



WRITTEN TESTIMONY  
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## *Introduction*

Chairman Grijalva: we have received your letter dated March 12, 2019, inviting us to testify before the Committee on Natural Resources on an oversight hearing on the status of the “Rebuilding and Privatization of the Puerto Rico Electric Power Authority (“PREPA”)”. We appreciate the opportunity you have granted us to take part in the analysis and discussion of this important public policy issue.

In this written statement we synthesize a large part of the work the Center for a New Economy (“CNE”) has performed about PREPA since 2005. Below we provide some historical context, explain how PREPA became a bankrupt public utility, and analyze some of the currently salient issues regarding the reform of the electricity sector in Puerto Rico. We hope this background information is useful to you and to Committee members as you continue to work on this life and death matter for the people of Puerto Rico.

In our oral statement during the public hearing, due to time limitations, we will focus on a reduced set of important issues: the importance of enacting Puerto Rico Senate Bill 1121 into law to put in place a comprehensive energy policy; the imperative of getting the privatization process right; and the fraught problem of managing the transition from fossil fuels to renewable sources of energy.

## *Historical Context*

According to PREPA, the first private lighting system in Puerto Rico was installed in 1893 by José Ramón Figueroa in the municipality of Villalba. From that time, up until the inauguration of the Carite #1 Hydroelectric Plant in 1915, all electric power in Puerto Rico was produced and distributed by private companies established in the island's urban centers.<sup>1</sup> By the 1930s, Puerto Rico had 11 “insular” and 11 municipal power plants, while private plants furnished electricity to all but one of the remaining municipalities.<sup>2</sup>

This pattern of multiple, relatively small providers was the norm in the early years of the electric power industry. For example, between 1887 and 1893, twenty-four central station power companies were established within Chicago alone.<sup>3</sup> Competition in this market was brutal and inefficient; with overlapping distribution lines, the battle for customers was fierce and operating costs extremely high.

After a period of intense competition, consolidation became the standard in the industry as it became evident that electricity production, transmission and distribution had the characteristics of what was then called a “natural monopoly.” Vertically integrated utilities, which generated the

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<sup>1</sup> This information is from the historical sketch posted by PREPA at [www.aeepr.com/HISTORIA.ASP](http://www.aeepr.com/HISTORIA.ASP).

<sup>2</sup> Victor S. Clark, editor, *Porto Rico and Its Problems*, (The Brookings Institution: Washington, DC, 1930), p. 352. For example, historian Fernando Picó mentions in his book *Amargo Café* that the municipality of Utuado had its own electric generation plant since the mid-1890s. See Fernando Picó, *Amargo Café: los pequeños y medianos caficultores de Utuado en la segunda mitad del siglo xix*, (Ediciones Huracán: San Juan, PR, 1981), p.33.

<sup>3</sup> Steven Stoft, *Power System Economics: Designing Markets for Electricity*, (John Wiley and Sons, Inc.: New York, NY, 2002), p. 6.

electricity, transmitted it from the centralized power plants to the load centers, and distributed it to individual customers, became the industry standard for most of the 20<sup>th</sup> century. In most instances, these “public utilities” were subject to regulation by state public utility commissions which regulated profits and the rates of return those monopolists were allowed to realize.

In Puerto Rico the same forces pushing for consolidation and integration in the electric industry were at play and converged with the economic development objectives of the last colonial governor, Governor Rexford G. Tugwell, a prominent planner and economist of the institutionalist school. Indeed, the creation of PREPA was part of a broader agenda of institutional and state capacity building advanced by Governor Tugwell and the Popular Democratic Party majority in the Puerto Rico Senate. This agenda included, for example, the enactment of legislation in 1941 for the creation of the Minimum Wage Board, the Land Authority, the Food and Supplies Commission and the centralization of all drinking-water systems, which at the time were operated by municipalities.<sup>4</sup>

At the time of PREPA’s creation in 1941 the largest of the remaining private utilities owned the distribution system in San Juan, as well as a steam generating plant and two hydroelectric projects. In general terms, however, the central government owned most of the generating capacity, in the form of hydroelectric projects, while private companies controlled the distribution for the largest market, which consisted of San Juan and its environs.

The Tugwell administration advocated for the expropriation of the private lines by arguing that at a time when surpluses of electricity were available from public water developments, the private companies “were using precious fuel oil for their diesel and steam generators.”<sup>5</sup> Tugwell, working through the power division of the U.S. Department of the Interior, “persuaded the Federal Works Agency of the necessity to take the private lines and entrust them to our Authority for operation.” President Roosevelt signed a seizure order to that effect in 1942.<sup>6</sup>

The private power producers, however, did not go quietly into the night. They challenged the “taking” in federal courts on grounds that their properties were taken illegally under the federal Lanham Act. The U.S. Circuit Court in Boston agreed with the plaintiffs. However, as PREPA was still in possession of the transmission and distribution lines and equipment, a new taking was devised under the broad powers granted to the President under the War Powers Act.<sup>7</sup> The private power companies fought on.

