UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF PUERTO RICO

In re: The Financial Oversight and Management Board for Puerto Rico, as representative of The Commonwealth of Puerto Rico, *et al.*, Debtors.[1]	PROMESA Title III No. 17 BK 3283-LTS
In re: The Financial Oversight and Management Board for Puerto Rico, as representative of The Puerto Rico Electric Power Authority, Debtor.	PROMESA Title III No. 17 BK 04780-LTS **Court Filing Relates Only to PREPA and Shall Only be Filed in Case No. 17 BK 4780-LTS**

DECLARATION OF DEREK HASBROUCK IN SUPPORT OF OBJECTION OF THE PREPA AD HOC GROUP TO URGENT MOTION FOR ENTRY OF ORDER CONFIRMING APPOINTMENT OF CHIEF TRANSFORMATION OFFICER

I, Derek HasBrouck, hereby declare as follows under penalty of perjury pursuant to 28 U.S.C. § 1746:

1. I am a Member of PA's Management Group at PA Consulting Group, Inc. ("**PA**"), a global consulting firm with an Energy and Utilities Practice that specializes in advising

[1] The Debtors in these Title III Cases, along with each Debtor's respective Title III case number and the last four (4) digits of each Debtor's federal tax identification number, as applicable, are the (i) Commonwealth of Puerto Rico (Bankruptcy Case No. 17 BK 3283-LTS) (Last Four Digits of Federal Tax ID: 3481); (ii) Puerto Rico Sales Tax Financing Corporation ("COFINA") (Bankruptcy Case No. 17 BK 3284-LTS) (Last Four Digits of Federal Tax ID: 8474); (iii) Puerto Rico Highways and Transportation Authority ("HTA") (Bankruptcy Case No. 17 BK 3567-LTS) (Last Four Digits of Federal Tax ID: 3808); (iv) Employees Retirement System of the Government of the Commonwealth of Puerto Rico ("ERS") (Bankruptcy Case No. 17 BK 3566-LTS) (Last Four Digits of Federal Tax ID: 9686); and (v) Puerto Rico Electric Power Authority ("PREPA") (Bankruptcy Case No. 17 BK 4780-LTS) (Last Four Digits of Federal Tax ID: 3747) (Title III case numbers are listed as Bankruptcy Case numbers due to software limitations).

public utilities and their investors on strategic, economic, and operational issues. I began my 35 year utility industry career as a practicing engineer at Florida Power & Light Company. Since 1988, I have been a management consultant to the utility industry, providing industry leading performance and reliability benchmark services, operational improvement services, and commercial management advice to over 100 electric and gas utilities in the US and internationally. I created PA's ReliabilityOne™ program, the electric industry's independent electric reliability certification and awards program, identifying and recognizing the most reliable electric utilities across the U.S. annually since 1999. I have also served as the Chief Financial Officer of Vermont Electric Power, where I led a comprehensive financial re-structuring to enable a $1 billion, decade long investment program in electric transmission system upgrades. I have also led a series of engagements since 2009 with Hawaiian Electric Company, supporting their strategic and operational efforts to cost effectively and reliably transform their five independent island power systems. My educational qualifications include a B.S. in Electrical Engineering from Rensselaer Polytechnic Institute and a Masters in Management from the J. L. Kellogg School of Management at Northwestern University.

2. Since October 2014, PA has been an advisor to the members of an ad hoc group of holders (the "**Ad Hoc Group**") of bonds sold by the Puerto Rico Electric Power Authority ("**PREPA**" or the "**Authority**") that hold over $3 billion in uninsured bonds – over 37% of the approximately $8.3 billion in total outstanding bond debt. I respectfully submit this declaration in support of the objection by the Ad Hoc Group to the Urgent Motion of Financial Oversight and Management Board for Puerto Rico for Entry of Order Confirming Appointment and Authority of Chief Transformation Officer (the **"Motion**").

3. Since Hurricane Maria made landfall on September 20, 2017, I have made two trips and spent nine days in Puerto Rico, making extensive trips throughout the Island to evaluate the state of PREPA's system. I have personally spent two days in a helicopter surveying virtually all of PREPA's 230 kilovolt (kV) transmission system assets. In addition, for the past three weeks a team working under my personal supervision has been conducting a carefully designed damage assessment of the electric system in Puerto Rico, employing extensive surveys and using statistically valid sampling methods. This declaration describes the state of PREPA's electric system after the passage of Hurricane Maria, the restoration efforts of PREPA and its management to date, and the path forward for PREPA. The statements and opinions set forth here are based on my personal observations from two trips to Puerto Rico spanning nine days, the preliminary results of the analysis conducted by the team under my supervision, and publicly available data, as well as my training and experience.

4. In summary, I believe the Oversight Board is right to conclude that fundamental changes, including senior leadership changes, are required at PREPA due to the following:

(a) Hurricane Maria made landfall in Puerto Rico on September 20, 2017, and resulted in the total loss of electricity from the grid in Puerto Rico. As of October 30, 2017, nearly 6 weeks after the storm, PREPA has been unable to restore power to more than 70% of its approximately 2,700 megawatt (MW) load, and almost certainly a far higher percentage of its roughly 1.5 million customers.

(b) While the damage to PREPA's assets is undeniably extensive, a significant majority of the electric system is substantially intact and can (and should) be restored at a reasonable cost and within a reasonable timeframe.

