Clean Energy Requires a New Grid: Building Renewables in New York

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Goal: Share EDFR’s perspectives as a renewable company with over 30+ years of experience and operations across all ISO markets in the U.S.
## A Global Leader in Low-Carbon Energy

### EDF Group
- 70+ years experience
- $18 B EBITDA
- 154,808 employees
- 31.5 M clients worldwide

### EDF Renewables
- $1.3 B EBITDA
- 22 operating countries
- 3,685 employees
- 23.4 TWh green electricity

### EDF Renewables North America
- 16 GW developed
- 11 GW O&M contract
- 26 GW pipeline
- 35 years experience
- 1,162 employees

*as of 12/21/19*
177 MW Morris Ridge Solar, awarded contract through 2018 NYSERDA Renewable Energy Solicitation (Mount Morris, NY)

Developed, built and placed in service 53.5 MW (46 projects) of solar projects (<15 MW) throughout NY

Developed, built and placed in service 80 MW Copenhagen Wind project (Copenhagen and Denmark, NY)

Together, these projects will power more than 80,000 homes and remove 330,000 tonnes of carbon from the atmosphere each year

50/50 partnership with Shell New Energies on Atlantic Shores Offshore Wind. Lease area potential for 2,500 MW.

50% equity stake in EnterSolar, an NYC based company with over 30 solar projects in NYS

2,000+ MW of grid-scale solar and storage in various stages of Development
Developers 'Transmission Risk Scenarios

Studies To Date Show The Need For Grid Upgrades

1. Without Transmission Investments:
   - Developers hesitate to move projects forward in high-risk environment
   - Higher risk of congestion/curtailment risks may prevent renewable projects from obtaining financing and make them unviable economically
   - Individual renewable energy projects may not be able to fund major grid upgrades based on the size and scope of projects and the identified upgrades.
   - Developers might be turning to the 345kV grid to avoid or limit the transmission risk. However, there is limited land availability alongside 345kV lines and project sizes need to be large enough to justify the cost of a 345kv interconnection.

Constrained Pocket

- Curtailment risk is high - low cost energy cannot get delivered to load
- A transmission constraint is separating the "constrained pocket" from the rest of the zone, depressing the price received for energy by all generators in the constrained pocket:
  - LBMP at the project's location is lower than the LBMP of the zone (the spread or Basis=$0-$30= ($30)/MWh)
Developers' Transmission Risk Scenarios
Studies To Date Show The Need For Grid Upgrades

2. With Transmission Investments:

• Congestion/curtailment risk is not high

• Transmission investments guide future generation siting decisions

• Public investments including at the 115kV network would open up development to:
  ▪ More diverse resource-rich areas across the state
  ▪ Greater variety of projects of all sizes ("all-of-the-above" approach)
  ▪ More competition (more developers)
  ▪ More communities sharing in financial benefits paid by Project developers

Unconstrained Pocket

• Curtailment risk is minimal – low cost energy can be delivered to load
• No transmission constraint creating price separation within the zone:
  • LBMP at the project’s location is close to or the same as the LBMP at the project’s zone (the spread or Basis=$30-$30= ($0)/MWh)
Commendable leadership efforts have been taken to date by NY government, legislators and state agencies in setting and working towards implementing the most ambitious climate and clean energy targets in the Nation

- Ongoing NYSERDA/DPS “Power Grid” study is expected to support and prioritize transmission investments to meet the CLCPA targets

Investment decisions on targeted transmission both at local and bulk transmission systems would give the Development community the right signals

- Prioritize congested pockets with large NYSERDA awards to date
- Prioritize transmission projects with the biggest return on investment in terms of tons of CO2 avoided
- Prioritize both low hanging fruit upgrades on the short term but also longer term backbone projects to guide generation investments longer term

Delaying grid expansion decisions could result in:

- Higher ratepayer costs because of transmission risk premium priced in REC contracts and suboptimal expansion of the grid
- Delays in meeting the CLCPA targets
- Suboptimal development and sharing of community benefits