Finally, after close to two years of legal wrangling, the government of Puerto Rico purchased the distribution system in an out of court settlement transaction in 1944. In the poignant words of Governor Tugwell:

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<sup>4</sup> James Dietz, *Economic History of Puerto Rico: Institutional Change and Capitalist Development*, (Princeton University Press: Princeton, NJ, 1986), p.187. See also, Francis A. Catalá Oliveras, *Promesa rota: una mirada institucionalista a partir de Tugwell*, (Ediciones Callejón: San Juan, PR, 2013).

<sup>5</sup> Rexford G. Tugwell, *The Stricken Land: The Story of Puerto Rico*, (Doubleday & Company, Inc.: Garden City, NY, 1946), p. 345.

<sup>6</sup> *Id.* at 346.

<sup>7</sup> *Id.* at 458.

I felt that the price we paid was outrageous; but we had done our best. That it was a good investment, however, we had the assurance of the New York bankers who loaned us the funds for the purchase as well as for extensions and improvements. The negotiations leading up to this had been long and devious and had to be parallel with those for the purchase. If the Canadian interests [the owners of the San Juan power company] did not lose, neither did the bankers, of course, though we expected that. In fact, when we finally came to the point of paying too much and borrowing under conditions and at rates calculated to please Wall Street, we were suddenly regarded benignly by all the powers that be. I had thought that we ought to be castigated for the deal. But that did not happen. There was not a word of criticism and a good deal of congratulation. The people of Puerto Rico would pay for it over a period of some twenty years in inflated rates; but absolutely no one showed any concern over that.<sup>8</sup>

Thus, the conflict of these disparate, but in the end mutually reinforcing interests—the greed of absentee owners, the grandiose dreams of central planners, the avarice of New York bankers, and the necessities of a nation at war—set the stage for the tumultuous birth of PREPA’s monopoly in electricity generation, transmission and distribution in Puerto Rico.

To be fair in the discussion of this historical record, we note that in the 1940s Puerto Rico was an extremely poor and rural country, with a per capita income of \$146 and with 70% of its population living in rural areas. In addition, the island’s economy was predominantly agricultural and private capital was limited and could not satisfy the demand for investment in large infrastructure projects. Therefore, seventy years ago this kind of state intervention in the economy was deemed imperative to jumpstart economic growth in Puerto Rico.

It is in this historical context that PREPA was created with the mission of conveying electricity to every corner of the island; and the consensus is that it performed that mission with admirable success. For many years PREPA operated as a relatively successful public utility in accordance with the then standard business model for electric-generation companies, traditionally known as “build and grow”, based on (1) building increasingly larger and more efficient generating plants using cheap fossil fuels, and (2) a continuous increase in the consumption of electricity.

### *Decline and Fall*

Two trends converged in the late 1970s to radically alter this state of affairs. First, the standard business model for public utilities was no longer successful due to limitations in the efficiency achievable in electrical generation, the increase in the price of fossil fuels, new environmental regulation, a reduction in the demand for electricity, and the entrance of new generation technologies using renewable sources.<sup>9</sup>

Second, and perhaps more important in the case of PREPA, by the early 1980s it had essentially fulfilled its mission of bringing electricity to every nook and cranny of the island. Once that mission was completed, PREPA lost direction; it no longer had a mission, or any clear goals and objectives. This mission drift eventually occurs in all organizations, whether public or private, for-profit or

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<sup>8</sup> *Id.* at 622.

<sup>9</sup> Gretchen Bakke, *The Grid: The Fraying Wires Between Americans and Our Energy Future*, (Bloomsbury: New York, NY, 2017), pp. 72–93.

not-for-profit. The phenomenon is so well known that it is a matter for study in most business schools.

As we have stated on other occasions, the problem in PREPA's case is that it became what economist Albert O. Hirschman called a "lazy monopolist." Economic theory has traditionally focused on the monopoly that uses its power in the market to exploit the consumer and maximize its profits by restricting production and charging prices far above the marginal cost of production. But Hirschman had a somewhat different view. "What if," he asked:

...we have to worry, not only about the profit-maximizing exertions and exactions of the monopolist, but about his proneness to inefficiency, decay, and flabbiness? This may be, in the end, the more frequent danger: the monopolist sets a high price for his product not to amass super-profits, but because he is unable to keep his costs down; or, more typically, he allows the quality of the product or service he sells to deteriorate without gaining any pecuniary advantage in the process... [And] as a result one can define an important and too little noticed type of monopoly-tyranny: a limited type, an oppression of the weak by the incompetent and an exploitation of the poor by the lazy, which is the more durable and stifling as it is both *unambitious and escapable*.<sup>10</sup>

### **"The oppression of the weak by the incompetent and the exploitation of the poor by the lazy"**

I cannot imagine a more succinct and accurate way to describe PREPA's performance after Hurricane María. This oppressive dynamic leads to the departure from the system of those customers who are most sensitive to the quality of the products or services they purchase. This departure, or flight, has an adverse effect, as it allows the lazy monopolist to...

