Power Generation

Chair: John Rhodes
Public Service Commission

Power Generation Mitigation Strategies, slide 1/10

Scope topic/Subgroup: Equity Subgroup	
Strategy under consideration	Community Impact – Develop recommendations to identify and proactively advance opportunities to address health disparities associated with hosting pollution sources, new renewable energy, access to energy efficiency, and siting
Rationale	Each region of NYS has specific community impacts and concerns that should be considered and addressed in relation to the future of power generation under the CLCPA
Equity considerations	• Reduce disproportionate impacts in overburdened communities (e.g. the operation of high emission power generation facilities result in significant health concerns for neighboring communities) • Consider means for increasing access to energy efficiency, solar, and community distributed generation projects to specifically assist disadvantaged communities • The siting of renewable projects and their potential impact on local communities both in the short and long term, particularly in rural areas • The impacts on communities (e.g. jobs, revenues, etc.) where energy facilities are being retired
Potential Implementation challenges	• NYS should prioritize replacing high emissions power generation in disadvantaged communities • NYS will swiftly need to increase access to energy efficiency & solar and community distributed generation projects to disadvantaged communities by 2030 • NYS will need to encourage the development of large scale renewables downstate, large scale renewables directly connected to downstate, distributed generation, and energy storage • Some community members may have questions/concerns when it comes to the siting of local renewable projects and the potential impacts of these projects • How to assist communities where energy facilities will be retired • Stronger valuing of renewables from community owned/lead projects in the VDER value stack
Issues to explore	• What types of clean power generations technologies (e.g., wind, roof-top solar, tidal, etc.) can enhance the generation mix to meet peak demands • How developing/strengthening partnerships with community organizations and affordable housing providers to develop local solutions can lead to the equitable access of solar energy • How continued efforts to communicate with members of local communities for siting of local renewables and development of best practices with those communities can help with siting issues • Consider the wide range of aspects involving impacts to communities where energy facilities will be retired and how NYS can assist with the transition through economic support, job training/jobs and more • Providing financial support to the pairing of Community Distributed Generation with energy efficiency, electrification and DR interventions

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Scope topic/Subgroup: Equity Subgroup	
Strategy under consideration	Access and Affordability for all (Enabling) – Develop recommendations to ensure New Yorkers have access and can afford to participate meaningfully in NYS's clean energy future
Rationale	Equity includes access to affordable solutions, good paying jobs, and alleviating the disproportionate burden on communities. A majority of low and moderate-income residents, as well as small businesses, have a high energy burden and are already experiencing difficulties paying their bills.
Equity considerations	NYS must invest in residential energy efficiency and clean energy solutions in a manner that benefits disadvantaged communities, which includes low-moderate income individuals, while also considering support for small businesses.
Potential Implementation challenges	• Costs including upfront/future costs – How can such costs be subsidized to not overburden low-moderate income residents/small businesses • Lack of options for renters/subsidized housing (including NYCHA) • Difficulty spreading information regarding existing programs to the community • Lack of flexibility in utility billing increases customer confusion (e.g. flexibility in billing systems, consolidated billing, etc.) • Additional rates for electric heating and cooking only • Limited availability of the Solar for All program • Federal Action – Loss on Investment Tax Credits for renewable energy development and tariffs on solar • Predatory ESCOs • Expand state funding/incentives for LMI energy efficiency and clean distributed generation • Need solutions to reduce cost burdens to rate payers for improvements to the transmission grid & rate designs for behind the meter electric generational projects
Issues to explore	• Identifying short/long terms costs so that there is a plan to reduce cost to low-moderate income renters/homeowners/affordable housing providers/small businesses • Evaluating existing incentives, low-income programs, and more to ensure they can adequately assist low-moderate income residents/small businesses with increased costs • Can alternative rate design be used to help control increased costs on NYS's most vulnerable • How to help renters • How to strengthen community outreach/education efforts regarding new/existing programs • Providing financial support to the pairing of Community Distributed Generation with energy efficiency, electrification and DR interventions • Increased financing options for energy efficiency, renewable energy, and distributed generation • How to equitably distribute the cost of transmission system upgrades
Additional thoughts	• Low income customers should not bear the brunt of the burden for stranded assets • Explore how the state has handled previous accelerated depreciation events (e.g. Rochester thermal system 1984) • Explore how warranty of habitability laws can be leveraged to ensure the equitable provision of utilities it the future

