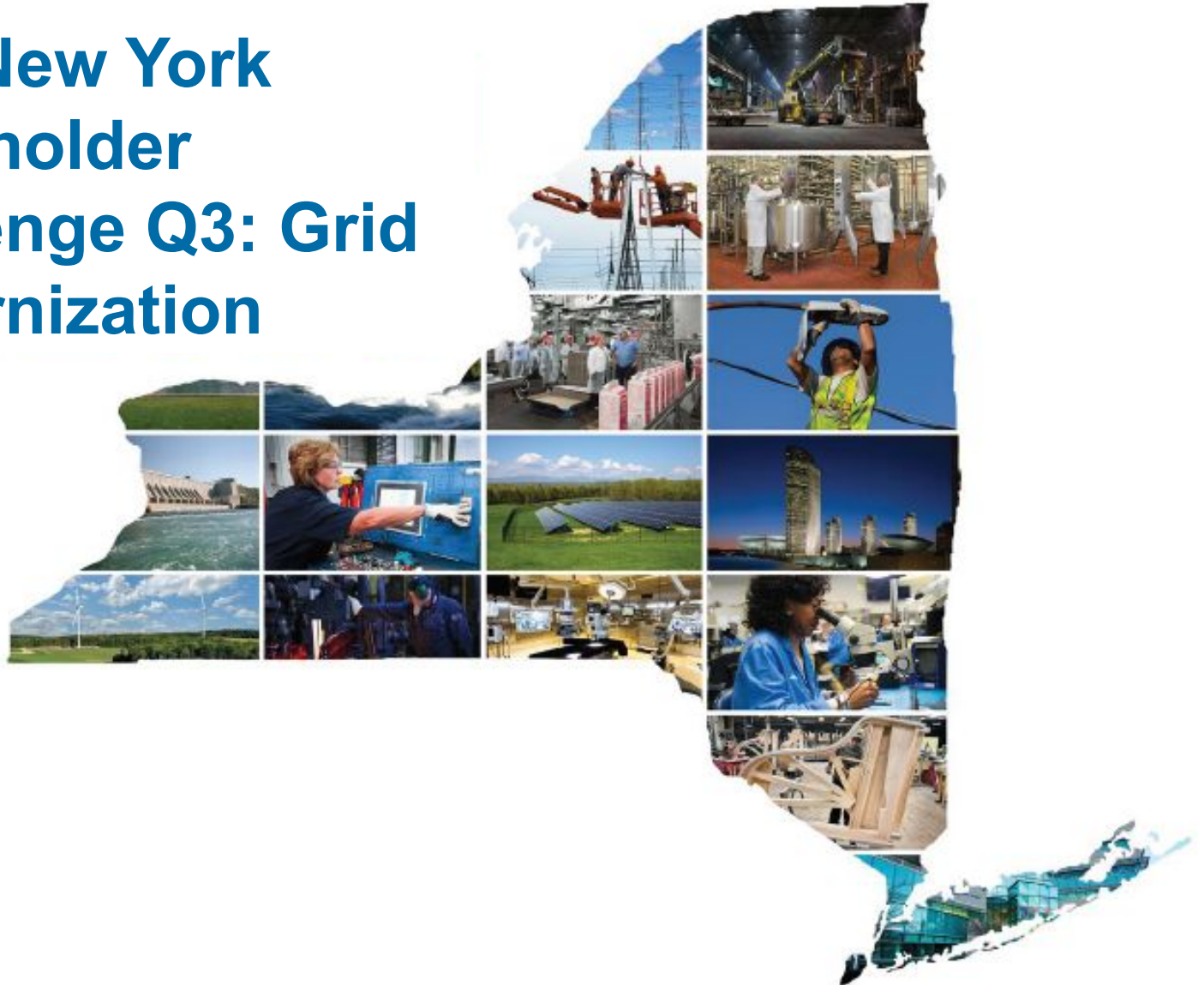


AEG New York Stakeholder Challenge Q3: Grid Modernization



**NY Power
Authority**





Key trends shaping the New York State power sector

- 1 New York State (NYS) policies set one of the world's most ambitious energy decarbonization agendas
- 2 Our customers' needs and expectations to decarbonize are growing
- 3 Competition in the NYS ecosystem for decarbonization driven growth is increasing
- 4 The need for resilience is ever increasing in our environment
- 5 High uncertainty remains in our socio-economic environment as part of the COVID-19 recovery