...persist in his comfortable mediocrity. This applies, for example, to the small city or "ghetto" stores which lose their quality-conscious patrons to better stores elsewhere, as well as to sluggish electric power utilities in developing countries whose more demanding customers will decide at some point that they can no longer afford the periodic breakdowns and will move out or install their own independent power supply.<sup>11</sup>

In Puerto Rico we have seen the most demanding consumers attempting to "get off the grid," or disconnect from PREPA's system.<sup>12</sup> The flight of these consumers allows PREPA, in turn, to continue to peacefully operate in the comfort of its mediocrity, offering an expensive, unreliable service to hundreds of thousands captured clients that cannot afford to defect from its system.

Furthermore, PREPA has repeatedly lied to its clients for decades, has willfully and recklessly violated both federal and Puerto Rican environmental laws and regulations, has traditionally operated with little transparency and even less accountability, has been, and continues to be, a focus

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<sup>10</sup> Albert O. Hirschman, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States* (Harvard University Press: Cambridge, MA, 1970), pp. 57-59 [italics in original].

<sup>11</sup> *Ibid.*, p. 59.

<sup>12</sup> We note that this phenomenon has occurred in Puerto Rico not just with PREPA but also in the fields of education, health, and even public safety, all to the detriment of Puerto Rican democracy. See Franciso A. Catalá Oliveras, *Recursos Extraviados: Lecciones de Hirschman para el desarrollo de Puerto Rico* ["Misplaced Resources: Lessons from Hirschman for Development in Puerto Rico"], keynote lecture, University of Puerto Rico, Cayey Campus, September 10, 2013.

of political and governmental corruption, and its high and arbitrary rates and unreliable service have been, for decades, a massive dead weight on the island's economy.

This sorry state of affairs is due in large part to the fact that party politics has become inextricably interwoven into PREPA's administrative and managerial culture, in the same way a malignant virus invades a cell and takes over its control mechanisms and reproduces itself until the infected cell explodes. In the case of PREPA, we can stipulate that that moment arrived with its petition for debt adjustment, essentially a bankruptcy reorganization, under Title III of the Puerto Rico Oversight, Management, and Economic Stability Act of 2016, better known as PROMESA.<sup>13</sup>

In addition, through the years PREPA's operational flexibility has been severely limited due to other constraints. Among these we note that PREPA: (1) is required to grant several credits, subsidies and special rates to thousands of its clients; (2) is subject to a rate covenant under a 1974 Trust Agreement, which requires PREPA to fix, charge and collect reasonable rates and charges so that revenues of the system will be sufficient (a) to pay current expenses and (b) to provide an amount at least equal to 120% of the aggregate principal and interest requirements for the next fiscal year; (3) is required to make substantial contributions in lieu of taxes; (4) loses, or otherwise cannot account for, close to 15% of the electricity it transmits, mostly due to theft; and (5) has significantly higher administrative, accounting, and customer support costs relative to its peers.

PREPA managed to keep operating only by performing the managerial equivalent of a three-card monte game: resorting to accounting gimmicks, deferring payments to suppliers, postponing routine maintenance operations, delaying much needed capital expenditures, and issuing an eventually unsustainable amount of debt. That all of these shenanigans eventually ended in a bankruptcy filing should not be surprising. Nonetheless, it is still difficult to think of other monopolies that have managed to bankrupt themselves, with the exception, perhaps, of the state-owned enterprises in the former Soviet Union.

Given all of the above, the inescapable conclusion is that PREPA simply cannot go on operating the way it has up until now. Therefore, we concur with the Governor that the time has come to take drastic action with respect to PREPA, as it has proven incapable of reforming itself and has, in addition, been immune to the efforts of a number of administrations to modernize and improve its operations.

That said, however, we believe it is imperative to analyze the current political and economic context in which PREPA operates and carefully study the wide range of options that exist for transforming the Puerto Rico electric system.

