Building Renewables Together: Update on Clean Energy Construction

Legislative Breakfast, March 1, 2023
Co-hosted by Laborer’s Union PAC and ACE NY
New York’s Nation-Leading Climate Goals

- **CLEAN ENERGY ECONOMY**
  - over 157,000 clean energy jobs
  - More than 200,000 new jobs added
  - 10,000 MW of distributed solar
  - **now**

- **RENEWABLE ENERGY**
  - 6,000 MW of distributed solar
  - 2025

- **RENEWABLE ENERGY/ CLEAN ENERGY STANDARD**
  - 70% electricity from renewable energy
  - 2030

- **RENEWABLE ENERGY**
  - 9,000 MW of offshore wind
  - **by 2035**

- **CLEAN ELECTRICITY**
  - 100% zero-emission electricity
  - **by 2040**

- **GHG REDUCTION**
  - 85% reduction in greenhouse gas emissions from 1990 levels
  - **by 2050**

- **RESILIENT and DISTRIBUTED GRID**
  - 1,500 MW of energy storage
  - **by 2025**

- **ENERGY EFFICIENCY AND BUILDING DECARBONIZATION**
  - 185 TWh end-use savings in buildings and industrial facilities
  - 6,000 MW of energy storage
  - 1 million electric homes and 1 million electrification-ready homes
  - **by 2030**

- **CLEAN TRANSPORTATION**
  - 100% light duty zero-emission vehicle sales
  - **by 2040**
Current Sources of Electricity in New York

New York Control Area Energy Production

Figure 12: Energy Production by Fuel Source (GWh) - Statewide, Upstate and Downstate New York: 2021

- **50% Zero-Emissions**
- **24% Fossil Fuels**
- **8% Other Renewables**
- **39% Fossil Fuels**

<table>
<thead>
<tr>
<th>Source</th>
<th>2021 Production (GWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>31,113</td>
</tr>
<tr>
<td>Hydro</td>
<td>29,675</td>
</tr>
<tr>
<td>Wind</td>
<td>4,111</td>
</tr>
<tr>
<td>Hydro Pumped Storage</td>
<td>712</td>
</tr>
<tr>
<td>Other Renewables</td>
<td>2,535</td>
</tr>
<tr>
<td>Oil</td>
<td>154</td>
</tr>
<tr>
<td>Dual Fuel (Gas/Oil)</td>
<td>49,079</td>
</tr>
<tr>
<td>Gas</td>
<td>10,387</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>125,766</strong></td>
</tr>
</tbody>
</table>

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ALLIANCE FOR CLEAN ENERGY NEW YORK, INC.
Tale of 2 Grids

New York Control Area Energy Production

- **50% Zero-Emissions**
  - Nuclear: 31,113 GWh
  - Hydro: 28,675 GWh
  - Wind: 4,111 GWh
  - Other Renewables: 2,538 GWh
  - Gas: 10,387 GWh
  - TOTAL: 126,766 GWh

- **47% Fossil Fuels**
  - Oil: 154 GWh
  - Dual Fuel (Gas/Oil): 49,079 GWh
  - Gas: 10,387 GWh
  - TOTAL: 86,214 GWh

Downstate Energy (Zones F-K)

- **89% Fossil Fuels**
  - Gas: 7,307 GWh
  - Dual Fuel (Gas/Oil): 49,394 GWh
  - Oil: 1,477 GWh
  - Other Renewables: 1,832 GWh
  - TOTAL: 52,740 GWh

Update Energy (Zones A-E)

- **91% Zero-Emissions**
  - Hydro: 54,539 GWh
  - Wind: 4,111 GWh
  - Hydro Pumped Storage: 620 GWh
  - Other Renewables: 1,973 GWh
  - Gas: 3,360 GWh
  - Oil: 305 GWh
  - Dual Fuel (Gas/Oil): 305 GWh
  - TOTAL: 64,599 GWh

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Need to Build Renewables in NYS to Achieve CLCPA
Predicted Need for Renewables from the Climate Scoping Plan (Appendix G)

Figure 28. Installed Capacity and Annual Generation for Scenario 3: Accelerated Transition away from Combustion

