Defining the 21st Century Electric Industry: Puerto Rico is Ground Zero

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I. *Puerto Rico's electricity problems:* Financial, physical, administrative, environmental [All material in Part I excerpted from the Commission's January 2017 order setting new rates]

[The Puerto Rico Electric Power Authority (PREPA) is the government-owned, vertically integrated monopoly, owning most of the Commonwealth's generation and all of its transmission and distribution facilities. It is the exclusive provider of retail electric service.]

A. PREPA's financial and physical stresses

1. "PREPA is experiencing a financial emergency. All three major bond rating agencies (Moody's, Standard & Poor's, and Fitch) give PREPA a ***credit rating of default or near-default.*** This situation is not sustainable. Until PREPA's financial situation improves, it cannot borrow new money. If it cannot borrow new money, ***it cannot repair its deteriorating physical infrastructure***, prepare that infrastructure for a future of renewable energy, pay salaries sufficient to attract and keep excellent workers, and ***modernize its system*** so as to enable consumers to save money on their electric bills."

2. "***Years of underspending*** have left it unreliable and in disrepair, short of experienced staff, ***at risk of environmental fines*** and ill-prepared to accept the quantities of renewable energy mandated by Act 82-2010."

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3. "As with any other utility, PREPA's rates must be sufficient to cover its reasonable costs, including the costs of paying the principal and interest on its loans. ***... Since 1989, however, PREPA's Board has failed to raise its rates*** (except that a fuel adjustment clause and purchased power clause recover increases in those costs). Because of this, ***as expenses rose PREPA had to borrow to pay them***—an imprudent practice that was no bargain for customers....PREPA's continuing losses-annual costs exceeding annual revenues-have reduced the ***Company's assets well below its liabilities***...."

B. Problems in spending and performance

1. "PREPA's officials and consultants describe an ***inefficient bureaucracy with high absenteeism, overly staffed*** with non-value-added administrative personnel. There is a shortage of technical expertise and an ***unacceptable safety record***. Procedures for ***budgeting and spending*** do not provide sufficient information on individual project plans and completion. ***On major capital projects PREPA was often unable to provide basic explanation***s, workplans, or other due diligence documentation."

2. "PREPA's infrastructure spending has been based not on actual needs but on ***company-wide ceilings rooted in political concerns*** about rate increases. As PREPA's own witnesses stated: "Historically, there has been ***political pressure to not increase PREPA's rates*** in response to cost and investment needs and therefore PREPA has had to sacrifice needed capital expenditures in order to remain solvent and to not run out of cash." ... Among the detrimental effects has been a ***focus on reactive maintenance instead of preventative maintenance*** and new construction."

3. "[T]he physical structural/mechanical and electrical deterioration of critical components in the transmission and sub-transmission lines have directly caused ***significant grid outages*** and service interruptions."

4. "Forced outages are due in part to "skilled labor leaving operational roles and not being replaced." There has been a ***"loss of significant number of experienced personnel,"*** replaced by "new employees [who] do not have the required expertise and knowledge." ... In distribution in particular, PREPA has suffered a ***22% workforce reduction since 2014***. As a result, construction crews have been shifted from preventative to reactive maintenance."

5. [From Act 57's Preamble] "After more than seventy (70) years of its creation, and after more than three decades of having achieved the total electrification of the Island, ***PREPA has become a monopoly that regulates itself; sets its own rates without actual oversight; incurs operational, managerial and administrative deficiencies, whose actual cost at the end of the day, is borne directly by customers***; and whose governance lacks transparency and citizen participation. All of the above contributes to Puerto Rico being among the top U.S. jurisdictions with the highest energy cost."

C. PREPA's MATS compliance problems

1. "In 2012, the U.S. Environmental Protection Agency ("EPA") issued the National Emission Standards for Hazardous Air Pollutants (also known as Mercury and Air Toxics Standard, or MATS). This rule restricts mercury emissions from solid fuel- and fuel oil-fired power plants. It requires uncontrolled or inadequately controlled coal- and oil-fired power plants to install and operate (or upgrade existing) environmental controls by April 2015 (extended to April 2017 for certain plants exempted due to reliability needs). Violations trigger penalties."