### *Political Economy and Rent Seeking Issues*

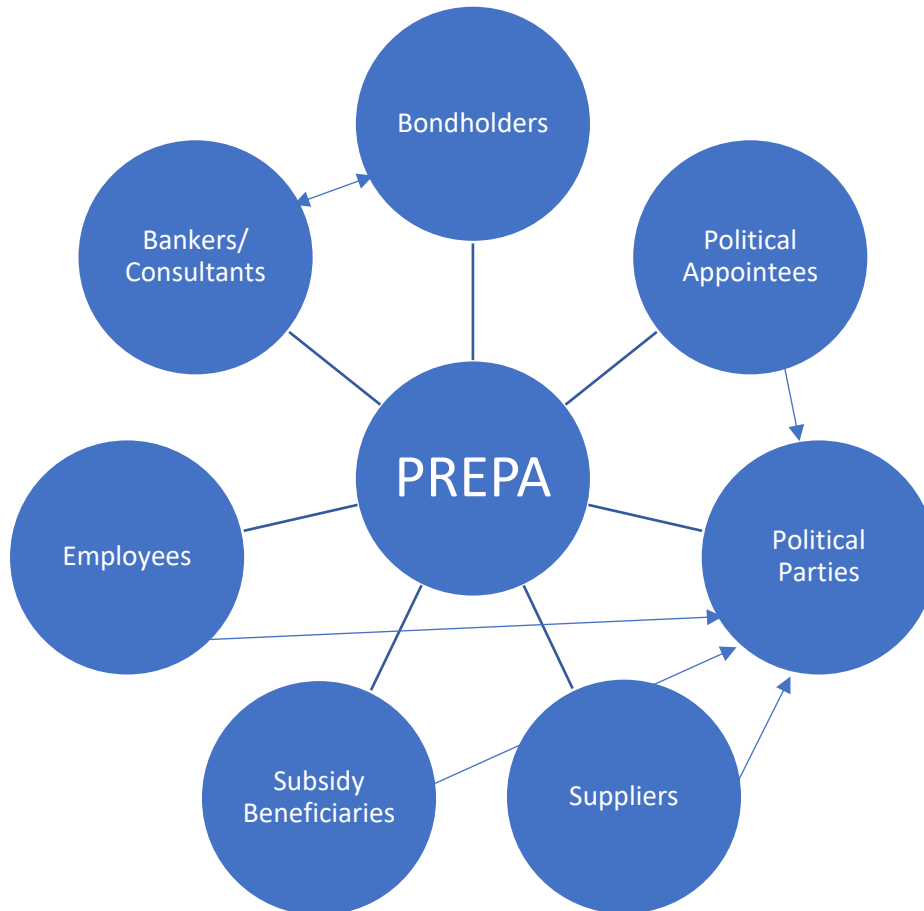
First, it is important to understand that no one at PREPA exercises the powers that shareholders—in this case the residents of Puerto Rico—would exercise in a private company. This situation has allowed diverse interest groups, such as suppliers, political parties, beneficiaries of subsidies, unions,

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<sup>13</sup> 48 U.S.C. §§ 2101-2241

bondholders, bankers and consultants, and the politically connected, to organize in order to extract undeserved benefits from PREPA at the expense of the rest of the population of Puerto Rico.

Economists call this behavior “rent seeking,” which the International Monetary Fund defines as “the pursuit of uncompensated value from other economic agents, in contrast with profit-seeking, where entities seek to create value through mutually beneficial economic activity.”<sup>14</sup>



Paul Teske, a professor at the University of Colorado, offers further insight into this phenomenon:

Rent seeking is a complex phenomenon, especially where multiple interest groups, each with different organization costs, interests, and power, interact with each other. The usual result is that, like vectors in a physics model, the interest group pressure will act on politicians from different directions and with differential force.<sup>15</sup>

These rent seeking groups create obstacles that hinder the efforts to transform PREPA, since each of the groups that benefit from the status quo is well organized and has a strong interest in protecting its benefits, while consumers are disorganized and the costs of acting collectively exceed the individual benefit each consumer would receive. The fundamental problem, then, is not

<sup>14</sup> International Monetary Fund, “Building Institutions”, *World Economic Outlook 2005*, p. 126.

<sup>15</sup> Paul Teske, *Regulation in the States* (Brookings Institution Press: Washington, DC, 2004), p. 38.

technological or merely financial, but is much more complicated; it is a problem of political economy, and specifically a problem of striking a balance between the interests of those who benefit from the existing system and those who are adversely affected by it.

In a democracy it is hard to eliminate the causes of rent seeking, but it is possible, through legislation and regulation, to limit its effects. In fact, controlling the power of these diverse interest groups, or “factions,” as James Madison called them, is one of modern government’s main functions. According to Madison,

[A] faction [is] a number of citizens, whether amounting to a majority or a minority of the whole, who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community. . . . A landed interest, a manufacturing interest, a mercantile interest, a moneyed interest, with many lesser interests, grow up of necessity in civilized nations, and divide them into different classes, actuated by different sentiments and views. . . . *The regulation of these various and interfering interests forms the principal task of modern legislation.*<sup>16</sup>

Therefore, any effort to transform the electrical system of Puerto Rico needs to consider the predatory behavior of PREPA’s internal and external interest groups that benefit from the current situation and provide mechanisms for limiting or eliminating that behavior. *If the currently-favored privatization process is limited to transferring a corrupt company in the public sector to a group of corrupt investors in the private sector, we will have achieved absolutely nothing.* In other words, privatization, in and by itself, will not magically solve Puerto Rico’s electricity problems.