- **Installed Capacity (MW)**
  - 2020: 3,355
  - 2025: 4,860
  - 2030: 22,394
  - 2035: 60,604
  - 2040: 101,192
  - 2045: 133,212
  - 2050: 160,000

- **Annual Generation (GWh)**
  - 2020: 0
  - 2025: 50,000
  - 2030: 100,000
  - 2035: 150,000
  - 2040: 200,000
  - 2045: 250,000
  - 2050: 300,000

Legend:
- Pumped Storage
- Battery Storage
- Wind
- Offshore
- Wind Imports
- Solar
- Hydro Imports (New)
- Hydro Imports (Existing)
- In-State Hydro
- Biomass
- Zero-Carbon Firm Resource
- Gas & FO
- Nuclear
- Load
- 2% Solar 33% Wind 55% ZC
- 9% Solar 46% Wind 55% ZC
- 16% Solar 36% Wind 50% ZC
- 23% Solar 42% Wind 35% ZC
- 31% Solar 43% Wind 25% ZC
- 40% Solar 42% Wind 35% ZC

Source: ACE NY Alliance for Clean Energy New York, Inc.
Sources of Electricity in 2040, If NY Achieves CLCPA

- 62% Intermittent Renewables
  - 33% Baseload Resources
    - 10% DEFRs
    - 9% Nuclear
    - 7% Offshore wind
    - 7% Land-based wind
    - 7% Solar (Behind-the-meter)
    - 7% Solar (Grid Connected)
    - 5% Hydro Pondage + Run-of-River
    - 3% Imports
    - 3% Storage
    - 2% Price Responsive Demand (PRD)
    - 2% Dispatchable Emissions-Free Resources (DEFRs)

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6 GW Goal for 2025 is in CLCPA; this is nearly achieved.
NY is striving to achieve + 4 GW of Solar through NY-Sun, VDER, net metering

<table>
<thead>
<tr>
<th>Incentive Group</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstate MW Block Incentives - C/I</td>
<td>2,943</td>
</tr>
<tr>
<td>Con Edison MW Block Incentives - Residential</td>
<td>150</td>
</tr>
<tr>
<td>Con Edison MW Block Incentives - Small Projects</td>
<td>150</td>
</tr>
<tr>
<td>Con Edison MW Block Incentives - Large Projects</td>
<td>150</td>
</tr>
<tr>
<td><strong>Subtotal: MW Block Incentives</strong></td>
<td>3,393</td>
</tr>
<tr>
<td>Long Island, and Upstate Unincentivized Projects</td>
<td>607</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>4,000</td>
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The Accelerated Renewable Growth and Community Benefit Act (2020) directed the PSC to do an Initial Grid Study.

Subsequent actions include 1 NYPA Priority Transmission Project, Phase 1 projects by utilities, recent approval of projects in 3 Areas of Concern.

Also, declaration of “Public Policy Transmission Need” (PPTN) for offshore wind in 2021, with project still to be selected.

Next step – PSC to approve the Coordinated Grid Planning Process; ACE thinks there should be some modifications to the utilities’ proposal.

ACE has also requested additional PPTN declarations in North Country, Southern Tier, and Downstate for offshore wind.
Beginning in 2017, NYSERDA Accelerated Awarding Contracts for Renewable Energy Projects in Tier 1 and Offshore Wind Tier
Total of 137 Awards in Tier 1 and Offshore Wind Tier

TIER 1 NYSERDA-CONTRACTED PROJECTS - STATUS

- Permitted: 27%
- Under Construction: 8%
- Status Unknown: 9%
- Operational: 14%
- Denied: 1%
- Cancelled: 11%
- Pre-App: 19%
- App Submitted: 8%
- App Complete: 3%

Disclaimer: ACE NY does not have full transparency into the status of all projects. This data represents our best efforts to determine the status of each project.
NYSERDA reports that these awarded projects, plus the two Tier 4 projects (NYC Renewables Program), if all built, would allow NY to reach 66% renewable electricity in 2030. Under the Clean Energy Standard, NYSERDA is authorized to contract for ~4,700 MW more of offshore wind and 5 more years of Tier 1 RFPs (~110 more wind and solar projects). The Tier 1 procurement schedule accounts for 20% project attrition.
About three fourths of the projects are solar.
More than a Quarter of the Megawatts are Offshore Wind