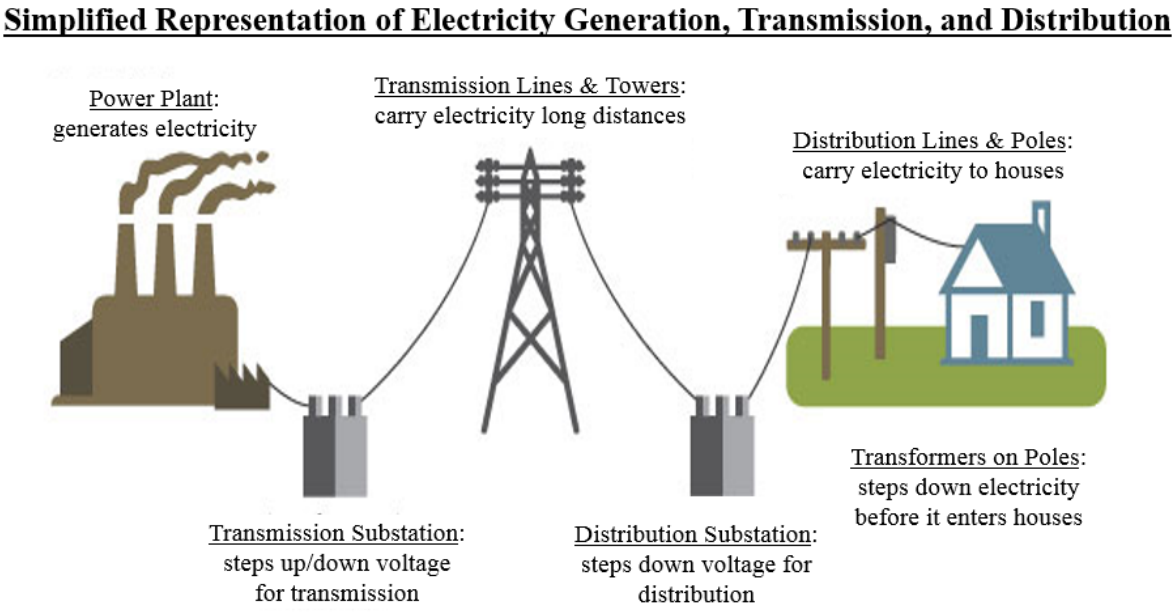
(c) The restoration efforts to date have been egregiously mishandled, with valuable time lost. Unless drastic action is taken to correct the restoration efforts to date, even more time will be lost to the economic and humanitarian detriment of Puerto Rico.

(d) What is needed now is not a Chief *Transformation* Officer but rather a Chief *Restoration* Officer. For the benefit of those Americans continuing to suffer without basic necessities, PREPA's first, and only, priority right now should be to get the lights back on.

STATE OF PUERTO RICO'S ELECTRIC SYSTEM

5. An electric system is a network of generating plants and customer loads, which are interconnected through a high voltage transmission grid and a medium voltage distribution network. This system is operated in real-time, with generator output adjusted to match customer usage on an instantaneous and continuous basis. The high voltage transmission lines enable the movement of large amounts of power between specific points, known as transmission substations, while the local distribution network provides a connection from these transmission substations to each customer. Figure 1 provides a high level representation of a typical electric system.

Figure 1: Diagram of Electricity Generation, Transmission, and Distribution[2]



Source: Adapted from National Energy Education Development Project (public domain)

6. PREPA's electric system consists of 6 generation stations with 5,839 MW installed capacity, 45 transmission substations, 333 distribution substations, approximately 1,100 circuit miles of 230 kV and 115 kV transmission and roughly 33,000 circuit miles of sub-transmission and distribution.[3]

7. In the wake of Hurricane Maria, there were numerous informal reports (from PREPA, the Governor of Puerto Rico and the media) claiming that the electric grid in Puerto Rico was completely destroyed, with some reports suggesting that 80-90% of the

[2] *Electricity Explained: How Electricity Is Delivered to Consumers*, U.S. ENERGY INFO. ADMIN. (last updated Aug. 31, 2017), available at https://www.eia.gov/energyexplained/index.cfm?page=electricity_delivery.

[3] *Fortieth Annual Report on the Electric Property of the Puerto Rico Electric Power Authority*, PREPA (June 2013), available at https://www.aeepr.com/INVESTORS/DOCS/Financial%20Information/Annual%20Reports/Consulting%20Engrs%20Annual%20Report%20FY2013.pdf . The circuit miles of transmission includes the number from the URS report (the most current information available from PREPA) as well as the addition of estimated circuit miles for a transmission corridor constructed since FY 2013. We have used estimated geographical distance between the endpoints of new transmission lines to estimate circuit miles of new transmission (approximately 50 miles between Arecibo & Guayanilla).

transmission and distribution infrastructure had been lost and would have to be repaired or replaced.[4] We conducted an initial transmission system damage review on October 4 and 5, and completed field work on the transmission damage assessment on October 15 through 20. We conducted these independent assessments, in part, because there had been no formal assessment information on the extent of the damage to the transmission system. We are not aware of any transmission system damage assessment information released by PREPA, and the Army Corps of Engineers did not announce the results of its assessment until October 20, a full month after the hurricane. These sorts of transmission system damage assessments are routinely available one or two days after the storm by utilities executing well-designed storm response plans. PREPA clearly failed in this regard, and sought assistance from the Army Corps of Engineers, which is not typical practice.

8. To assess the extent of the damage caused by Hurricane Maria, my team has been conducting an independent and scientific damage assessment. The team, which is operating under my supervision and includes experienced utility professionals (including utility engineers and certified utility property assessors), has nearly completed a comprehensive survey of PREPA's generation assets, 230/115 kV transmission assets, and a carefully designed statistical sampling of PREPA's distribution assets, in each case evaluating condition and recording the level of damage to form valid conclusions as to the state of the system.

Description of Assessment Methodology:

9. For the damage assessment, the survey team visually evaluated all generation plants on the island, all 230 kV transmission corridors (including substations) as well

[4] *See, e.g.*, Richard Fausset, et al., *Minus Electrical Grid, Puerto Rico Becomes Generator Island*, N.Y. TIMES (Oct. 7, 2017), available at https://www.nytimes.com/2017/10/07/us/puerto-rico-power-generators.html; Gavin Bade, *Puerto Rico Power Grid 'Devastated' by Maria, PREPA CEO Says*, UTILITY DIVE (Sept. 25, 2017), available at https://www.utilitydive.com/news/puerto-rico-power-grid-devastated-by-maria-prepa-ceo-says/505740.

as the 115 kV transmission lines co-located in these corridors, and a statistically meaningful sample of distribution circuits. Visual inspection is a standard and reliable way of assessing damage following an event like a hurricane.

10. The assessment of the generation facilities included a helicopter review, a visual inspection from the ground, and a visual operational inspection from outside the facilities. The survey team photographed and recorded any visible damage and any signs that the unit was currently operating (*e.g.*, smoke from the stacks).

11. The review of the transmission system, namely the 230 kV corridors and the 115 kV lines co-located in these corridors, was conducted aerially via a two-day helicopter review and supplemented by ground visits.[5] The survey team took photos of these transmission structures (towers, lines and associated substations) and assessed their condition. Both damaged and undamaged segments of the transmission system were photographed.