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Scope topic/Subgroup: Equity Subgroup	
Strategy under consideration	Workforce Development (Enabling) – Develop recommendations to enable an equitable clean energy workforce
Rationale	NYS should increase opportunities for members of disadvantaged communities to economically benefit from future investments in clean energy and supporting infrastructure
Equity considerations	Disadvantaged communities suffer disproportionately adverse environmental, economic, educational and health realities when compared to other communities. Investments in workforce development will need to be aggressive and targeted, and likely for longer periods of time than what is afforded through existing models (possibly throughout an individual's career), and ensure that jobs created result in meaningful, long duration careers, rather than short term job opportunities.
Potential Implementation challenges	• Pre-apprenticeship programs and apprenticeship programs • Given long term goals of NYS, workforce development may need to begin before H.S. to ensure a sizable flow of candidate for positions as they become available • Address environmental injustices which led to inequitable and disproportionately exposure to airborn toxics resulting in school absenteeism • Coordination and development with existing programs (e.g. Green City Force, Sustainable South Bronx, WeACt, etc.) • Working with state and communities to ensure these jobs are NY jobs • NYS should support and incentivize renewable supply chain and infrastructure projects in environmental justice communities
Issues to explore	• How to increase diversity in all aspects of the industry • How to increase awareness of the growing industry and need for workforce • How the equity subgroup can coordinate with the Just Transition working group • How will these efforts increase support from communities and how can these efforts be tailored to community needs in order to reduce the potential for further amplifying the inequities already present
Additional thoughts	• As the demand for jobs in renewable energy sector grows, it is important to remember that the wages and benefits are just as important as the job itself • NYS should continue to include prevailing wage in large scale renewables RFPs • Some clean energy jobs (offshore wind steelworkers, building energy management workers, etc.) are more likely to be union jobs than others

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Scope topic/Subgroup: Barriers Subgroup	
Strategy under consideration	Clean Energy Siting
Rationale	• There will need to be rapid deployment of renewables to meet the CLCPA goals • Optimizing the locations of these projects and the regulatory process will be necessary to meet the timeline and ensure an effective and efficient transition of the grid
Equity considerations	• Ensuring benefits from renewables are accessible by all, in both rural and urban environments • Developing principles of justice for requiring renewable developers to provide benefits to communities, particularly disadvantaged communities • Investing community benefits funds in ways that would improve the economic, social, and environmental of the surrounding area
Potential Implementation challenges	• Current NYS statutes that inhibit renewable energy deployment • Aging transmission infrastructure • Collocating storage with renewable energy sources • Renewable energy siting and energy delivery planning processes are not coordinated • Providing incentives for decision makers to embrace the siting of well-designed renewable projects
Issues to explore	• Optimizing new transmission builds • Collocated storage with renewable energy projects • Correctly designing clear and transparent price signals for both energy and interconnection costs • Provide standardized property tax assessments for renewable projects • Encouraging more robust host community and PILOT plans to increase benefits for community members • Explore reducing timeframe and restrictions for siting on brownfields and unused industrial land • Siting projects closer to end user areas • How to properly track progress and make course corrections as process progresses
Additional thoughts	

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Scope topic/Subgroup: Barriers Subgroup	
Strategy under consideration	Energy Delivery & Hosting Capacity
Rationale	Renewable energy must be reliably delivered to the load. How can NYS increase the hosting capacity and ease interconnections for renewable energy and distributed energy resources? Without transmission and distribution level upgrades there will be significant renewable energy curtailments compromising achievement of the CLCPA goals.
Equity considerations	• Developing principles of justice for requiring transmission and energy storage developers to provide benefits to impacted communities, particularly in disadvantaged communities • Reduce cost burdens for improvements to the transmission and distribution grid, particularly in disadvantaged communities
Potential Implementation challenges	• Regulatory processes that increase the time needed or cost for transmission development and interconnection, or that decrease the effectiveness and coordination of transmission projects • Encouraging stakeholder involvement in the transmission planning process • Coordination amongst OSW developers for cohesive transmission development • Renewable generation pockets leading to curtailments occur today and are likely to further develop unless the build out of renewables is well coordinated with a focus on energy deliverability
Issues to explore	• Upgrading aging infrastructure and optimizing the location and operation of new transmission projects, including transmission of OSW, and removing regulatory barriers that make optimization difficult • Upgrading the transmission system to be able to host more distributed energy resources • Easing interconnections on both the bulk and distribution levels • Energy delivery extends beyond transmission to include storage, especially as the saturation of intermittent resources increases • How should the economic tradeoff between new transmission, energy curtailment, and energy storage be considered • How to properly track progress and make course corrections as needed
Additional thoughts	• Is the current cost allocation for interconnection, where the burden is on the energy developers, the best model?