**TIER 1 NYSERDA-CONTRACTED PROJECTS - BY TECHNOLOGY & CAPACITY**

- **Offshore Wind** (4,230 MW)
- **Solar** (7,395 MW)
- **Land-Based Wind** (1,962 MW)
- **Fuel Cell** (2 MW)
- **Biogas** (11 MW)
- **Hydro** (22 MW)
<table>
<thead>
<tr>
<th>Technology</th>
<th>Solar</th>
<th>Land-Based Wind</th>
<th>Offshore Wind</th>
<th>Hydro</th>
<th>Fuel Cell</th>
<th>Biogas</th>
<th>TOTAL #</th>
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</thead>
<tbody>
<tr>
<td># of Projects</td>
<td>102</td>
<td>17</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>137</td>
</tr>
<tr>
<td>Percent Projects (%)</td>
<td>74%</td>
<td>12%</td>
<td>3%</td>
<td>7%</td>
<td>1%</td>
<td>1%</td>
<td>100%</td>
</tr>
<tr>
<td>MW</td>
<td>7395.90</td>
<td>1962.25</td>
<td>4230.00</td>
<td>22.18</td>
<td>1.84</td>
<td>10.84</td>
<td>13623.01</td>
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<tr>
<td>Percent MW (%)</td>
<td>54.29%</td>
<td>14.40%</td>
<td>31.05%</td>
<td>0.16%</td>
<td>0.01%</td>
<td>0.08%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Collaboration between the RE industry and the farming community can advance the objectives of NY’s Climate Act while preserving the State’s vital agricultural sector.

Through the co-location of solar panels on farmland, **agri-voltaics and dual-use solar** can deliver a much-needed boost to farm income & can improve soil health, increase biodiversity protection, stabilize farm revenues, create construction jobs and bolster the local economy.

Renewables are always built on land owned by **willing** landowners. Landowners that are willing to lease their land to solar developers are often farmers that seek additional income.
In NY, all solar developers are required to adhere to the NYS Department of Agriculture and Markets Mitigation Guidelines for Solar Projects on Agricultural Land, to protect topsoil and prevent permanent loss of farmland.

- NYSERDA’s existing contracting process already has a powerful incentive for solar projects to avoid locating on the best soils (Mineral Soil Groups 1 – 4) and assesses a mitigation fee if they do not. **Note: this is for Tier 1 projects**

- This current Agricultural Mitigation Payment has proven to be effective at incentivizing project developers to avoid prime soils (as well as develop comprehensive agricultural co-location plans).
New York has both the **Agricultural Technical Working Group** and the **Farmland Protection Working Group** currently working on this issue.

- Both involve state agencies, farmers, agricultural organizations, renewables developers and other stakeholders.

Research underway is through the lens of:

- *projects can be designed as a form of medium-term conservation with strategies to improve soil health, protect pollinators and other species, and reduce runoff and erosion.*
- *projects, sited responsibly, offer farmers a steady revenue stream for decades, allowing their farm to continue in production and to better endure market volatility.*
So, how much farmland are we talking about?

- The Climate Scoping Plan predicts 2030 Solar capacity in NYS at 18.9 gigawatts (GWs), which includes 10 GW of distributed solar and 8.9 GW of grid-scale solar.
- If we assume that half of the distributed solar (approx. 5 GWs) would not be on rooftops, the remaining 13.9 GWs of solar on land translates to 77,000 acres, based on 5.5 acres per MW.
- Because not all solar would be on farmland, 77,000 acres is an overestimate.
  - Using that overestimation predicts that 1.1% of NY’s approximately 7 million acres of farmland would be used for solar power in 2030.
What about 2050? We will need much more solar then.

- Climate Plan Scenario 3 predicts 60,604 MW of solar in 2050.
- Assuming half of the 10,000 MW of distributed solar is rooftop or customer-sited, ~55,000 MW would remain.
- Assuming ALL 55,000 MW is on farmland = 303,000 acres.
- 303K acres = 4.3% of New York’s farmland.
- Again, this is an overestimate because not all solar will be on farmland.
Our next speakers are Vinny Albanese from the LiUNA (Laborer’s Union) and Jennifer Lawrence from the Social Enterprise and Training Center. They will speak about clean energy jobs.

Thank you for attending our legislative breakfast!