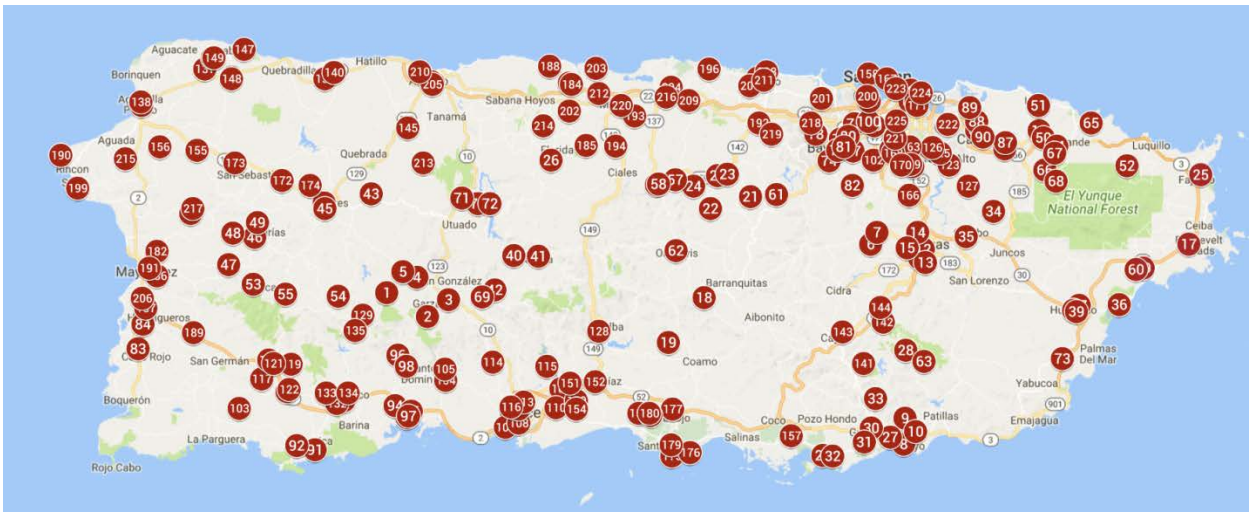
12. To assess damage to the primary distribution system, we worked with a statistical and applied mathematical consulting firm, to define a sampling methodology. Our statistical sample consists of evaluating 225 sections of circuits by starting from a randomly selected point on the circuit and tracing the circuit back to the substation. The sample was drawn from 67 of the 78 municipalities of Puerto Rico. The 67 municipalities represent approximately 93% of Puerto Rico's population and 93% of Puerto Rico's households. The starting point for each of the 225 circuits was determined by a random selection of census tracts. Within each of the selected census tracts a starting point with longitude and latitude was determined by a population density weighting.

[5] In addition to our formal study of the 230 kV corridors, we also observed many of the 115 kV lines and corridors in all different parts of the island.

13. The survey teams started at the identified geo-coordinates and traced the circuit back to the substation using a combination of visual inspection and a PREPA circuit map. The survey team counted the number and type of poles back to the substation and recorded damage to poles, conductors or other major equipment (such as transformers, regulator banks, and capacitors), as well as general observations about the circuit. Damaged segments of the distribution system were photographed. In addition, the survey teams recorded the presence and condition of sub-transmission (38 kV) on poles over the primary distribution circuits being traced. Finally, we made a visual inspection of the distribution substation including the status of all transmission entering the substation and feeders leaving the substation.

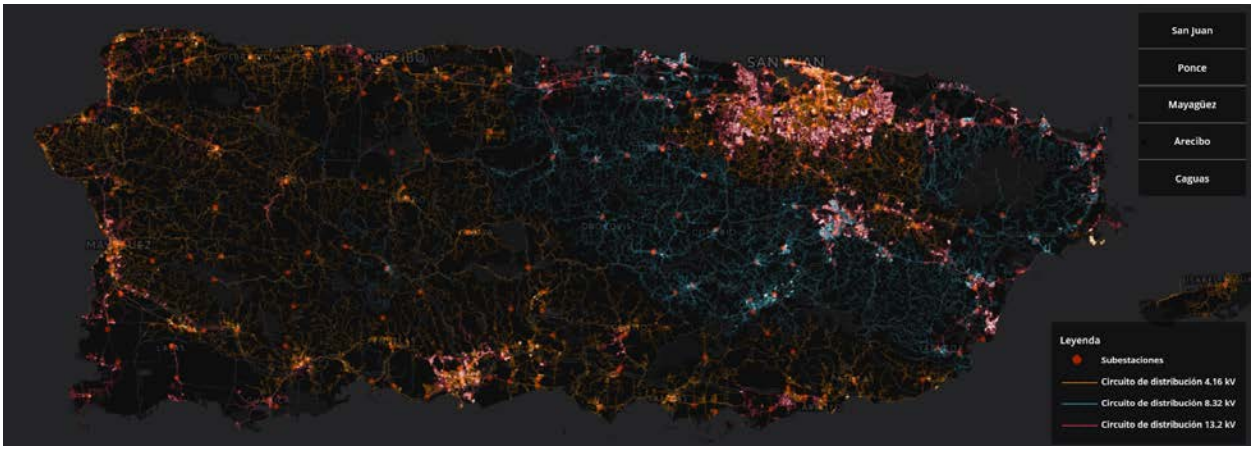
14. A map of the sample set that we used for the distribution system is depicted in Figure 2:

Figure 2: Distribution System Sample Sites



15. Figure 3 is a heat map demonstrating the load delivered through Puerto Rico's distribution system as of 2015:

Figure 3: Image of PREPA Distribution System from 2015[6]



16. When comparing the sample set selection in Figure 2 to the distribution heat map in Figure 3, it is evident that the sample sites are concentrated where the population and load are (*i.e.*, San Juan and the coastal areas).

Status of the Assessment:

17. The electric system assessment is substantially complete and analysis is in process.

18. Comprehensive photo albums showing each of PREPA's generation stations, each 230 kV transmission corridor flown, as well as some representative distribution circuits are being developed and posted to http://www.paconsulting.com/industries/energy-and-utilities/puerto-rico-damage-assessment/ as they are completed. As of the morning of Friday, November 3, 2017, photo albums for the generation stations, 4 transmission corridors and 2 distribution circuits have been posted.

