 Kongens Gade, Charlotte Amalie, St Thomas 00804

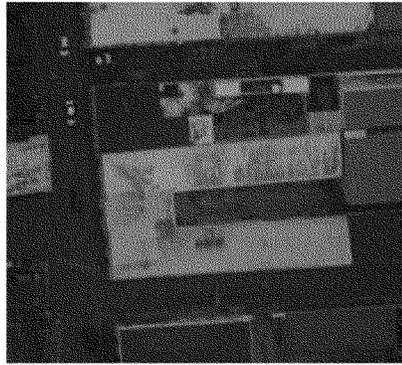
Total Cost to Repair



Before Storm

Repair Cost	\$1,567,559
Replacement Cost	\$6,400,000
Living Space Cost	\$800,000
Living Space Cost	\$800,000
FFE	\$313,512

After Storm



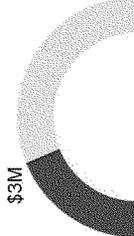
Non-Flood: Wind Driven, Water Intrusion.
Disaster Damage
Brick and stone masonry construction with plaster/stucco...
Building Materials

8,000

Square Footage

\$3M

Cost to Repair vs. Cost of Replacement

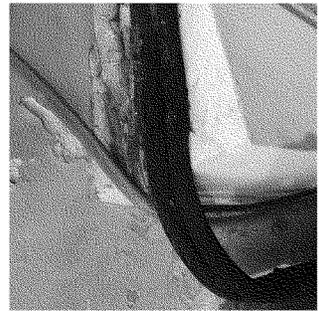
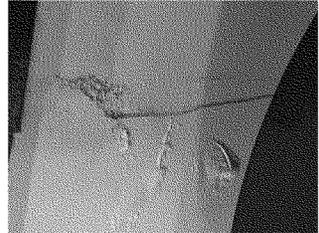
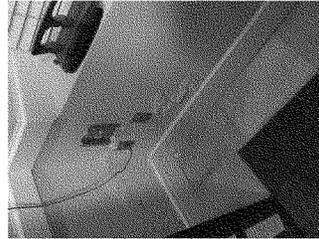
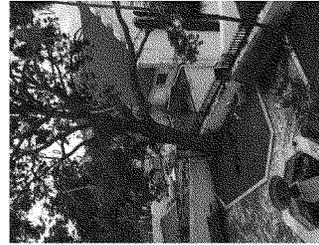
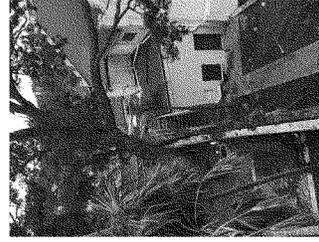


\$0M

\$7.20M

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Mechanical/Plumbing	Electrical / Comm/ Security	Fire Protection	Overall Narrative Rating
Office of the Governor's Finance and Communication Building	Exterior: Overall moderate damage. Roofing replaced. Interior: Significant damage to exterior masonry and plaster/stucco. Repainting of exterior facade/walls areas required. Recommendation for crack/stucco/waterproofing/interior plaster, wood trim and paint damaged by water penetration, some mold is present.	Mechanical: Damaged. Water and mold flooding due to water infiltration. Ceiling Damage. 1st floor room exterior door and shutters do not open due to possible water damage. Stair from 1st to 2nd floor have cracked stringer due to possible settlement of supporting slab/foundation. portion of retained wall damaged by	Mechanical equipment suffered. Condensing units are severely damaged with a few still operating but not full capacity. Mold has been noticed due to the AC systems not working properly or in all. Plumbing at main building appears intact but plumbing to adjacent structures have moderate deficiencies. Lack of cold water at sinks and leaks.	Electrical conditions and equipment have been affected. Requires further inspections. Almost half or more of exterior lighting fixtures have been affected. Some interior lighting is affected. Comm/Security and public address systems are not	Some of the Fire Protection System has been affected	Severely but repairable. Some of the Fire Protection System has been affected. Replacement of a significant portion of all partitions and building systems and equipments within the building