2. "***PREPA's fleet is vulnerable***. Fourteen of its units, comprising about 2,900 MW of oil-fired capacity (over half of PREPA's nameplate capacity), are subject to MATS. PREPA's ... compliance options are shrinking. PREPA is non-compliant today at many of the same units for which it was non-compliant in 2011....With the AOGP delays, overall system compliance under PREPA's current plans may take until 2022 or later."

II. *Products and services:* What mix of resources best solves the Puerto Rico supply and demand problems—excess dependence on fossil fuels, deteriorated infrastructure, double afternoon-evening peak, vulnerability to extreme weather?

A. Statutory goals

1. In the "Statement of Motives" accompanying Act 57-2014, the Legislature stated in pertinent part:

   a. "[T]here is a broad consensus on the need to ***evolve our dependence on fossil fuels*** and use to the maximum extent possible the Island's energy resources such as the sun and the wind, conservation, and efficiency."

   b. "We have been held as hostages of a poorly efficient energy system that excessively depends on oil as a fuel and that does not provide the tools to promote our Island as a place of opportunities in the global market. ***The current cost per kilowatt of approximately twenty-seven cents ($.27) is extremely high*** when compared to other jurisdictions that compete with Puerto Rico to attract investors and severely affects the pockets of local consumers."

2. Act 57 thus requires PREPA to submit, and the Commission to approve, an ***integrated resource pla***n, defined as—

   "A plan that considers all reasonable resources to satisfy the demand for electric power services during a specific period of time, including those related to the offering of electric power, whether existing, traditional, or new resources, and those related ***to energy demand, such as energy conservation and efficiency***, or demand response and localized energy generation by the customer."

B. Menu of products and services to mix and integrate

1. Total mix: Baseload, intermediate and peaking generation

2. Refurbishing and maintenance of existing generation

3. Construction and maintenance of new generation

4. Renewable energy portfolio standards and renewable energy credits

5. Microgrids

6. Third party energy efficiency administrator

   Some states have assigned the new service, or reassigned an existing one, to a specialist-a separate, exclusive franchisee. ***Hawaii, Vermont, Oregon and Maine*** are the prominent examples. Each has appointed a non-incumbent to provide energy efficiency services formerly provided by the utility.

   See How Efficiency Vermont Works, EfficiencyVermont.com, http://efficiencyvermont.com/about_us/information_reports/how_we_work.aspx (last visited Jan. 21, 2012) (describing Efficiency Vermont's responsibility to provide "technical assistance and financial incentives to help Vermont households and businesses reduce their energy costs with energy-efficient equipment and lighting" and "energy-efficient approaches to construction and renovation"); *About Us*, Hawaii Energy.com, http://www.hawaiienergy.com/4/our-team (last visited Jan. 21, 2012) (describing Hawaii Energy's ratepayer-funded conservation and efficiency programs); *About Us*, EnergyTrust of oregon, http://energytrust.org/about (last visited Jan. 21, 2012) (describing Energy Trust of Oregon's responsibility to invest in cost-effective energy efficiency and assist with the above-market costs of renewable energy); *About Efficiency Maine*, EfficiencyMaine.com, http://www.efficiencymaine.com/about (last visited Jan. 21, 2012) (describing Efficiency Maine's technical assistance, cost-sharing, training, and education programs to reduce the use of electricity and heating fuels through energy-efficiency improvements and the use of cost-effective alternative energy).

7. Demand aggregation, demand management and associated rate designs

III. *Market structure:* Which of the required resources are best provided by a monopoly market structure and which are best provided by a competitive market structure? What facts do we need to answer the questions?