Preliminary Results of the Assessment:

19. Our review of generation assets revealed no substantial damage, which accords with other reports from PREPA and publically available sources.[7] We believe that all

[6] *PREPA's Electric Power Distribution System*, P.R. ENERGY COMM. (Sept. 28, 2015), available at http://energia.pr.gov/en/datos/prepas-distribution-system.

units that were available for operations prior to Hurricane Maria continue to be available for operations.

20. Our comprehensive review of the transmission system, consisting of 230 kV corridors and the 115 kV lines co-located in these corridors, indicates that the vast majority of transmission structures – lattice steel, lattice aluminum, steel pole, or concrete H frame – are in fully functional condition. Preliminary analysis of the data indicates that as of October 20, 2017, approximately 95% of the transmission structures in the 230 kV corridors are in fully functional condition. In addition to the roughly 5% of structures that are damaged, an additional 4.5% of structures contain conductor(s) or jumper connector(s) that will require repairs.

Figure 4: Preliminary Transmission System Results (230 kV corridors and any co-located 115 kV lines)

		Towers Assessed	Towers Down	Add'l locations with conductors / jumpers down
Preliminary Transmission Results	Count	2,789	152	125
	% of Total		5.4%	4.5%
Select Transmission Corridors				
Bayamón to Aguas Buenas	Count	117	3	15
	% of Total		2.6%	12.8%
Aguirre to Junction with AES-Yabacoa	Count	160	20	6
	% of Total		12.5%	3.8%
Aguas Buenas to AES	Count	224	28	2
	% of Total		12.5%	0.9%
Hato Rey to Yabucoa	Count	401	10	31
	% of Total		2.5%	7.7%

21. The above results include the heavily damaged 230 kV transmission line from the AES generation plant to Yabucoa. This line is severely damaged and will likely require

[7] *See 2017 Hurricane Season: Oversight of the Federal Response, Hearing Before the S. Comm. on Homeland Secur. and Gov't Affairs*, 115th Cong. 1 (Oct. 31, 2017) (oral statement of Major General Donald E. Jackson, U.S. Army Corps of Engineers), available at https://www.hsgac.senate.gov/hearings/2017-hurricane-season-oversight-of-the-federal-response.

at least some redesign to avoid a similar outcome in the future. If this line is excluded from the above preliminary results then we estimate that approximately 4% of the transmission structures in the 230 kV corridors are damaged, while the percentage of locations with additional conductor and jumper damage remains the same.

22. On October 20, the Commander Lieutenant General of the Army Corps of Engineers conducted a press briefing from the Pentagon indicating that around 340 transmission towers were down.[8] His remarks referred to both 230 kV and 115 kV transmission towers. Taking into account the exclusively 115 kV corridors that we did not survey, and considering that the 115 kV transmission towers are generally older and likely to have a higher failure rate than the 230 kV transmission towers, the Army Corps of Engineers' estimate appears to be consistent with our own observations.

23. Our preliminary analysis indicates that the transmission substations are in good condition. The only damage we observed at the transmission substations we visually inspected by air and ground is a broken communications tower at the Piñas 115 kV substation. The mast was folded over in half – however, it appeared not to have landed on other equipment within the station.

24. Our preliminary analysis of sample data from the distribution system indicates that the vast majority of the distribution system is in serviceable condition. For example, analysis of 6 of the sampled circuits in the greater San Juan metro area indicate that 90% of the poles are in serviceable condition. Analysis of 4 sampled circuits in the south-

[8] *Department of Defense Press Briefing by Army Corps of Engineers Commander Lt. Gen. Todd T. Semonite in the Pentagon Briefing Room on Relief Efforts in Florida, Puerto Rico and the Virgin Islands*, U.S. DEP'T OF DEFENSE (Oct. 20, 2017), available at https://www.defense.gov/News/Transcripts/Transcript-View/Article/1349928/department-of-defense-press-briefing-by-army-corps-of-engineers-commander-lt-ge/.

southeastern area of the Island, where the AES to Yabucoa 230 kV transmission line was severely damaged, show that 74% of distribution poles are in serviceable condition.

25. Repair of the damaged sections of the primary and secondary distribution system will require a significant level of effort. PREPA's primary distribution system has significant segments that are off roads, located in back lots without vehicle access, or in steep terrain. Replacing poles and reattaching or replacing conductor in these difficult to access locations will be time consuming and require specialized equipment. In addition, there are a number of standing poles with conductor where the conductor needs to be reattached to the insulators. Lastly, there are poles that need to be straightened, and in some cases guyed,[9] but often these repairs can wait until after service is restored.

26. Preliminary analysis of the distribution substations indicate they are also in good condition. Of the approximately 75 substations we visually inspected as part of the distribution sample, we only observed a few broken poles or insulators within the station fences. We observed no obvious damage to substation transformers or circuit breakers.

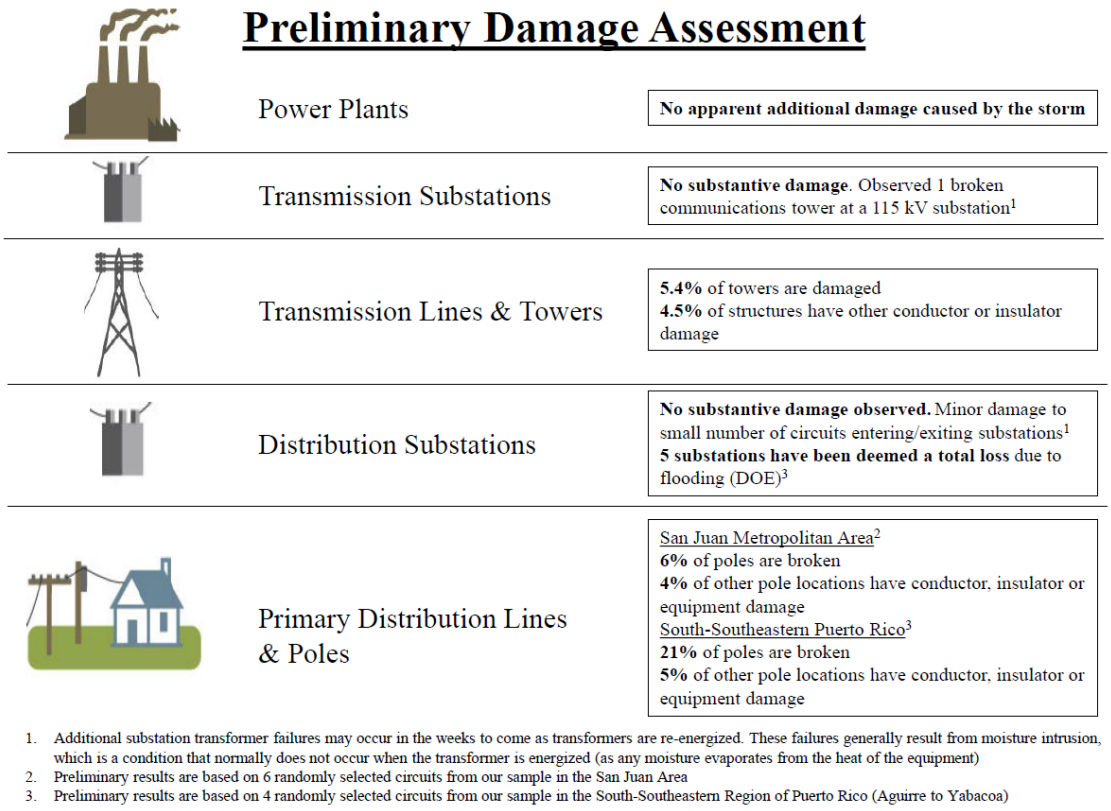
27. We do understand through discussions with United States Department of Energy ("**DOE**") representatives that there are approximately five 38 kV substations that were exposed to significant flooding during the storm and have been deemed a total loss. We also expect, based upon our experience with storm recovery work, that there will be some substation transformer failures in the weeks to come as transformers are re-energized. These failures will likely be due to moisture intrusion, which is a condition that normally does not occur when the transformer is energized because it is warm enough to evaporate any moisture intrusion.

