

Specific Plan for Revitalization of Puerto Rico Energy

The Consortium

A consortium of US industrial firms has come together to create a new team to provide power to the island of Puerto Rico in a more affordable, reliable, clean and more efficient manner; and at dramatically lower cost to taxpayers. Each Consortium member is a leader in development, ownership, operation and maintenance of utility-scale generation, transmission, distribution and fuel-supply. The consortium is comprised of:

- ITC/Fortis (transmission and distribution)
- Kindle Energy (generation)
- Shell North American LNG (fuel supply and management)

Further information about each of the Consortium members is at the end of this document

Transmission and Distribution

- I. Properly designed, constructed and maintained Transmission and Distribution (T&D) systems are extremely reliable; Puerto Rico's T&D failed because of decades of inadequate maintenance
- II. Using extensive stakeholder outreach, the Consortium will make the necessary capital investment to re-build, upgrade, own, operate and maintain the Transmission and Distribution (T&D) systems
- III. Consortium will conduct full system planning, including:
 - a. In-depth study of historical data regarding demand patterns, transmission faults, etc.
 - b. Analysis of FEMA / USACE restoration work and observations
 - c. Update or redevelop PREPA's 2015 IRP to:
 - i. Identify critical facilities for implementation of micro-grid/distributed-generation capability such as hospitals, police/fire stations, nursing homes and entry ports
 - ii. Utilize energy storage technologies where appropriate
 - iii. Increase utilization and interconnection of renewable generation sources
 - iv. Identify supporting infrastructure (such as ports, critical ground transportation, etc.) necessary to support rapid response in future emergency situations
 - d. Design upgraded transmission and distribution structures (poles, towers, conductor, insulators, substation equipment, etc.) using present, state of the art technologies appropriate to hurricane prone environments
 - e. Maximize re-use of existing sites, facilities and rights-of-way (ROW) where appropriate to minimize both cost and implementation timing
 - i. Harden / reinforce existing assets and facilities where appropriate
 - ii. Identify and decommission unnecessary system facilities
 - f. Where appropriate, upgrade transmission voltage classification, (ex: 230kV to 345kV) to allow for optimized performance of the overall system
 - g. Utilize proven information technologies to create Systems Integrated Operations to optimize on-going system operations/performance and emergency response capabilities
 - h. Where appropriate, relocate transmission lines along highway ROW to provide greater access for construction, maintenance and restoration
 - i. Where appropriate, relocate substations to non-flood zones and/or design to be flood-resistant
- IV. Infrastructure Investment

- a. The Consortium will commit to an aggressive, long-term T&D investment plan and will develop a long-range T&D system plan as part of a full IRP
 - b. Commit to significant per year investment in new and upgraded T&D structures, wires, substations to improve system reliability and resiliency
 - c. New, permanent reconstruction and networking of T&D facilities will be designed to withstand Category 4 hurricane and minimize damage due to winds above Category 4
- V. System Performance & Reliability
- a. Develop and implement aggressive and proactive T&D maintenance management and vegetation management programs
 - b. The Consortium will commit to certain reliability metrics with a target of moving the Puerto Rico system from the bottom decile to the top half and ultimately to the top 25% of island T&D systems using industry standard, agreed-upon performance metrics
 - c. Develop a comprehensive Emergency Management and Response program including:
 - i. Strategic material and equipment inventory on-island
 - ii. Logistical plans and contingencies
 - iii. Leverage of Mutual Aid resources

Generation

- I. The Consortium proposes to invest over \$4 billion of private capital on the island to modernize the generation and fuel infrastructure over the next ten years
- II. The Consortium will act as developer and operator of generation on the island, modernizing the generation portfolio by repowering and replacing existing generation with cost-effective, fuel-efficient, cleaner, reliable and flexible generation resources at key locations to serve critical load pockets.
 - a. Repowering inside the San Juan load pocket with fast response combustion turbines (CT) helps provide flexibility and efficiency for load following response on the north side of the island
 - b. Placing higher efficiency combined cycle combustion turbines near lowest-cost fuel supply provides significant efficiency gains and production cost savings
 - c. Replacing existing boiler technology with new CT technology will allow for the use of cleaner fuel sources (ultra-low sulfur diesel and natural gas) and reduce generation heat rates (the rate at which generation burns fuel) by 10 to 15%
 - d. All new generation units will be dual-fuel capable to ensure reliability, use of lowest cost fuel source, and suited to manage intermittent renewable generation
 - e. Target the development, construction, and integration of 20-25% renewable generation online by 2035
 - f. Identify critical facilities for implementation of micro-grid and distributed generation capability
 - g. The Consortium will use existing generation sites to the maximum extent possible to reduce costs and limit environmental impacts on the island
- III. Over the next five to ten years, the Consortium will construct new generation resources, either CT or CCGT, in the following locations on the island:
 - a. Palo Seco 200 MW CT (Commercial Operation Date (“COD”) 2022)
 - b. Aguirre 1,100 MW CCGT (COD 2021/22) and 200 MW CT (COD 2021)
 - c. Costa Sur 500 MW CCGT (COD 2024)
 - d. San Juan 400 MW CCGT and 200 MW CT (COD 2024)
 - e. Guayama 300 MWCT (COD 2028)