#### *Transformation Efforts, Privatization, and the Issue of Market Structure*

During the last decade or so, the Government of Puerto Rico has enacted several laws to provide for the transformation of PREPA’s operations. Among these we find the following:

- Law 114-2007: Puerto Rico Electric Power Authority Net Metering Act.
- Law 73-2008: Mandates retail wheeling as part of the Economic Incentives for Economic Development Reauthorization Act.
- Law 82-2010: Establishes Public Policy for Energy Diversification by Means of Sustainable and Alternative Renewable Energy in Puerto Rico Act
- Law 83-2010: Green Energy Fund Act—provides funding for certain renewable energy projects.
- Law 57-2014: The Puerto Rico Energy Transformation and RELIEF Act:
  - Creates an independent Electric Energy Regulator;
  - Removes the public policymaking powers from the PREPA board of directors;

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<sup>16</sup> James Madison, *The Federalist No. 10, The Utility of the Union as a Safeguard Against Domestic Faction and Insurrection*, November 22, 1787.



- Creates the office of a consumer advocate to represent electricity consumers
- Law 4-2016: Establishes a “Hatch Act” for PREPA; Amends Contributions In Lieu of Taxes.
- Law 22-2016: Reforms a plethora of subsidies in PREPA’s Organic Act.
- Law 120-2018: The Puerto Rico Electric Power System Transformation Act—Sets the legal framework for the privatization/sale of PREPA’s assets.
- Law 258-2018: Allows the creation of energy cooperatives in Puerto Rico.
- Senate Bill (S.B.) 1121: Puerto Rico Energy Public Policy Act—Sets forth Puerto Rico’s public policy for the electricity sector.

These laws, by and large, have failed to jumpstart the sustained transformation of Puerto Rico’s electricity system. The most recent of these (Act 120-2018 and S.B. 1121) seek to establish a process to privatize the electricity sector in Puerto Rico. We note, however, that the Rossello administration has moved forward this privatization process, without having in place a comprehensive electricity policy, as S.B. 1121 has not yet, as of this writing, been signed into law.

Furthermore, there are several modalities of privatization. For example, among other models for PREPA we might mention: (1) keeping it as a state-owned enterprise but with a private operator; (2) restructuring it as a mixed-capital company, with both government and private-sector participation; (3) turning it into one or more energy-production cooperatives; (4) keeping it just as the operator of the transmission and distribution network and selling the energy-generation portion; or (5) privatizing it in its entirety.

However, we are greatly concerned that the government of Puerto Rico has already announced a process by which (1) PREPA’s generation assets will be sold off while (2) the government continues to hold the title to the transmission and distribution system—with, be it noted, the operation of that system contracted out to a licensee or concession-holder for a relatively long, fixed period of time. This is the model described in detail in the March 2018 draft of PREPA’s Fiscal Plan.<sup>17</sup> But we have found no explanation as to why and how this model was selected or what advantages it has over other modalities. Nevertheless, the government has continued forward issuing, first, requests for qualifications and then requests for proposals to operate the transmission and distribution system.

International experience tells us that transparency and openness are important if a privatization process is to achieve its objectives. Therefore, we recommend that all feasible options for the transformation of Puerto Rico’s electrical system be considered and evaluated; (2) that any transaction aimed at the transformation of Puerto Rico’s energy system be governed primarily by the Law to Transform the Electrical System of Puerto Rico and S.B. 1121 (if and when it becomes law), and (3) that PREPA’s Fiscal Plan and its debt restructuring process conform to the provisions of applicable Puerto Rico law governing the electricity sector, not the other way around.

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<sup>17</sup> Puerto Rico Electric Power Authority, *Amended and Restated Fiscal Plan – Draft Submission*, March 21, 2018, pp. 81-110.

In addition, we note that several economists have studied the privatization and reform processes for electrical systems in a range of contexts and countries, and a kind of consensus has emerged about the optimal sequence to be followed in order to achieve the best results. For example, according to several studies done by Yin-Fang Zhang, David Parker, and Colin Kirkpatrick, the optimal sequence for reforming the electrical industry seems to be the following:

- First, establish a modern, transparent, and robust regulatory framework for governing the energy sector.
- Second, liberalize the market to allow the controlled entrance of other producers and entities interested in providing energy services.
- Finally, privatize governmental assets through transparent, competitive, and duly structured processes.<sup>18</sup>

According to these researchers, there is a positive and significant correlation between this sequence for transforming the energy sector and improvements in the economic performance of the generation companies, increases in the sector's productivity, and the efficient utilization of generation capacity. All these factors eventually lead to lower rates for consumers.

However, the market structure proposed by the Rosselló administration is bifurcated and complex. On the one hand we will have three or four large producers of electricity, what economists call an "oligopoly"; and on the other we will have a single buyer, the company that manages and operates the transmission and distribution system, a "monopsony" in the jargon of microeconomics.