[9] A "guy" is a brace or cable attached to a pole to strengthen it and keep it in place.

Implications from the Assessment:

28. The results of our assessment are summarized in Figure 5:

Figure 5: Results of Preliminary Damage Assessment



1. Additional substation transformer failures may occur in the weeks to come as transformers are re-energized. These failures generally result from moisture intrusion, which is a condition that normally does not occur when the transformer is energized (as any moisture evaporates from the heat of the equipment)
2. Preliminary results are based on 6 randomly selected circuits from our sample in the San Juan Area
3. Preliminary results are based on 4 randomly selected circuits from our sample in the South-Southeastern Region of Puerto Rico (Aguirre to Yabacoa)

29. Our preliminary results clearly demonstrate that, while the PREPA electric transmission and distribution (**"T&D"**) system was significantly damaged by Hurricanes Irma and Maria, the vast majority of the T&D system is in serviceable condition. This means that the fastest and most economical way to restore electric service to customers across Puerto Rico is to focus resources on the needed repairs to the existing system, which will require a significant amount of effort.

30. There are a few specific situations where special circumstances may call for a deviation from this repair first philosophy. There are locations where prior to the storm PREPA built substantially complete, but not yet in service, sub-transmission and distribution

lines. The completion of these line segments may allow for faster service restoration than making repairs to the assets PREPA already intended to retire. Further, there may be isolated customers or small groups of isolated customers in extremely remote, mountainous areas of the Island where it may be more cost effective to build and maintain an off-grid solution than to rebuild the distribution system to reach these customers.

31. Beyond these few special situations, our preliminary results strongly support the whole-hearted commitment of resources to restore electric service by repairing the storm damage to the grid as quickly as possible.

PREPA'S RESTORATION EFFORTS

32. Electricity is the life blood of modern society. The electrical grid does not just provide power to homes, businesses, schools and hospitals that allow us to cook and store food, receive critical medical care, see after dark, and cool our homes. Electricity is essential to keep clean water pumping, street lights lit, traffic lights running, and power our communication. That is why putting back up poles, transmission towers and restoring power as quickly as possible after storms is the standard protocol followed by every major electricity provider in the United States, so that electricity can be restored to customers within hours or days (not weeks or months).

33. PREPA's restoration efforts to date have been remarkably slow, which can be attributed in large part to the egregious mishandling of the restoration process on PREPA's part. Unless drastic action is taken to correct the course even more time will be lost to the economic and humanitarian detriment of Puerto Rico. As a tangible example of the lack of progress, we observed one readily accessible site where there is tower damage to essential 230

kV transmission circuits which had been untouched between our first observation on October 4 and our second observation 15 days later.[10]

34. Hurricane Maria made landfall in Puerto Rico on September 20, 2017 and resulted in the total loss of electricity from the grid in Puerto Rico. As of Monday, October 30, 2017, the DOE reported that PREPA had restored approximately 30.5% of normal peak load (approximately 819 MW of 2,685 MW normal peak load)[11] and that 39 of 78 municipalities were partially energized.[12] DOE estimates that at least 1.1 million customers (69.5%) remain without power on Puerto Rico.[13]

35. The speed of restoration in the wake of Hurricane Maria has been materially slower than comparable restoration efforts in similar events on the mainland. Figure 6 outlines the speed of restoration in the wake of some of the most severe outage events in the last decade. In all other instances reviewed, utilities have restored power to over 70% of customers within the first fifteen days. In contrast, PREPA had restored power to approximately 10% of customers within the first fifteen days and to approximately 30% of customers within the first 40 days.