- f. Micro-grid/distributed generation at key facilities such as hospitals, police/fire stations, nursing homes and entry ports
- IV. The Consortium will retire the following units and utilize the sites on which they operate for the development of new generation (*i.e.*, “repower” the sites):
 - a. Palo Seco 386 MW No. 6 oil-fired boiler (Retire 2022)
 - b. Aguirre 900 MW No. 6 oil-fired boiler (Retire 2021) and 592 MW CCGT (Retire 2021)
 - c. Costa Sur 900 MW No. 6 oil-fired boiler (Retire 2024)
 - d. San Juan 300 MW No. 6 oil-fired boiler (Retire 2024)
- V. The Consortium proposal will provide the generation flexibility needed to accommodate the island’s renewable energy goals
- VI. The Consortium will develop and construct additional fuel gas infrastructure on the island for greater utilization of natural gas for power generation on the island to reduce fuel costs and pollution

Fuel Supply

- I. The Consortium will act as energy manager supporting immediate and longer-term fuel needs through a flexible multi-fuel “BTU” structure linked to the generation mix of PR (liquid natural gas (LNG), ultra-low-sulfur diesel (ULSD), heavy fuel oil (HFO), etc.)
 - a. Shell will supply the necessary fuels until a fuel source is no longer needed
 - b. Shell’s investment will be recovered through the fuel price offered on a competitive basis
- II. The Consortium will manage:
 - a. Liquid storage contracts linked to the existing fuel mix and any new LNG regasification contracts to ensure the generation assets have sufficient quantities of fuel as necessary
 - b. Scheduling and logistics needed to receive fuels into appropriate storage assets
- III. The Consortium will facilitate and mitigate risks associated with developing, supplying, and managing LNG infrastructure. More specifically, Shell can:
 - a. Leverage its LNG/gas marketing expertise to assist in (re)negotiating optimal import Terms & Conditions on existing assets
 - b. Leverage its experience of developing and supporting owned and contracted liquefaction and regasification terminals worldwide for the benefit of any new regasification terminal or contract (e.g. terminal commissioning and commissioning cargoes)
- IV. Consortium will provide fuel contracts with needed averaging provisions, quantity variation, and quality assurance, creating value beyond headline price
- V. Hedging services will be provided or embedded into the physical fuel contracts where needed
- VI. The fuel price structure will be indexed to relevant market indexes (Henry Hub, Brent, others) with a fixed adder and will be based on competitive market rates. This variable fuel cost will ultimately flow through to end-users as a pass-through cost in their total power bill

Consortium Members Expertise

ITC/Fortis

- I. ITC Holdings Corp. is the largest independent transmission company in the U.S. with over 15,600 line miles of high-voltage electric transmission line in service; ITC:
 - a. Invests, develops, owns and operates transmission assets to improve reliability, lower the cost of delivered energy and allow new generating resources to interconnect to the grid
 - b. Owns and holds transmission assets and does not sell, flip or passively invest

- c. In addition to developing numerous greenfield projects, ITC has **acquired** existing, **struggling systems** and **‘invested them back to health’**
 - i. Driving outages down and overall reliability up
 - ii. All systems perform in the top quartile of benchmarked utilities
 - d. ITC has invested \$6.5+ billion in transmission infrastructure since 2003
 - i. 4 operating companies in 7 states, with 650+ Employees
 - ii. Regulated by FERC with a forward-looking, formula rate and annual true-up
- II. ITC is part of Fortis Inc. of Canada, a leading utility company with operations in the U.S., Canada and the Caribbean including generation, T&D and natural gas
 - a. Fortis has ~\$32 billion in assets, including the acquisition of ITC in 2016
 - b. 3.2 million utility customers, 8,500 employees, including 3 utilities in the Caribbean (Turks & Caicos, Grand Cayman, Belize)
 - c. Fortis has had operations in the Caribbean for over 15 years; no one has more experience with distribution in the Caribbean (systems in Grand Cayman and the Turks & Caicos)
 - i. Following the recent devastating hurricane damage to **Turks and Caicos**, Fortis emergency response teams were on the island within 48 hours to begin damage assessment and logistical support for resource deployment
 - ii. **In 51 days, the utility was restored and fully in-service.**
- III. ITC/Fortis is well-capitalized, experienced and prepared to move quickly to develop the assets Puerto Rico needs to reduce electricity rates, expand its use of renewable energy and establish high system reliability

Kindle Energy

- I. Kindle is expert in all elements of power generation and will create a positive impact through responsible construction, purchase and optimization of standing assets for Puerto Rico and the local communities
- II. Kindle has asset management experience with more than 25,000 MW of fossil-fueled and renewable generation
- III. Kindle has been active participants in the mergers and acquisitions of more than 50,000 MW of power generation and has developed more than 10,000 MW of fossil-fueled and renewable generation throughout North America

Shell

- I. Largest global LNG trading and shipping portfolio with an extensive and complimentary liquid fuels portfolio
- II. Broad-based value chain experience, combining upstream assets, pipeline and LNG terminals with marketing and trading expertise to offer fully integrated solutions to customers
- III. Strong track record of participating in and developing regasification terminals as lead developer, partner, and advisor to LNG terminal owners
- IV. New Energies division focused on developing wind, solar, energy storage assets capable of delivering integrated energy solutions to customers
- V. Extensive resources/support with technical expertise in LNG, communications/ stakeholder engagement
- VI. Strong Shell brand in Puerto Rico ~160 Shell retail gas stations