Randall Doc James Racetrack

\$4M

AECOM

Total Cost to Repair

1 Havensight Way, St. Thomas, VI 00802

Before Storm



After Storm



\$4,471,150
Repair Cost

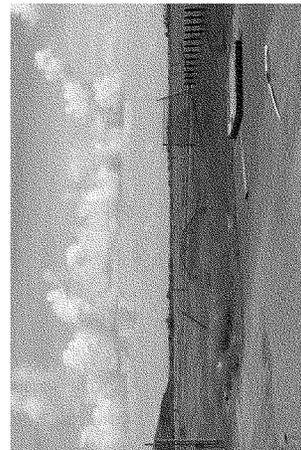
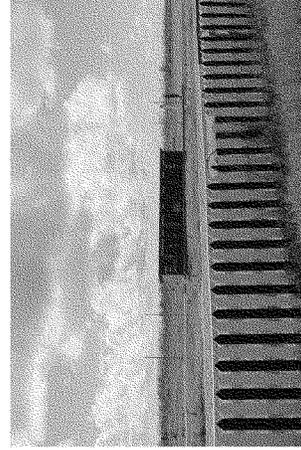
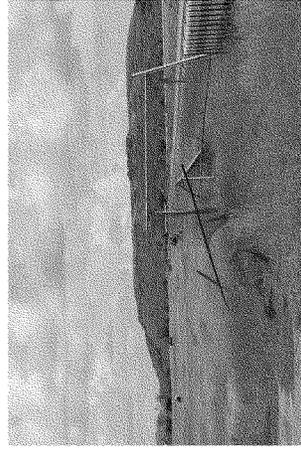
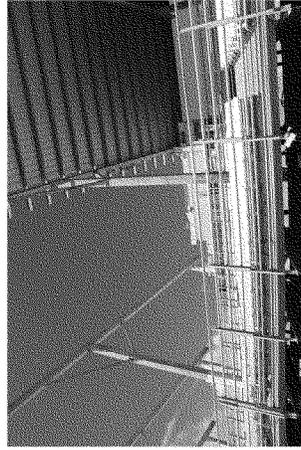
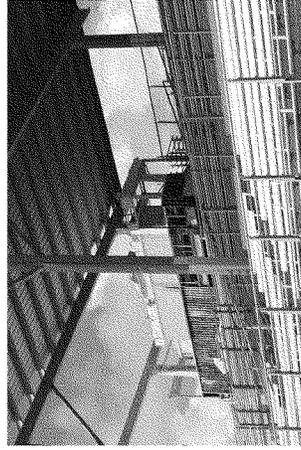
\$4,471,150
Total Cost to Repair