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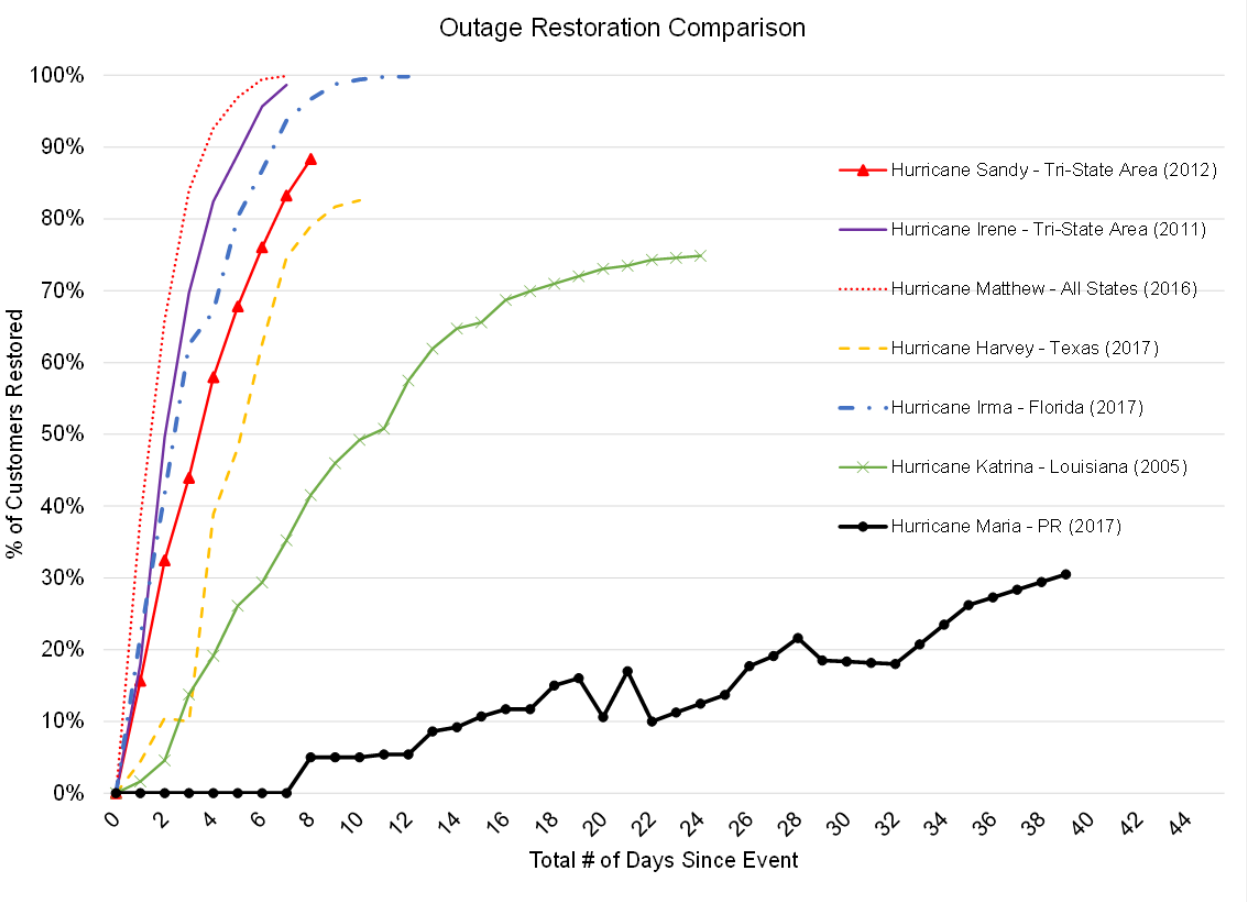
[10] Photos available at http://www.paconsulting.com/industries/energy-and-utilities/puerto-rico-damage-assessment/.

[11] Based on PREPA statistics, this peak load number appears low. The peak load in May 2017 was 2,887 MW and in October of 2016 was 2,955 MW. *See Operations Report – May 2017*, GOV'T OF P.R., P.R. ELEC. POWER AUTH. at 2 (June 22, 2017), available at https://www.aeepr.com/INVESTORS/DOCS/Financial%20Information/Monthly%20Reports/2017/May%202017.pdf; *see also Monthly Report to the Governing Board – October 2016*, GOV'T OF P.R., P.R. ELEC. POWER AUTH. at 3, available at https://www.aeepr.com/INVESTORS/DOCS/Financial%20Information/Monthly%20Reports/2016/October%202016.pdf.

[12] *Hurricanes Maria & Irma: October 30 Event Summary (Report #72)*, U.S. DEP'T OF ENERGY at 2 (Oct. 30, 2017), available at https://energy.gov/sites/prod/files/2017/10/f39/Hurricanes%20Maria%20and%20Irma%20Event%20Summary%20October%2030%2C%202017.pdf.

[13] *Id.*

Figure 6: Outage Restoration Comparison[14]



36. While Puerto Rico presents special challenges due to geography and accessibility, sound preparation should have been able to address many of these issues, and PREPA's restoration curve should have looked much closer to the others in Figure 6 above.

37. The primary reason behind the slow restoration effort has been the lack of line workers, which in turn can be attributed to poor emergency planning and execution on PREPA's part. Our initial estimate on October 5, 2017 was that PREPA would need at least 1,000 external line workers to supplement its own crews for a period of sixty days in order to complete restorations in a timely manner. Even now, nearly six weeks after Maria, PREPA has

[14] Figure 6 compiles data presented in DOE *Situation Reports* released following emergency response efforts, which convey information on a storms' impacts, the energy industry's response and recovery and certain restoration activities. *See, e.g., Hurricanes Nate, Maria, Irma, and Harvey Situation Reports*, DEP'T OF ENERGY, available at https://energy.gov/oe/downloads/hurricanes-nate-maria-irma-and-harvey-situation-reports.

not managed to secure this level of external resources. As of October 25, Whitefish announced that it had around 300 people on the ground.[15] It did not explain what jobs these people were performing – i.e., how many of them are line workers, as opposed to, for instance, vegetation specialists or debris removal specialists.

38. Furthermore, based on the observations of the survey team, the number of line crews operating on the island actually appears to be lower than reported. In three weeks of driving across Puerto Rico and conducting aerial tours of PREPA infrastructure, we only came across work crews a few times and we never encountered multiple crews working together in close proximity to rapidly restore a badly damaged area (normally a common sight during post-storm restorations). In addition, we saw multiple PREPA operations centers with large numbers of unused vehicles and trucks – suggesting line workers are the current bottleneck to the restoration efforts. In addition, the few crews that we did observe appear to be operating under "near normal" conditions (*i.e.* small crews, daylight hours only, working out of local headquarters, normal meal arrangements, etc.).

39. As a point of comparison, we looked at Hurricane Irma, which struck Florida on September 10, 2017. Florida Power & Light ("**FPL**"), the largest utility in Florida, activated its storm response plan in anticipation of Hurricane Irma. FPL mobilized a restoration workforce of more than 11,000 employees and contractors across more than 20 staging sites in preparation for the landfall of Hurricane Irma. FPL also continued to secure additional support

[15] Whitefish Energy (@Whitefish Energy), TWITTER (Oct. 25, 2017, 10:30 a.m.), available at https://twitter.com/WhitefishEnergy/status/923240245822394368 ("Whitefish has more than 300 workers on the island and that number is growing daily.").