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Scope topic/Subgroup: Solutions for the Future Subgroup	
Strategy under consideration	Technology and Research Needs
Rationale	• A variety of energy technologies will be needed to meet CLCPA goals, especially in 2040, to effectively transition to a clean, affordable and reliable power system • To accelerate progress NYS needs a structured and focused approach to determine which technologies are needed and how to best accelerate commercial deployment at scale
Equity considerations	• Ensuring that new technology deployment is collaborative and complimentary to other grid investments such that the lowest overall cost is incurred to achieve the CLCPA goals. • Ensure new technologies do not burden communities where environmental justice is a concern.
Potential Implementation challenges	• Adoption of new technology to enable CLCPA goals must be integrated with more traditional investments for continued safe and reliable operation of the grid • Timeframes for adoption of new technology on the electric grid must be accelerated from the typical timeline of 5+ years from initial commercial product availability to deployment at scale • Demonstration and validation of technology frequently requires large scale projects in real work use cases that are both costly and require coordination of many entities. • Maintaining flexibility to allow for new solutions that are not contemplated or ready yet • Cost and funding source for any new investments/pilots
Issues to explore	• Determination of key technologies needed for the 2030 and 2040 goals, and whether these technologies align with the mandates and intentions of the CLCPA • Are there research and development needs for these technologies and where is it not needed • How can adoption and integration of new technologies be accelerated while managing performance, cost, and longevity risks • How can markets help encourage new technologies? • How will the progress regarding new technology development be considered in conjunction with the transition away from fossil?
Additional thoughts	• For new technologies, the environmental and equity burdens must be analyzed.

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Scope topic/Subgroup: Solutions for the Future Subgroup	
Strategy under consideration	Market Solutions – Maximize the market participation of different technologies in a way that adds to system efficiency & send correct price signals to resources over time
Rationale	• Allowing participation and utilization of all resource types will maximize potential contributions system-wide • Sending more granular and correct price signals at both the wholesale and retail level will encourage desired and efficient behavior as the system changes over time • Increasing transparency of market data and system conditions will allow all market participants to make informed decisions
Equity considerations	• Ensuring that energy markets allow for system-wide benefits and system-wide costs to be fairly distributed across all New York ratepayers
Potential Implementation challenges	• Will require several forward-looking market designs and the implementation of each design must be structured in a way that sends the correct price signal at the appropriate time
Issues to explore	• Participation Rules/Tariff Design • Market Rule Changes/Additional Products • Retail Rate Structures
Additional thoughts	

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Scope topic/Subgroup: Resource Mix Subgroup	
Strategy under consideration	Growth of renewable generation and energy efficiency
Rationale	The CLCPA requires 70% renewable electricity by 2030 and 100% carbon free electricity by 2040. We anticipate demand growth of 65% to 80%, dependent on the scale and timing of electrification and whether there are clean alternatives for transportation and buildings, such as bioenergy. The level of electrification needed to achieve GHG reduction goals will increase overall electric load and shift the system peak from summer to winter. There remains a large amount of renewables that must be procured and developed to reach the goals and NYS needs to incorporate flexibility and controllability as we electrify these sectors in order to create a more manageable system.
Equity considerations	• Community concerns/opposition related to the impact of renewables, particularly for large-scale renewables upstate when viewed as supplying downstate load • Wholesale markets must evolve to support the climate goals of the state while producing the most efficient investment and operational decisions at the lowest cost to consumers. • How do we ensure solutions are accessible to everyone and how do we keep costs affordable for everyone?
Potential Implementation challenges	• Renewable generation pockets leading to curtailments occur today and are likely to further develop unless the build out of renewables is well coordinated with a focus on energy deliverability • NYISO's Buyer Side Mitigation rules may increase the cost of integrating renewables • Will need to develop incentives to invest in the technology and encourage consumer behavior to allow for smart Electric Vehicle charging and building systems that allow electric demand to be managed efficiently • Wholesale market-based mechanisms combined with effective rate design will be needed
Issues to explore	• Are current policies in programs sufficient in order to meet our clean energy deployment goals? • Are there space limitations preventing more renewable deployment downstate? • Are there innovative solutions for siting renewables downstate? • What considerations should the panel suggest regarding the planning work to integrate Off-Shore Wind (OSW)? • The E3 work shows a significant scaling of renewable build out is required beyond the amount codified in the CLCPA – for example, land-based wind of 4.7GW by 2030 and 8.9GW by 2050 and offshore wind of 15.5GW. Investment driven by market incentives must accompany Renewable Energy Credits and contract-based approaches. • How do we ensure continued year-round reliability and flexibility of the electric system as both demand grows and more clean resources (that are often intermittent) supply the grid?
Additional thoughts	• Energy conservation and efficiency efforts will be important to reduce the impact of electrification on load and reduce costs.