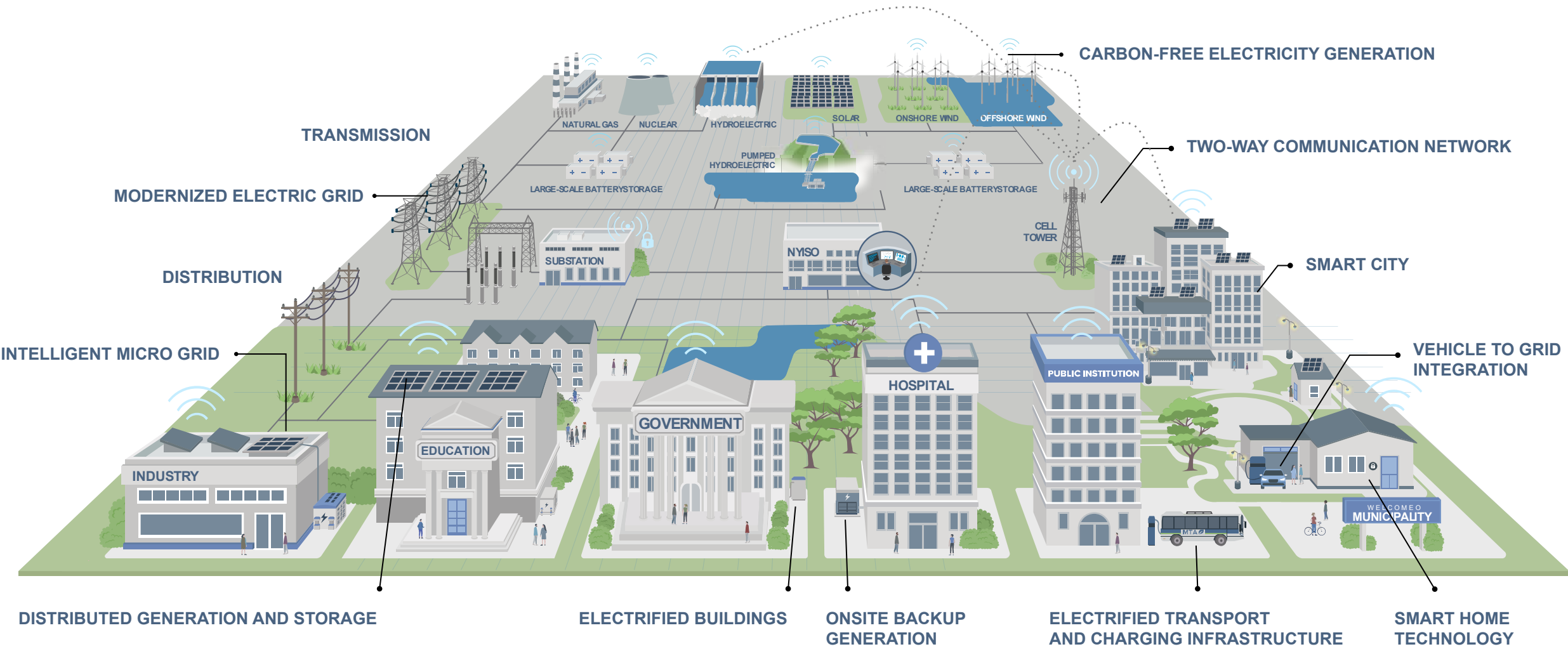
Technological advancements are driving and enabling these trends

We face a generational set of challenges as our energy systems evolve and adapt

NOT-EXHAUSTIVE

- 1** How do we keep **systems resilient and protected** from new and heightened risks? ...weather hardening, distributed backup, enhanced cyber protections
- 2** How do we **monitor and control** the grid and enable streamlined **communications and automation**? ...AMI, SCADA, SAMAC, PMUs, reclosers, remote fault and health indicators, automated feeder switchers, wireless networks, fiber, network protectors
- 3** How do we **balance** (intermittent) **supply and demand** and **integrate distributed resources**? ...siting and interconnecting of new technologies (e.g. grid-scale storage, EV infrastructure) and management of distributed energy (e.g. DERMS, smart inverters)
- 4** How do we **incentivize fast development** and integration of RES? ...appropriate incentives for construction and ownership of assets, rates and market structures to recognize the value of (balancing) assets
- 5** How do we **prepare our workforce** and **enable the right capabilities**? ...agile ways of working, strategic alliances, system planning and modelling, offering integrated solutions

We envision that New York State's grid of the future accommodates many functionalities



The future grid will be... **...more distributed** **...more complex** **...less controllable**

New York State has challenged itself to go after big decarbonization targets...

100%

Zero-carbon electricity by 2040

40%

Reduction in GHG emissions by 2030

9 GW

Offshore wind by 2035

3 GW

Storage by 2030 (15GW by 2040)

35%

Benefits to disadvantaged communities

70%

Renewable energy generation by 2030

85%

Reduction in GHG emissions by 2050

6 GW

Distributed solar by 2025

185_{TBTU}

Energy consumption savings by 2025

Call to action

Regarding Grid Modernization, to achieve NY's 2050 Carbon & Equity goals, the most critical obstacle to overcome is to preserve and enhance the value of our hydro assets...



View policy as a technological challenge that we (engineers) need to pioneer and solve to achieve a common vision



Set bold ambitions for technological progress and collaborate across the industry



Take a connected and integrative view to ensure we can deliver against the challenges, rather than innovating on siloed technologies