On October 22, PREPA reported that it had 180 external crews on the ground: 100 crews staffed with local contractors, 73 Whitefish crews, and 7 crews from the Army Corps of Engineers. PREPA (@AEEOnline), TWITTER (Oct. 22, 2017, 5:53 p.m.), available at https://twitter.com/AEEONLINE/status/922264557963366407. It is unclear how many people this actually covers, although we would expect that a typical crew would have two to four people at most. It is also not clear what job these crews were performing or are trained to perform, which can include anything from line work to clearing debris and tree trimming.

and resources from out-of-state utilities and electrical contracting companies after Irma made landfall. By September 13, 2017 (Day 3 of restoration efforts), FPL reported that they had a workforce of over 21,500 working on restorations and that they were receiving support from utilities and other companies from nearly 30 states as well as Canada.[16]

40. Similarly, when Hurricane Harvey made landfall in Houston on August 25, 2017, CenterPoint Energy had already activated its storm response plan and, in addition to its own 2,500 crew members, had called in several hundred mutual assistance resources to support its efforts. More than 70 additional crews arrived in Texas on August 28 and more than 100 additional crews were on their way. CenterPoint Energy's total mutual assistance resources totaled more than 800.[17]

41. It is true that each major storm brings its own unique challenges, such as the initial delays in restoration due to inaccessibility caused by the flood waters in the aftermath of Hurricane Harvey, but a utility's job is to be prepared in advance and then adapt their plan to whatever unexpected circumstance may arise. In both of the above examples, the utilities in Florida and Texas demonstrated some industry best practices when it comes to storm response, which enabled them to navigate logistical challenges:

- Have an emergency / storm response plan in place
- Start sourcing restoration resources (generally through mutual aid agreements and contractors) and making other preparations (e.g. planning housing, meals, fuel, backup communications, and finances) ahead of the storm

[16] Press Release, Flor. Power & Light, Power restored to more than 70 percent of customers (Sept. 14, 2017), available at http://newsroom.fpl.com/2017-09-14-Power-restored-to-more-than-70-percent-of-customers-impacted-by-Hurricane-Irma-topping-3-million-as-massive-operation-continues-working-around-the-clock.

[17] Nikki Chandler, *CenterPoint Confronts Harvey Damage*, T&DWORLD (Aug. 29, 2017), available at http://www.tdworld.com/electric-utility-operations/centerpoint-confronts-harvey-damage.

- Deploy large numbers of restoration resources immediately after the storm.[18]

42. Based on PREPA's restoration performance, along with personal observations and publicly available information, it is apparent that the restoration efforts to date have been grossly inadequate and severely mismanaged – complying with none of the abovementioned best practices. PREPA had certainly long been aware that a hurricane event was possible, and had several days advance notice that Hurricane Maria was heading towards the island.[19] Instead of putting in place an emergency response plan (or even a basic outline of a plan) and executing against it in a systematic and organized manner, they have dealt with this disaster in a completely ad hoc, disorganized and inefficient manner.

43. PREPA failed to follow standard protocol that utilities use to respond to crises. Below are just a few examples of how PREPA has mismanaged the restoration efforts:

- We have seen no evidence that PREPA had a plan in place to handle post-Maria logistics: As the largest electric utility on an island in a region susceptible to hurricanes, PREPA should have had a plan in place well ahead of Hurricane Maria to guide their recovery and restoration efforts. As just one example of PREPA's complete lack of any planning, PREPA's chief executive blamed his failure to request mutual aid after the hurricane on damage to communications. In fact, according to an article published in E&E News, contact with Whitefish was made through a PREPA procurement employee who happened to have a satellite phone and Whitefish's phone number on hand.[20] PREPA should have had plans in place to deal with contingencies

[18] For further information on best practices in electric utility emergency preparedness plans and sample emergency response plans, see generally *Understanding the Electric Power Industry's Response and Restoration Process*, EDISON ELEC. INST. (Oct. 2016), available at http://www.eei.org/issuesandpolicy/electricreliability/mutualassistance/Documents/MA_101FINAL.pdf; *ConEdison Electric Operations Emergency Response Plan*, CONEDISON (Mar. 31, 2013), available at http://goo.gl/L8tFwv; *PSEG Long Island Emergency Restoration Plan*, PSEG LONG ISLAND (Apr. 22, 2016), available at https://www.psegliny.com/files.cfm/2016EmergencyPlan.pdf.

[19] The National Hurricane Center issued its first advisories for the system that would become Tropical Storm Maria on the morning of September 16, 2017. By September 18, Puerto Rico had issued evacuation orders. *See Potential Tropical Cyclone FIFTEEN*, NAT'L HURRICANE CENTER (Sept. 16, 2017), available at http://www.nhc.noaa.gov/archive/2017/al15/al152017.discus.001.shtml; *see also Governor Rosselló urges to evacuate flood-prone areas before Hurricane Maria passes through Puerto Rico*, LA FORTALEZA, OFFICE OF THE GOVERNOR (Sept. 18, 2017), available at http://www.fortaleza.pr.gov/content/governor-rossell-urges-evacuate-flood-prone-areas-hurricane-maria-passes-through-puerto-rico.

[20] David Ferris & Peter Behr, *Cash crunch slowed Puerto Rico's appeal for grid help, CEO says*, E&E NEWS (Oct. 9, 2017), available at https://www.eenews.net/stories/1060063083.

such as communications failure – like securing access to satellite phones and having contact details for key organizations (such as the American Public Power Association) easily accessible.

- PREPA did not take advantage of mutual aid agreements: PREPA failed to coordinate resources and equipment through mutual aid agreements with American Public Power Association ("**APPA**") or Edison Electric Institute ("**EEI**") member utilities before or for weeks after the hurricane struck.[21] Normally, ahead of a natural disaster, a utility would reach out to these organizations in an attempt to secure the required resources under mutual aid agreements. If possible, resources would actually head closer to the impacted area ahead of the disaster and be staged in strategic locations that are convenient yet safe. Immediately after a disaster, APPA would coordinate a conference call with its members (public utilities from across the nation) to get the required personnel and equipment to the impacted region as soon as possible. For instance, APPA coordinated the deployment of thousands of workers and their equipment to Texas and Florida after hurricanes Harvey and Irma.[22] When APPA reached out to PREPA a week after Hurricane Maria, PREPA told them that it would not need the network's help because it had already contracted with another firm (Whitefish).