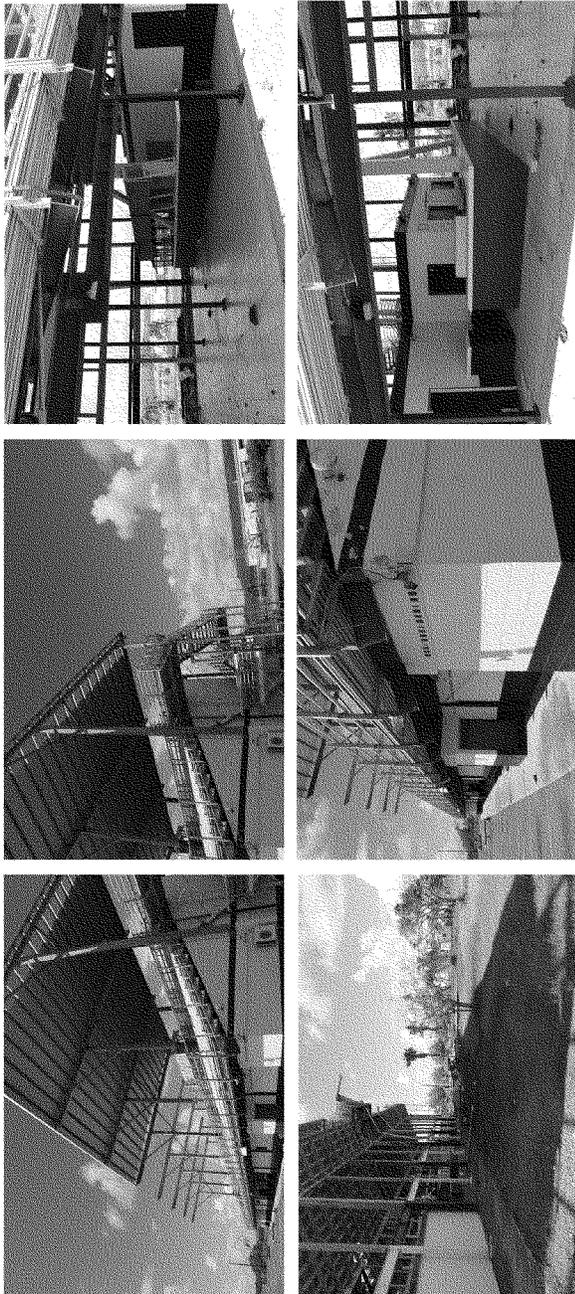
Minor
Damage Footage

16,000
Square Footage

Preliminary Assessments by Discipline

Facility Name	Architecture	Structure	Site	Mechanical/Plumbing	Electrical/Comm/Security	Fire Protection	Overall Narrative Rating
Randall Doc James Racetrack	Minor to Moderate Damage: Damage found at Horse Stable, Gate, Bleachers, and Press box	Moderate Damage: Portions of the roof is missing	Minor Damage: Some debris is present. Chain link fencing needs to be replaced in several areas	Not Applicable	Minor Damage: Satellite dish has been destroyed	Not Applicable	Minor Damage to Corridor, Horse Stable, Gate, Bleachers, and Press box







November 14, 2017

Chairwoman Lisa Murkowski
304 Dirksen Senate Building
Washington, DC 20510

Chairwoman Murkowski and Ranking Member Cantwell,

Thank you very much for the opportunity to present for the record testimony for your hearing on the storm damage in Puerto Rico and the Virgin Islands.

My name is Michael Thomas, CPA and I am the CEO and Founder of Thomas USAF, and a participant in the USDA Loan Program for 37 years. Our companies are major originators and underwriters in several federal guarantee lender programs and are the largest secondary market purchaser of USDA Rural Development guaranteed loans.

I have had an opportunity to visit the Virgin Island since the double whammy of the two hurricanes.

Our partner banks (Byline Bank and Touchmark National Bank) and Thomas USAF in the past year have had \$32 million in loans approved for seven different borrowers working in the Virgin Islands and currently are working on \$50MM - \$150MM in new USDA Business & Industry, Community Facility and REAP loans in the islands.

Our recent trip demonstrated the need for additional federal involvement through USDA guaranteed loan programs. Both hospitals in the Virgin Islands (Governor Juan F. Lewis Memorial Hospital in St Croix and the R. L. Schneider Hospital in St. Thomas) will need to be replaced. There are number of severely damaged schools and the St. Croix police station was without a roof. In addition, as I am sure you will hear today there is a severe lack of power on the islands and most power is coming from generators or solar power.

USDA's Rural Development has several loan programs that could be of great assistance to the Virgin Islands and Puerto Rico.

We have been a lender to the United Corp. Shopping Center in St. Croix, which runs on solar and battery power supplemented by a propane gas generator. This solar power project was made possible USDA's Business and Industry Loan Guarantee Program. As both the Virgin Islands and Puerto move forward Congress should consider both private and public sector opportunities to take advantage of solar and battery power to provide local electricity and not be dependent on a large grid. Interestingly the solar system at the United Shopping Center was not damaged by

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either storm and is fully operational today. Solar power is attractive given the insolvent financial condition of the public utilities in both the Virgin Islands and Puerto Rico.

USDA also operates its Community Facilities Program (CF) which can provide low cost guaranteed loans for any public or non-profit facilities. As the Islands rebuild, there will be the need for a lending facility that can help given the impossible financial problems centered in their public utilities.

I have met with Anne Hazlett who is Secretary Perdue assistant to the Secretary for Rural Development recommended seeking Congressional approval for an increase in the available credit in these programs.

Given the severity of the programs in both Puerto Rico and the Virgin Islands, I hope that Congress will consider in its next supplement for hurricane damage the following increases in authorizations:

USDA Community Facilities Loan Program \$1 Billion + (Note: Program has a 1% loss rate)

USDA Business and Industry Loan Program \$1 Billion +

USDA REAP Solar Loan program \$1 Billion + (Note: There are zero losses in solar loans dating back to 2011)

Let me be clear these are guaranteed loan programs and require very little appropriated funds. For example, in FY17 USDA'S Business and Industry Loan Program authorized nearly \$1 billion in loan activity requiring slightly more than \$30 million in appropriated funds. Furthermore, the appropriated amount can be reduced or even eliminated if there is an effort to move over time to zero subsidy.

These loan programs which obviously require the borrowers to repay the loan are a much more effective way to begin the rebuilding process using fewer taxpayer resources and incentivizing economic development and job growth.