In the absence of effective state capacity to regulate this market structure, the situation will lend itself to all kinds of strategic interactions, both legal and illegal, among market participants. Generators, for example, could send price signals to other producers in order to limit competition; they could outright bribe the network operator to give preference to one company over another, even when the company preferred is not the lowest-cost producer; or they could pay the concession holder to make their competitors jump through all sorts of hoops in order to connect to the transmission and distribution network. On the other side, the network operator could extort generators in exchange for priority in connecting to the system; or the operator could use its power to arbitrarily cutoff electricity to force certain customers to pay a higher price for service.

The problem of how to properly address the risks generated by a less than perfect market is not new and was, for example, one of the main political issues during the Progressive Era. On one side, we found those, like Louis D. Brandeis, who advocated for breaking up monopolies and restoring

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<sup>18</sup> Yin-Fang Zhang, David Parker, and Colin Kirkpatrick, *Competition, Regulation, and Privatization of Electricity Generation in Developing Countries: Does the Sequencing of Reforms Matter?*, Center on Regulation and Competition, Institute for Development Policy and Management, University of Manchester, United Kingdom, September 28, 2004; and Yin-Fang Zhang, David Parker, and Colin Kirkpatrick, *Electricity Sector Reform in Developing Countries: An Econometric Assessments of the Effects of Privatization, Competition, and Regulation*, *Journal of Regulatory Economics*, Vol. 33, No. 2, April 2008, pp. 159–178. See also David M. Newberry, *Privatization, Restructuring, and Regulation of Network Utilities*, (MIT Press: Cambridge, MA, 2001).

competition, “to preserve a decentralized economy of locally based companies amenable to democratic control.”<sup>19</sup>

On the other side, we found advocates like Theodore Roosevelt, who considered big business as an inevitable consequence of economic development and “saw little point in trying to recover the decentralized political economy of the nineteenth century.” He argued instead in favor of increasing the power of the national government to regulate big business. In this view, Big Government had to match the scale and power of Big Business.<sup>20</sup>

In the case of PREPA’s privatization, it will be necessary to increase the capacity of the Puerto Rican government to effectively regulate market participants, as we deem the Brandeis solution of establishing a truly competitive electricity market in Puerto Rico to be economically unfeasible. To keep participants in the electricity market from exercising undue power over prices and the market, the Puerto Rico Energy Bureau must be able to call on the resources and expertise necessary for designing and implementing the correct incentives, thus ensuring that the prices paid by consumers are as low as possible.

In terms of generation, the designers of the new electricity market should consider that large generation facilities with investment recovery cycles of more than thirty years are increasingly a thing of the past. Today, there are renewable generation solutions with storage technologies to provide some base load, reserves, other auxiliary services, and additional load at peak hours. Complementing that model with smaller, highly efficient traditional generation units broadly distributed in service areas in order to supply base load is not only efficient, but can help provide a more cost-effective service, with fewer interruptions, for all customers.

Here, it is important to point out that when we compare the cost of traditional generation alternatives with the cost of renewable energy alternatives, it is important to remember the “all-in” costs associated with traditional generation—which are not just the cost of fossil fuel but social costs as well: the cost of environmental pollution, the cost of medical treatment for asthma, other respiratory problems, eye and skin diseases, and the cost of premature deaths caused by cancer and other diseases directly or indirectly caused by emissions of pollutants.<sup>21</sup>

On the transmission and distribution side, Puerto Rico should promote the grid’s evolution to efficiently and reliably employ distributed generation and incorporate the use of batteries at the substation and retail level so as to allow electricity to be stored when it is not immediately needed and thus foster and increase the value of intermittent-generation resources.

In addition, the rapid growth of the electric car market creates the potential for additional demand for electric power, presumably during off-peak hours, which could help to stabilize the demand

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<sup>19</sup> Michael J. Sandel, ‘America’s Search for a Public Philosophy’, in *Public Philosophy: Essays on Morality in Politics*, (Harvard University Press: Cambridge, MA, 2005), p. 14.

<sup>20</sup> Id. at p. 15.

<sup>21</sup> See, for example, Nicholas Z. Muller, Robert Mendelsohn, and William Nordhaus, “Environmental Accounting for Pollution in the United States Economy,” *American Economic Review*, vol. 101, (August 2011): 1649–1675.

for the base load that is projected to fall over the next few years. Electric vehicles would also function as a storage solution and could upload energy to the grid when more valuable uses emerge for that load. However, this would entail making capital investments in non-traditional areas, given that electric vehicles would need readily available charging stations, which would, consequently, have to be widely distributed around the island.

Finally, given the foreseeable effects of swift and imminent climate change, the grid of the twenty-first century must be sufficiently flexible to incorporate micro- and mini-grids that can be connected and disconnected from the main grid, as needed, to ensure that critical infrastructure facilities (hospitals, water pumps, telecommunications, etc.) have satisfactory backup in case of disasters, to protect isolated communities from prolonged interruptions in those services, and limit the impacts on health and the environment.