- PREPA did not secure contractors in advance: Another common practice is to secure contractors ahead of a disaster to supplement the utility's own workforce. PREPA apparently had not secured contractors ahead of Hurricane Maria and had no pre-existing arrangements with utility line contractors for storm restoration assistance. This led to a rushed and not fully vetted contract with Whitefish immediately following Hurricane Maria.

44. While securing contractors and mutual aid certainly required advance planning and may have required deposits or assurances that contractors would be paid, I understand that PREPA had over $500 million of cash on hand at the time Hurricane Maria struck, compared with an operating budget for employee-related expenses (excluding the purchase of fuel, which would be rendered unnecessary after the storm) of just over $44 million

[21] On October 31, 2017, after deciding to cancel the Whitefish contract PREPA reached out to these organizations to help arrange mutual aid. Letter from Ricardo L. Ramos Rodriguez, Chief Executive Officer of PREPA, to Sue Kelly, President and CEO of APPA, and Tom Kuhn, President of EEI, GOV'T OF P.R., P.R. ELEC. POWER AUTH. (Oct. 31, 2017), available at http://www.publicpower.org/system/files/documents/disaster_response-prepa_mutual_aid_request_10-31-17.pdf.

[22] *See* Alan Gomez & Rick Jervis, *Puerto Rico power restoration: Why it is taking so long*, USA TODAY (Oct. 30, 2017), available at https://www.usatoday.com/story/news/world/2017/10/30/puerto-rico-power-restoration-why-taking-so-long/806747001/.

per month.[23] It is also my experience that the expense of restoring power and repairing immediate damage to publicly-owned utility grids is reimbursed by FEMA through grants, and it is my understanding that Puerto Rico will be receiving reimbursement from FEMA for most, if not all, of its expenses.

45. Longer term questions about new generation resources, better geographic alignment of generation and load, increasing the use of renewable resources and the costs associated with those initiatives, and ways to re-structure the grid to increase its overall resiliency that have been raised by Mr. Zamot in a recent public LinkedIn post are topics worthy of thoughtful analyses and deliberation.[24] PREPA is only one of approximately a hundred major utilities around the United States to grapple with these issues. All have chosen for present to continue to rely on the electricity grid that they have as their cheapest and most reliable source of power for their customers, and have spent cautiously on expensive measures to "harden" the grid and new technological reform to keep electricity costs down for consumers. Whatever the merits and pitfalls of a "transformation" plan may be, these issues do not represent issues of any moment for managers at a utility that cannot presently deliver the most basic service to the overwhelming majority of its customers. Restoration and recovery of electricity service must be the first, second, and third priority for PREPA. Any initiatives that distract from that focus are not in the best interests of the 3.5 million American citizens living in Puerto Rico.

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[23] *See Liquidity Update to the Financial Oversight and Management Board for Puerto Rico (FOMB)*, GOV'T OF P.R., PUERTO RICO FISCAL AGENCY & FIN. ADVISORY AUTH. at 5 (Oct. 31, 2017), available at https://juntasupervision.pr.gov/index.php/en/documents/; *Fiscal Plan*, P.R. ELECTRIC POWER AUTH. (Apr. 28, 2017), available at http://www.aafaf.pr.gov/assets/fiscal-plan---pr-electric-power-authority.pdf (employee disbursements as outlined in the 13-week cash flow budget).

[24] Noel Zamot, *Puerto Rico: The Caribbean's Once and Future Shining (Energy) Star*, LINKEDIN (Oct. 11, 2017), available at https://www.linkedin.com/pulse/puerto-rico-caribbeans-once-future-shining-energy-star-noel-zamot.

PATH FORWARD: FOCUS ON POWER RESTORATION

46. The vast majority of Puerto Rican residents have lived without electricity for the past six weeks and are likely to continue to live this way in the weeks to come if this unacceptable situation is allowed to continue. This reality will have drastic impacts on the quality of life and economic activity across the Island. The immediate solution to this disaster is the rapid repair of the grid to restore service to customers Island-wide. PREPA's generation assets, and most of the independent power producers under contract to PREPA, are able to produce electricity as soon as the grid can accept it. Repairing the grid – replacing broken towers and poles, re-hanging and/or repairing conductors, and replacing broken insulators and other ancillary equipment – is the critical path to restoring electrical service to businesses and residents Island-wide.

47. PREPA needs a seasoned utility executive at the helm to implement the repair of PREPA's grid. Mr. Zamot, whose curriculum vitae shows experience in aerospace and cyber security, appears to be a competent and able executive in his fields, but managing the largest publicly-owned electrical utility in the United States at this moment of crisis requires an experienced electricity executive with an electrical engineering background and contacts throughout the country at other major utilities. Mr. Zamot does not have these requisite skills and experience to lead PREPA. *See* Mot., Exh. B (Noel Zamot Curriculum Vitae).

48. Longer term questions about new generation resources, better geographic alignment of generation and load, opportunities to increase the use of renewable resources, and ways to re-structure the grid to increase its overall resiliency are all important concepts that merit analyses and discussion. But these potentially transformative issues do **not** represent issues of any moment for managers at a utility that cannot presently deliver service to most of its

customers. Restoration and recovery are the first, second, and third priority at this time and any efforts that distract from that focus are not in the best interests of the people of Puerto Rico.

49. In fact, the focus on restoration and recovery efforts should continue well past the mere restoration of service to customers. Beyond the immediate repair efforts, there will be need for more permanent repair or replacement of some grid components. Examples are likely to include leaning poles that are returned to service with perhaps temporary braces, but do need permanent repairs or replacement, the removal of out-of-service poles and equipment, the completion of numerous partially complete T&D construction projects, and the replacement of flood damaged substation equipment. Accomplishing these tasks should be the next order of business, and should be planned for action while additional line construction crews and equipment are still in Puerto Rico.

50. It follows from the above conclusions that what is needed now is not transformation, but restoration. The first priority should not be to redesign or fundamentally transform a system that is substantially intact; it should be to repair the damaged parts of the system that will allow power to be restored as quickly as possible.

51. While we will undoubtedly have opportunities to engage in an extensive dialogue about innovative and untested concepts to transform PREPA's infrastructure in the future, now is not the time for those efforts. This is the time to get the lights back on.

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52. I reserve the right to amend and supplement the testimony set forth herein as necessary.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information and belief.

Executed: New York, New York
November 3, 2017

/s/ Derek HasBrouck
Derek HasBrouck