A. "**Market structure** ... describes (a) the geographic area in which transactions occur; (b) the products and services being sold in that geographic area; (c) the identities, characteristics and market shares of the sellers and buyers of those products and services in that geographic area; and (d) the entry costs and entry barriers, including any "bottleneck facilities"-assets essential for competition, controlled by one competitor but not economically duplicable by other competitors." (Hempling, *Regulating Public Utility Performance: The Law of Market Structure, Pricing and Jurisdiction*)

B. **PREPA's proposal** (excerpted from PREPA's draft "Fiscal Plan" dated January 24, 2018—there is a revised plan of 12 Feb. but it remains non-public)

1. ***Sale of existing PREPA generation assets*** to private investors (or potentially retirement of some assets)

2. ***Public-private partnerships for new generation assets*** (asset mix to be determined through integrated resource planning)

3. Financial support for acquirers of generation: ***long-term wholesale contracts*** to sell to the retail monopoly (which recovers its costs from monopoly retail customers)

4. ***Concession (i.e., franchise) for transmission and distribution system***

   a. Assets remain owned by government, but operated by private franchisee

   b. Competitive process open to private parties with a track record of operational excellence

   c. Term of concession to be determined, but likely medium to long-term (i.e. 25 years+)

   d. Concession terms to incentivize operational efficiencies and reliability targets

   e. Concession can be structured so as to require and remunerate (through rates) private investment in T&D

   f. Delivery and retail utility functions provided by single private concessionaire using publicly-owned wires and retail service assets subject to conditions and rate and performance regulation

   g. Concessionaire must make and fund necessary investments not otherwise publicly funded; title to all assets remains public

h. Concessionaire receives retail rate revenues set generally under established rate standards

IV. *Ownership:* Who should own what? Is "privatization" a policy, an ideology, or an opportunity for profiteering?

A. Governor's proposal

1. ***Private owners of generation***, selected competitively

2. ***Transmission and distribution concession***, selected competitively

3. Ownership of transmission and distribution remains with the ***government***

B. "For each major service required to bring electricity cost-effectively to our citizens, the ***provider should be the one most qualified***. ***Whether the selected entities come from the private sector or the public sector is less important than whether the entity has proven itself to be the one most prepared to act efficiently***, responsively, cost-effectively, and in compliance with all appropriate regulatory standards. An objective understanding of the century of electric service on the mainland shows that 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." [From U.S. Senate Testimony of Commission Chairman José Roman]

C. Not all companies are the same. It is necessary to define the characteristics of companies that are most likely to assist the Commission in meeting these goals. Those characteristics fall into three categories.

1. **Business activities:** A standalone utility-one affiliated with no other business, serving a single local territory-experiences no inter-business conflict. The potential for conflict grows as the holding company's business activities expand, in terms of either geography or type of business. Geographic expansion (acquiring other utilities in other locations) can benefit customers if there are increasing economies of scale; but it can hurt customers if operations are impaired by managerial remoteness or diseconomies of scale. ***Type-of-business expansion (acquiring companies that sell other services, to third parties or to the utility itself) is a two-edged sword***: Non-utility affiliates can support a utility (as might a subsidiary experienced in acquiring land or buying fuel); or distract it (like affiliates investing in nuclear power or hedge funds). A commission can address these conflicts by allowing only those acquisitions whose complexities are justified by benefits. But the difficulty of weighing does not erase its importance.

2. **Corporate structure and culture:** In a utility's corporate family, there should be at all levels, from the holding company CEO to the substation repair team, ***a single***

focus: the utility's performance for its customers. When presented with a proposed acquisition, a commission should ask: Will ultimate control be exercised by individuals whose full focus and professional priority is on service to utility customers? Or will control be exercised by companies and executives having other objectives-objectives that distract from, or conflict with, the public interest and the consumer interest?

3. **Financial structures:** Financial structure involves the mix of equity and debt-including who provides the equity and who holds the debt-and which business activities have priority when financial capital is scarce. How do these financial features affect the utility subsidiary? First, if the utility's holding company pays for acquisitions with debt, this ***leveraging*** can cause the holding company to pressure the utility to divert cash flow from operations to the holding company; or, to limit the flow of holding company equity into the utility. Second, when ***a non-utility affiliate fails***, investors view the holding company as more risky, raising its finance costs. The utility affiliate's equity (which comes from the holding company) then becomes more expensive.

V. *Regulatory governance:* What type of regulator, and what type of regulatory rules, are necessary to attract capital, induce performance and restore citizen trust?

A. 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.*** (Act 57-2014, 22 L.P.R.A. §1051 et seq.) 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:

1. "[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."