Best Regards,



Mike Thomas
Chairman, Thomas USAF Group

cc: Senator John Isakson
cc: Senator David Perdue
cc: Congressman Robert Aderholt
cc: Congressman Sanford Bishop



VOCES: CONGRESS MUST ACT NOW TO RESPOND TO THE CRISIS IN PUERTO RICO AND THE USVI

On September 20th, Hurricane Maria changed the lives of 3.5 million Americans in Puerto Rico and the US Virgin Islands stranding them without shelter, food, clean water, electricity, and services, disconnecting entire communities from the rest of the world.

Almost two months later, the situation remains dire with millions still without power or access to clean drinking water. Government response has been slow and inefficient resulting in prolonged hardship and unnecessary risk to human health. Our fellow citizens should not be forced to wait any longer. The time for action is now.

We at Voces call on congressional leaders to act swiftly to put Puerto Rico on the path to a just recovery that prioritizes the needs of the people, directed by the people. As in the case of Florida and Houston, we call on leadership to deliver a robust relief package that does not force Puerto Ricans to give up environmental or other safeguards and rights. In addition to resolutions presented by other organizations and the NHLA letter, Voces presents the following recommendations. *(This list is intended to be an initial list that should be expanded upon in consultation with impacted communities beforehand):*

Mobilizing Federal Agencies to Meet Immediate Needs for Puerto Rico and the US Virgin Islands: Under the National Response Framework, responsible federal agencies must take immediate action to ensure that residents of Puerto Rico and the U.S. Virgin Islands have reliable access to critical services such as water, energy, and housing.

Rebuilding the Electrical Grid Prioritizing Resilience and Clean Energy: Urgently addressing the need for access to electricity must not sacrifice health and wellbeing. Rebuilding the grid and electricity systems with an

emphasis on clean, renewable energy, stronger, more resilient to future storms, and more reliable.

An Immediate Analysis of the Safety of Drinking Water Sources: EPA must immediately begin testing of drinking water systems and publicly release the results. EPA should also develop a system for information distribution that takes into account the widespread communications disruptions which has left many disconnected or with sporadic access to communications systems.

Address Immediate Health Needs and Create Plans for the Future: The Environmental Protection Agency and Department of Health and Human Services must take urgent action to address the immediate health needs of hurricane-affected areas, including mold exposure, wound infections and illness from contaminated water, heat-related illnesses and deaths, PTSD and other mental health issues, injuries from debris removal, and more. Federal agencies should develop comprehensive health plans for future disasters.

Incorporate Environmental Justice and Social Vulnerability into Recovery Planning: To ensure a just recovery, states, cities and communities receiving federal disaster aid and recovery funding must utilize an environmental justice (EJ) analysis, integrate considerations of Cumulative Environmental Exposures, Sensitive Populations, and Social Vulnerability, and working with communities—into recovery planning and policies crafted to support redevelopment and establishment of their recovery plans.

Post-Disaster Workforce Redevelopment Plan: The Department of Labor and the Department of Housing and Urban Development, in collaboration with the Department of Energy should support a post-disaster redevelopment plan that ensures that displaced people can re-establish secure and sustainable livelihoods that enable their recovery, similar to what was done after Hurricane Katrina.

Resilient Water Infrastructure Funding: Provide \$2 billion to support reconstruction of more resilient water infrastructure and funding to correct

longstanding water infrastructure problems in Puerto Rico and the U.S. Virgin Islands.

Provide Technical Assistance to Recovering Communities

Responsible federal agencies have deep expertise and should be funded to provide technical assistance on multiple levels to support both immediate recovery from disasters and assessment of climate-related vulnerabilities for future planning purposes.

Flood Protection Standards for Federally-Funded Infrastructure:

Reinstate the Federal Flood Risk Management Standard, or create a flood protection standard that achieves the same outcome, to assist hurricane-impacted communities rebuild damaged infrastructure with a higher margin of safety against future flood events.

Maximize Deployment of Clean Energy in Rebuilding: Through direct grants to impacted communities, responsible federal agencies should support clean energy, energy efficiency and renewable generation, for electricity, heating and transportation, while ensuring recovery resources for rehabilitation and residential upgrades reach and benefit low income residents. Leverage existing grants, low-cost financing, and incentive programs to invest in rebuilding more efficient and storm-resistant homes and ensure proper disposal of discarded/ruined equipment.

Clean Energy for Low-Income Communities: Provide grants for communities to expand installation of energy efficiency upgrades and distributed renewables based on the Clean Energy for Low Income Communities Accelerator for communities affected by natural disasters to be funded through the Housing and Urban Development CDBG-Disaster Funds in close consultation with Department of Energy Weatherization and Intergovernmental Affairs Office.