### *The Role of the Puerto Rico Energy Bureau*

In 2014, CNE advocated for the creation of a regulatory commission exclusively for the electrical sector and argued that it should have the following functions, among others: regulate the market for electricity in Puerto Rico; ensure that rates are fair and reasonable; oversee the quality and reliability of electrical service; encourage long-term planning by means of an integrated resource plan; promote the integration of new technologies at the lowest possible cost in order to satisfy the long-term demand for electricity; approve long-term capital investments; encourage the integration of producers of renewable energy; promote implementation of energy-efficiency and demand-reduction measures, which are usually the lowest-cost solutions for lowering rates; provide an effective forum with a consumer advocate to deal with customer claims and complaints; and reduce PREPA's environmental footprint and its greenhouse gas emissions.

The Puerto Rico Energy Commission was created by Law 57 of 2014. In its short existence, the Commission, now known as the Puerto Rico Energy Bureau, working with limited budgetary and human resources, has won important victories in keeping PREPA in line. For example, it forced PREPA to prepare and adopt the first real integrated resource plan, enabling long-term planning for Puerto Rico's electrical system, and also managed to significantly reduce a "temporary" rate increase that bondholders demanded as a condition for restructuring the Authority's debt. In short, since 2014 Puerto Rico has had an effective independent regulator.

Unfortunately, the Energy Bureau's authority has been diluted and weakened by the current administration. This notwithstanding the words of the Acting Inspector General of the Department of Homeland Security ("DHS") who warned in a congressional hearing last year, that weakening the Commission would constitute "a recipe for disaster."<sup>22</sup>

The last thing we want in Puerto Rico after so much suffering caused by the slowness in restoring the island's electric service is to provoke another disaster in the electrical system because of inadequate regulation and the unsatisfactory functioning of our political institutions. I remind you

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<sup>22</sup> U.S. Congress, House Committee on Homeland Security, *Public Hearing on Preparedness, Response, and Rebuilding, Lessons from the 2017 Disasters*, 115th Congress, 2nd Session, March 15, 2018.

of the energy crisis in California in 2000–2001 caused by a weak and deficient regulatory framework that was taken advantage of by Enron in order to raise its rates astronomically. This crisis resulted in rolling blackouts across the state due to human error, not natural disasters.

However, the government of Puerto Rico and its team of advisors seem to assume that the market structure they propose to create is going to be perfectly competitive, and that the “invisible hand of the market” will ensure that our monthly electric bill is lower. There is nothing further from reality; we are not in the world of a Microeconomics 101 textbook.

As demonstrated above, the adequate regulation of the market is essential to obtaining the desired results with respect to modernizing our electrical system, incorporating renewable sources of energy into our generation system, and reducing the cost per kilowatt-hour.

In specific terms, the new regulatory structure will have to evolve away from the model based on integrated resource plans with long time horizons towards one based on more proactive supervision with respect to the efficient use of resources and more dynamic with respect to the oversight of the various actors and participants in the energy sector. This means that the regulator must implement a performance-based regulation model, define transparent parameters for accountability, and establish incentives (and sanctions) for achieving stated energy policy objectives.

Finally, it is imperative that the new rate structure be designed to: (1) send the right price signals to both generators and consumers; (2) promote energy efficiency; (3) encourage the efficient handling of the base load and peak demand; (4) encourage the transition to two-way interaction between the grid operators and customers who install distributed generation capacity; and (5) implement rates based on the time of energy use in order to foster efficiency and optimization in the use of resources. In addition, the system should promote the implementation of new energy norms for the design of buildings, facilitate financing for retrofitting existing structures in order to encourage energy conservation, and promote the use of efficient household appliances in order to stabilize residential consumption.

### *PREPA's Integrated Resource Plan*

On February 13, 2019, PREPA filed its proposed Integrated Resource Plan (“IRP”) with the Puerto Rico Energy Bureau. The IRP is a twenty-year plan for the transformation of the Puerto Rico electricity system. It essentially consists of evaluating six different fuel mix scenarios and three different strategies reflecting different approaches to the configuration of the system, starting with a fully centralized system (Strategy 1), moving on to a completely distributed system (Strategy 2), and ending with a mix of the first two strategies (Strategy 3). The objective is “to provide analysis and planning recommendations for energy supply resources for a 20-year period (2019 to 2038) to meet reliability and resiliency targets, as well as renewable portfolio standards. Scenarios contemplate different availability of natural gas and different local resource constraints.”<sup>23</sup>

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<sup>23</sup> *Joint Informative Motion of the Financial Oversight and Management Board for Puerto Rico and the Puerto Rico Fiscal Agency and Financial Advisory Authority Regarding Updates on the Transformation of Puerto Rico's Electric Industry*, Case No. 17 BK 4780-LTS, Document Number 1139, March 22, 2019, p. 7.