2. "The Energy Commission created herein shall be the key component for the faithful and transparent execution of the Energy Reform."

3. "[T]he Commission --

   a "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."

b. "***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."

c. "***shall oversee all types of operations, processes***, and mandates pertaining to the efficiency of the energy sector of the Island."

d. "shall oversee [that] PREPA's debt issues are in the public interest."

e. "shall approve the electricity rates proposed by PREPA."

f. "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...."

g. "shall... guarantee that PREPA meets its obligations to bondholders."

B. Principles of regulation

1. ***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.

2. ***The key criterion is economic efficiency.*** A utility cost is reasonable only if the Commission determines it is the least-cost alternative among all feasible alternatives. The Commission also aims to allocate costs to cost-causers and benefits to benefit-creators. The standards induce performance that is economically efficient.

3. ***What matters are facts, not beliefs.*** 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 the procedural formality varies as resources and time considerations demand.

4. ***The Commission's effectiveness depends on its independence.*** The Commission is not a supermarket, where interest groups shop for favors. It is an expert agency that makes decisions based on facts and logic, not political pressures or ideological beliefs.

5. ***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.

C. Key Commission actions pre-hurricanes [excerpted from Román testimony]

1. ***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. In light of those bondholders' agreement 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, 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.

2. ***Integrated resource plan (IRP):*** In September 2016, the Commission approved an integrated resource plan for PREPA. The IRP order approved, among other things, (a) temporary, limited spending on the Aguirre Offshore Gas Port; (b) the permitting, maintenance, development and retirement for various fossil 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.

3. ***PREPA's performance:*** In fall 2016, the Commission began a a far-reaching inquiry into PREPA's overall performance, gathering information on PREPA's performance so as to develop metrics and consequences.

4. ***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 and expert regulatory body. 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 disciplined 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 was a non-profit entity, the conventional regulatory treatment of imprudent costs-requiring their absorption by shareholders rather than imposing them on ratepayers-is unavailable 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; 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. 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.)

D. Key Commission actions post-hurricanes: Restore and transform, cost-effectively

1. ***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. 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 effectively and at just and reasonable prices.

2. ***Analysis of options for microgrids and distributed generation:*** PREPA's difficulties restoring service shows 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, reduce dependence on centralized generation--all with the goal of enabling us to respond to future emergencies more quickly and cost-effectively.

3. ***Disciplining PREPA's contracting process:*** Prior Commission inquiries have produced unambiguous, concrete examples of defective contracting policies and poor project management. Correcting these defects, including preventing repetitions of Whitefish, 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 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.

4. In these and other proceedings Commission will be focusing on the following areas:

    a. ***PREPA's spending, cost recovery and rate-setting:*** Budgets, revenue requirement, rate design, and procedures for updating and reconciling those items.

    b. ***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.

    c. ***PREPA's finances:*** Financing plans, debt restructuring, debt issuances, and approvals of Transition Charge mechanisms.

d. ***PREPA's customer relations:*** Bill format, customer complaint procedures, and customer education programs to produce efficient consumption under both monopoly and competitive market structures.

e. ***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.

f. ***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-metering community solar and microgrids by third-parties to end-use customers along with interconnection terms compensation payments for transportation locational choices and other parameters.

VI. Politics: How do we get the multiple political actors, federal and state, public and private, incumbent and newcomer, to produce a sustainable majority behind the right answers?

A. Again: The proper sequence of analysis is:

1. Determine the ***desired mix*** of products and services.

2. For that mix of products and services, determine the ***likely quantity*** required.

3. Determine which products and services are ***natural monopolies***, and which can potentially be provided 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.

B. Multiple actors

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), Army Corp of Engineers, Congress

3. Federal "bankruptcy" court

4. In addition, there are think tanks raising funds from philanthropists, and businesses raising funds from investors, and industry groups raising funds from their members--all trying to influence the actions of the above-mentioned government entities.

C. This diversity of actors, interests and passions could make for vibrant, disciplined process of problem-solving. But that is not the current situations. Instead we have the following problems:

1. There is no single coordinating entity.

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 many situations, a decision that seems to be "right" for the short term could be "wrong" for the long-term.

D. 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, then create a coordinating committee.