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Scope topic/Subgroup: Resource Mix Subgroup	
Strategy under consideration	Effectively transitioning away from fossil fuel energy generation
Rationale	• As renewable penetration increases, how do we transition away from fossil fuels while maintaining reliability and safety standards? • Older fossil fuel fired "peaking" resources have typically been relied upon to provide the final megawatts in the supply stack and reserves to provide contingency response. • The natural gas infrastructure is an extensive statewide network that must be considered in the energy transition, particularly regarding methane leakage, decommissioning of obsolete infrastructure, and maintaining reliability while electric demand grows.
Equity considerations	• Disproportionate impacts on environmental justice communities from high-emitting peaking units and methane leakage from the natural gas system • Consideration of job training for those who will need to transition away from the work associated with maintaining the current system

Potential Implementation challenges	• We need to carefully consider whether use of efficient, low-emitting, fossil peaking resources may be needed for a period of time in certain load pockets where energy delivery may be limited, requiring energy to be created and delivered within the load pocket itself or if other solutions are or will be available to address load pocket concerns. If it is concluded that peaking resources will continue to be needed, we need to and if so, how long those resources may be needed and whether it is possible to mitigate the impact on environmental justice communities.
	• Will need sustained durations of dispatchable/flexible power generation to replace base load resources
	• The speed of technology development that can replace fossil fuel generation
	• How do we address the potential for stranded resources associated with natural gas infrastructure?
	• Introduction of regulation for leak detection and repair may result in concern over:
	  ○ Reliability of fuel to generate electricity to the electrical grid
	  ○ Reliability for home heating
	  ○ Small business (well operators) financial impacts

Issues to explore	• How long will we need to rely on fossil fuel generators natural gas infrastructure to decarbonize effectively and reliably in terms of energy, response time, duration, contingency response, etc.? Can we move towards complete shutdown, or will we first need to move towards lower-emitting and higher-efficiency resources? • How can we maximize market and policy signals to support the transition away from fossil fuel generation, how does the 2019 NYSDEC Peaker Rule factor in? • What are the clean dispatchable technologies that we can replace fossil fuels with? • Where are the most significant leaks located and is there an adequate method for estimating leaks? How do we address leaks in infrastructure in a way that doesn't extend the life of the gas system? What existing NYSDEC/NY PSC/Utility processes can be leveraged?
Additional thoughts	36

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Scope topic/Subgroup: Resource Mix Subgroup	
Strategy under consideration	Deploying Energy Storage and Distributed Energy Resources (DERs)
Rationale	• Energy storage resources can be useful for the grid to shift daily consumption and supply patterns which can help grid operators handle peak demand, manage variability of intermittent resources, and potentially defer transmission upgrades in some instances. • DERs can improve system resiliency, energy security, and fuel diversity • DERs can also lower consumer prices, improve market efficiency, reduce energy losses, and allow consumers to take greater control of their electricity use and costs
Equity considerations	• Storage and DERs can be utilized to integrate renewables, maximize benefits (financial, environmental, etc.) and reduce peak emissions in communities where environmental justice is a concern. • Siting must still take community values into account • Must ensure access to DERs and their benefits to disadvantaged communities
Potential Implementation challenges	• Flexible market rules and hybrid resource models to ensure full benefits from storage • Buyer-side Mitigation is obstacle • Creating appropriate development pathways and policies. • Development of business model choices to disseminate maximum benefits to communities • Identification of high benefit locations and operation is difficult due to data limitations on distribution networks • The current NERC definition of DERs includes smaller, unregulated combustion sources.
Issues to explore	• What improvements to wholesale opportunities are needed for flexible resources like storage? • Are there more ways to utilize distributed storage and DER to maximize grid flexibility system benefits? • What is the optimal mix of storage and transmission for near- and long-term system needs (i.e., renewable integration, transmission, congestion)? • What are the different storage technologies that may be applied to the grid? Pros/cons of each • Can DERs and storage be utilized as part of portfolio approach for high-emitting fossil peaking replacement or transmission needs, especially as costs decline?
Additional thoughts	• Do the wholesale energy storage market rules implemented in August 2020 coupled with hybrid storage rules starting in 2021 and 2022 and DER rules in 2022 align with the timeline of expected build out of resources, as is indicated by the resources in the NYISO's interconnection queue? • Integrated planning between T&D systems will likely be necessary by 2040 to ensure optimal portfolio of solutions • Do the wholesale energy storage market rules implemented in August 2020 coupled with hybrid storage rules starting in 2021 and 2022 and DER rules in 2022 align with the timeline of the expected build out of resources, as is indicated by the resources in the NYISO's interconnection queue?