On March 14, 2019, the Energy Bureau issued a resolution and order finding that PREPA’s IRP submission did not comply with the applicable rules and regulations and granted PREPA 30 days to correct the deficiencies or request the necessary waivers. In addition to being incomplete, the IRP inexplicably sets arbitrary limits on rooftop solar/battery systems; barely analyzes the potential of wind generation; gives preference to certain “predetermined” and unexplained decisions made by PREPA management; and perhaps most perplexing of all, calls for a significant build-out of new natural gas infrastructure, whose useful life would probably extend beyond 2050, when according to Puerto Rico’s energy policy, as set forth in Senate Bill 1121, Puerto Rico should be generating electricity solely from renewable sources.

PREPA has not submitted its response to the Energy Bureau as of the date of this document.

### *Transition to Renewable Sources of Energy*

Perhaps the most vexing issue facing PREPA today is how to structure the transition from using fossil fuels to renewable sources to generate electricity. We believe the new electrical system in Puerto Rico should maximize the integration of renewable energy and energy-storage technologies into the system in order to provide reserves, other auxiliary services, and additional load at peak hours.

When we refer to renewable sources of energy for generating electricity, we are referring not just to solar photovoltaic energy and wind energy, but to any other clean, safe, renewable technology that has been proved feasible on a commercial scale—for example, solar thermal energy. We believe that in order to create a portfolio of generation that is as diversified as possible given the current state of technology and the technology projected for the near future, all feasible options that meet the parameters of cleanness, safety, and renewability should be considered.

Unfortunately, the technology available at the moment does not allow the full demand for electricity in Puerto Rico to be satisfied with renewable sources of energy. Generation through renewable sources is intermittent, and although that problem can be mitigated with energy-storage technologies such as batteries, it cannot be completely eliminated.

Puerto Rico needs to satisfy a base load the entire day in order to keep schools, businesses, offices, hospitals, hotels, and factories running, not to mention the electricity needed for our homes. Providing solar energy to the corner grocery store is not the same as providing electricity for a modern economy and society of 3.1 million people. And we simply do not see as feasible—in either the short or medium term—a scenario in which distributed generation, using photovoltaic panels, can be mass-installed using the roofs of 65 percent or more of the existing buildings in Puerto Rico. Therefore, Puerto Rico has no alternative but to utilize generation capacity from non-renewable sources to complement the ramp-up of renewable generation capacity. The problem is that there is no consensus regarding the duration of, and the tradeoffs that have to be made during, that transition.

Some groups are advocating for a strong push towards renewables, while rejecting any increase in existing natural gas generation capacity. On the other side of the issue, advocates for increasing natural gas capacity base their argument on the economic costs and short-term technical difficulties of rolling out fully distributed energy system based mostly on solar photovoltaic panels with battery backups. The government of Puerto Rico has made repeated statements favoring a rapid deployment of renewable power systems, but PREPA's actions and the publicly available evidence suggest otherwise. For example, PREPA's IRP is based on making substantial new investments in natural gas infrastructure and generation capacity, relegating renewables to a secondary, subordinate role. In our opinion, that proposal appears to be a Hobson's Choice that is the exact opposite of the energy policy set forth in Senate Bill 1121.

In our view, one reasonable path forward would be to (1) maximize the installation of new generation based on renewable sources, mostly solar PV with batteries; (2) maintain but do not increase PREPA's generation capacity using natural gas; (3) progressively retire generation units that use diesel and coal, given PREPA's current excess capacity; and (4) gradually eliminate all natural gas generation as Puerto Rico advances towards its stated goal of generating 100% of its electricity with renewable sources by 2050. We note, however, that this matter is at heart a political economy problem rather than a technological issue. Powerful interests are vested in maintaining the status quo and in increasing natural gas infrastructure and new generation capacity. Also, there are no guarantees that PREPA, or its successor, will mothball existing fossil fuel technology when the time comes to do so over the next 30 years or so.

### *Conclusion*

The reform of Puerto Rico's electric power system must be well-thought-out, strategic, and follow a logical sequence, especially when PREPA is facing, simultaneously, the challenges of rebuilding of the electrical system after Hurricane María, the restructuring of its \$9 billion indebtedness under the procedures of Title III of PROMESA, a substantial decline in the demand for its services, and the possible privatization, total or partial, of the electrical system that has been administered and operated as a lazy monopoly for more than seventy years.

In sum, transforming Puerto Rico's electric system is one of the most important tasks as the island rebuilds and lifts its collective gaze to the future. **Failure to successfully manage this transformation will earn us, quite rightly, the measureless scorn and contempt of generations to come.**

Once again, we appreciate the opportunity to take part in this public debate, and we are at your disposal to answer any question that you or the members of the Committee may have with regard to this important matter.

Respectfully submitted,

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Center for a New Economy